

USACE INLAND ELECTRONIC NAVIGATIONAL CHARTS (IENC) & OTHER CHARTING PRODUCTS

NOAA Open House on Nautical Cartography
07 July 2017

Denise LaDue
US Army Geospatial Center



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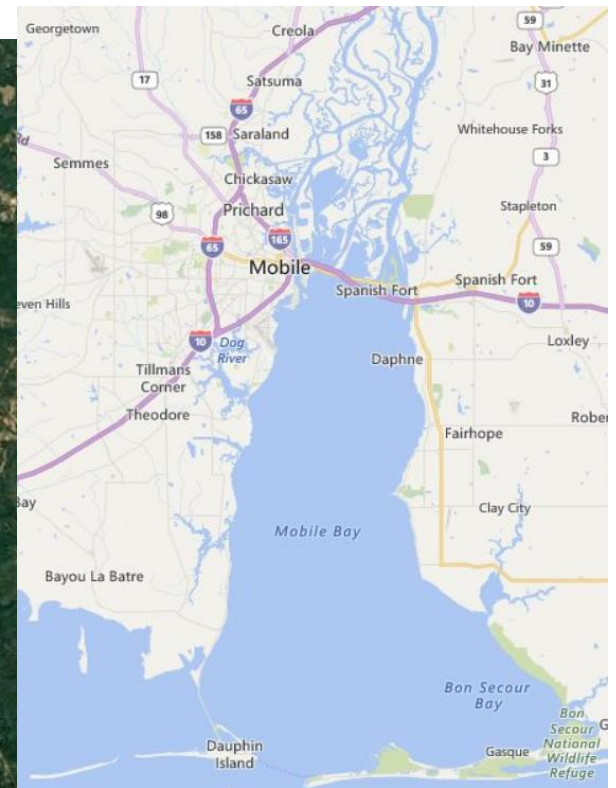
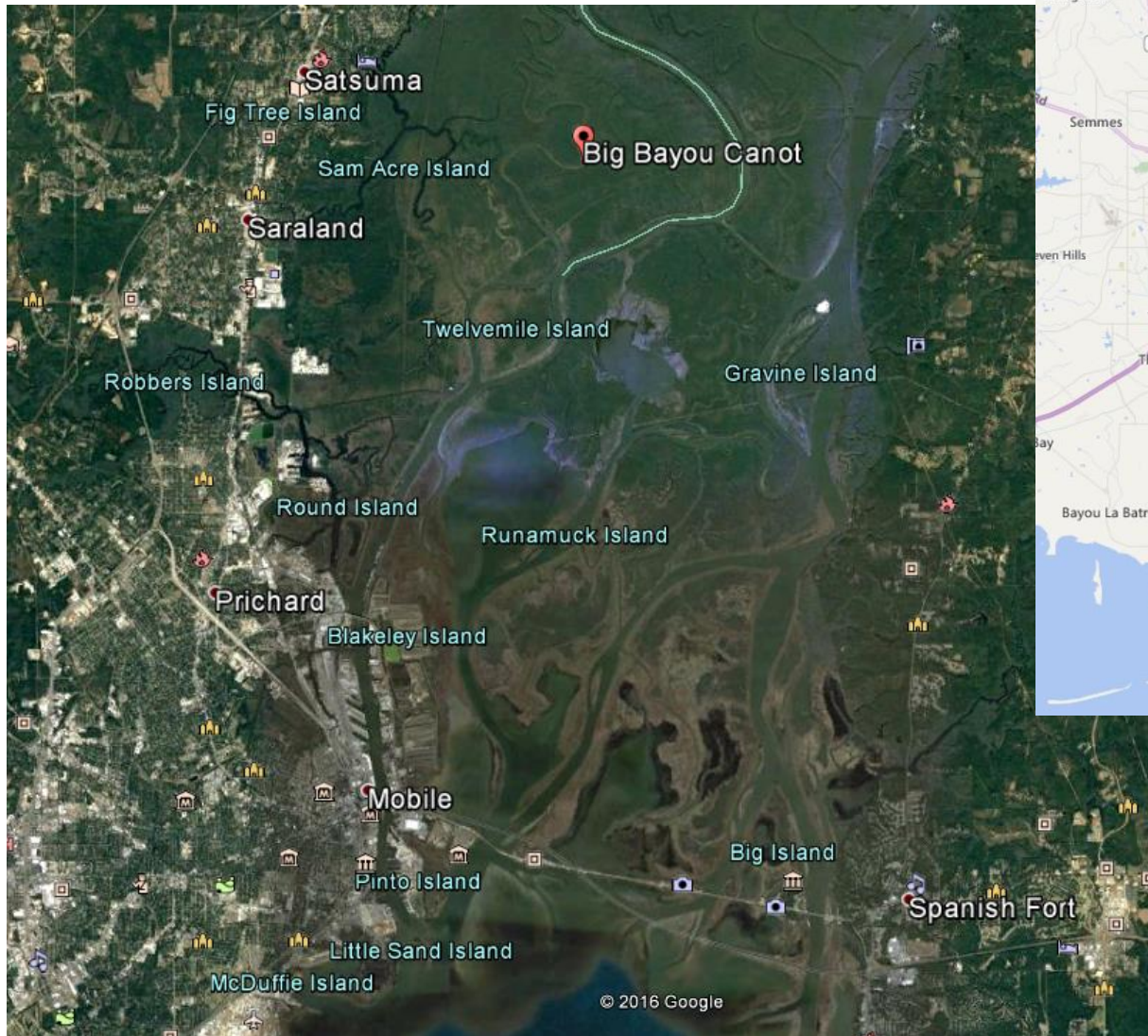
BACKGROUND A TRAGIC BEGINNING



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BIG BAYOU CANOT



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ELECTRONIC CHART DATA FOR SAFE AND EFFICIENT NAVIGATION

September 22, 1993



- A towboat pushing six barges, lost in the fog, struck the Big Bayou Canot bridge near Mobile, AL causing the track to misalign by approximately 3 feet.
- Eight minutes later, AMTRAK *Sunset Limited* derailed on the railroad bridge and plunged into the waterway, killing 47 and injuring 103.

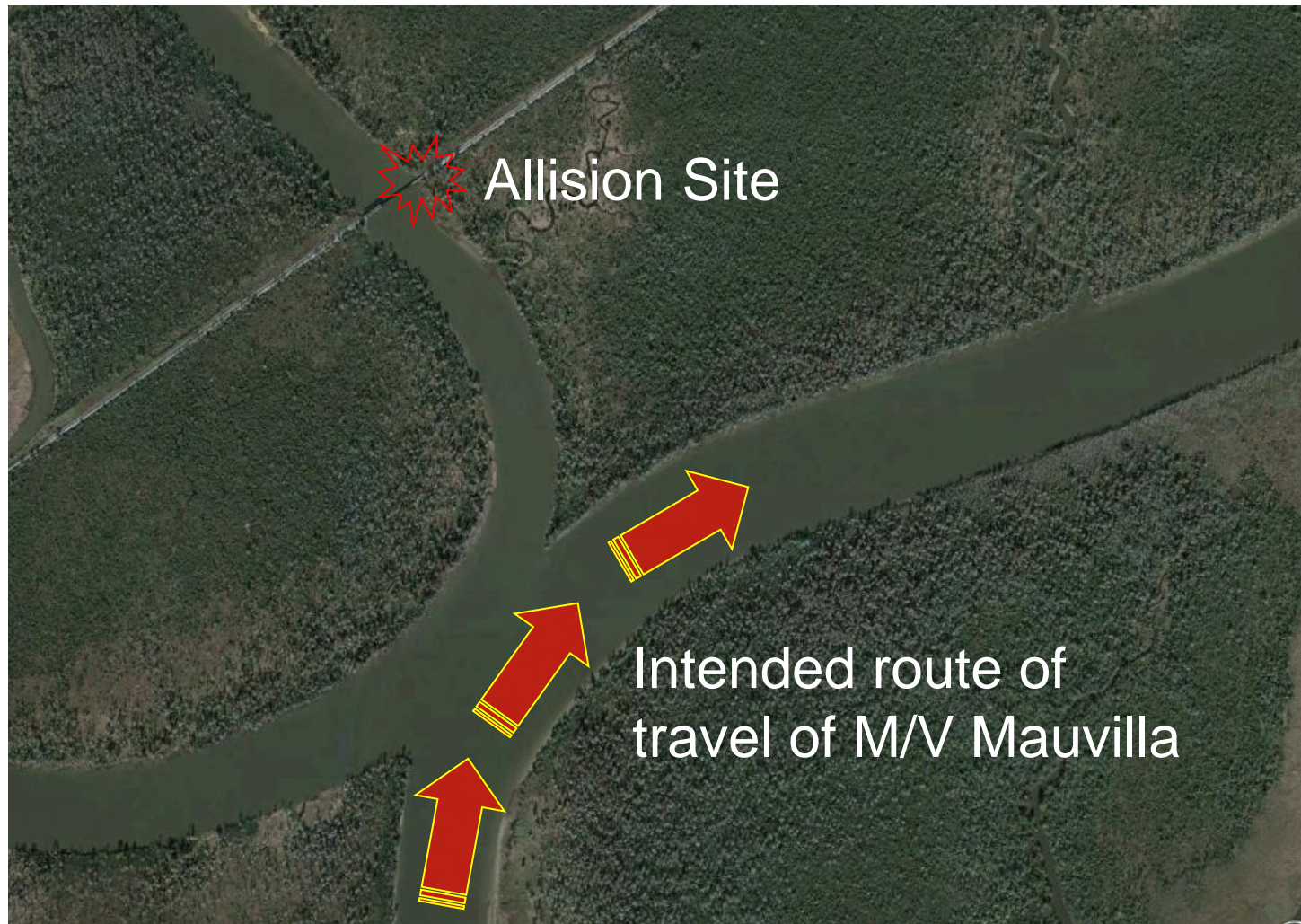
An electronic chart system on the towboat may have prevented the accident.



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BIG BAYOU CANOT



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CHRONOLOGY OF USACE IENC DEVELOPMENT

S-57 Standard, Edition 3.1 (For Maritime ENC's)

- 2001 – US Congress tasked USACE to produce IENCs
- 2001 – present – USACE produced & maintains 107 IENC cells, covering 21 waterways

IENC Standard, Edition 2.1-2.4 (For Inland ENC's)

- 2010 – Decision made to produce new waterways to Inland ENC standards (3 rivers produced to IENC 2.1)
- 2011 - Conversion of charts from S-57 & IENC 2.1 to Inland ENC 2.2 started
- 2012 – Migration of all charts to IENC 2.2 Completed
- 2014 – Conversion of IENC cells to IENC 2.3 standard
- 2017/2018 – *Conversion of IENC cells to IENC 2.4 standard*



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INLAND ENC COVERAGE IN USA

- 107 IENC cells covering over 7,200 miles
- 21 Rivers
- Charts are produced to the IENC 2.3 Standard
- All charts are reviewed monthly and updated, as necessary.

USACE IENC



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INTERNATIONAL IENC STANDARDS AND DEVELOPMENT



- International Working Group
- Organized to develop and to maintain a standard for IENCs suitable for inland navigation
- Standard based on the existing standards of International Hydrographic Organization for 'maritime' ENC's (S-57)
- Standard will be suitable for all known data requirements for safe and efficient navigation in European, North American, Russian Federation, South American and Asian inland waterways
- It is further intended that IENC standards meet the basic needs for Inland ENC applications, worldwide

WHY AN “INLAND” STANDARD?

Examples of unique features found in waterways which are not found in maritime waters

- Casino / Gaming Boats
- Fleeting Areas
- Ice Breakers
- Lock Guide Walls
- Exceptional Navigation Structures (Lift bridges/viaducts)



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PRODUCTION PROCESS



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15 USACE Districts & US Army Geospatial Center






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“FORMAL” SOURCE SUBMITTAL

IENC District Source Metadata & Check Sheet
US Army Corps of Engineers
USACE District Assessment of Current Data Source Submittals



April 2016 –Version 2.0

IENC Source Review Checklist:

This checklist is a form that should be completed prior to source delivery to the IENC program QA Manager and IIC Technologies or the IENC Production Manager (LRD). Please submit this completed form with each new source submission. This form replaces the previously used metadata sheet, and can help identify potential problem areas common to differences between S06 2.6 (or later) and IENC product specifications as well as any Skin of the Earth (SOE) changes that may have occurred. Discrepancies found in the new source data may result in a request for clarification or re-submission, resulting in the delay of data implementation.

District:
District POC:
POC Phone #:

Metadata:

Description of Data: (e.g. hydro or feature)

Delivery Date to Charting Center:
Intended Implementation Date (delivery date):

Source Data Specifics:

Each piece of submitted source information:
(To add a new row, left click in a row, right click to delete)

File Name	File Format
e.g. tentom.txt	ASCI XT

Source Replacement Specifics:

Is any of the data a Total Source Replacement (replaces existing layer/feature in chart completely.)?

☐ No
☐ Yes

If "Yes", please list the source file names:

Additional Remarks:

Feature & Attribute Specifics:

Depths/Depth Area Source:

For all Depth/Sounding Data submissions:

Should Data Quality (M_QUAL) be changed to reflect accuracy of data?

☐ Yes – Please choose Zone of Confidence (CATZOC) – most USACE IENCs should be 1, 2 or 3.

Topography (Land / Shoreline):

1. Does coastline (COALNE) cross any depth contours (0' or 9')?

- ☐ No – Proceed to question 2
☐ Yes – Answer question below

If you answered "Yes" above, have you provided new depth contours or sounding data to avoid overlap?


- ☐ No – Source will likely be rejected until new depth information is provided
☐ Yes – Proceed to Question 2

Additional District Remarks:

2. Does coastline (COALNE) maintain consistency with adjacent features, such as shoreline construction features (piers, wharfs, revetments, etc) or locks and dams?

IENC Source Review and Metadata Sheet

OTHER SOURCES



U.S. Department
of Homeland Security

**United States
Coast Guard**

LOCAL NOTICE TO MARINERS

District 8 MRS **Week: 16/17**

Mississippi River System

SECTION II - DISCREPANCIES

This section lists all reported and corrected discrepancies related to Aids to Navigation in this edition. A discrepancy is a change in the status of an aid to navigation that differs from what is published or charted.

SECTION III - TEMPORARY CHANGES and TEMPORARY CHANGES CORRECTED

This section contains temporary changes and corrections to Aids to Navigation for this edition. When charted aids are temporarily relocated for dredging, testing, evaluation, or marking an obstruction, a temporary correction shall be listed in Section IV giving the new position.

SECTION VII - GENERAL

This section contains information of general concern to the Mariners. Mariners are advised to use caution while transiting these areas.

SECTION VIII - LIGHT LIST CORRECTIONS

An Asterisk *, indicates the column in which a correction has been made to new information

(1) No.	(2) Name and Location	(3) Mile	(4) Bank	(5) Characteristic	(6) Structure / Dayboard Up Down	(7) Remarks
6260	Nettle Lower Daybeacon					Remove from list. 12/17



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IENC Chart Discrepancy Reporting System

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Welcome to the IENC Chart Discrepancy Reporting System

The IENC Chart Discrepancy Reporting System provides registered users the opportunity to report inaccuracies in and problems with IENC charts.

Do You Need An Account?

If you are not a registered user, click the button below.

Registered Users:

If you are a registered user, log in here.




USCG Navigation Center: <https://www.navcen.uscg.gov/>

IENC Chart Discrepancy Reporting System: <https://ienc-report.usace.army.mil/>

CHART DISCREPANCY REPORTING SYSTEM

<https://ienc-report.usace.army.mil/>

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HISTORY FILES

IENC Meta	Source Application	Compiler Reviewer	Discrepancy Report	"Legacy" Source Application
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 US Army Corps of Engineers IENC History File					
IENC Meta Data					
IENC Cell No.	IENC Cell Name	River Name	District	From Mile	To Mile
U37OH912	Bay City, IL to Cairo, IL	Ohio	CELRL	912	981
Product Release History					
New Edition (EN) / Update (ER)	IENC File Name	Edition No.	Update No.	Update Application Date	Issue Date
EN	U37OH912.000	33	-	7/13/2016	
ER	U37OH912.001	33	1	8/2/2016	
ER	U37OH912.002	33	2	8/17/2016	
ER	U37OH912.003	33	3	9/14/2016	
ER	U37OH912.004	33	4	10/12/2016	
ER	U37OH912.005	33	5	12/14/2016	
ER	U37OH912.006	33	6	1/18/2017	
EN	U37OH912.000	34	-	2/8/2017	
ER	U37OH912.001	34	1	3/8/2017	
ER	U37OH912.002	34	2	4/12/2017	

Source Application							
Item No.	Source Description	Source Name / Identifier	Source Date	Vector / Raster	Location: River Mile & Descending Bank	Action Taken	Date Completed
1	Encoding Guide 4.0 Compliance		5/8/2007	V	Entire Cell		5/8/2007
2	2007 SEAS, Inc. 400' X-section hydrographic survey			V		New shoreline, drying height and 9' depth contour added to cell.	5/2/2008
3	McClane Environmental Services feature survey		9/7/2007	V	Entire Cell	Field verification of all lights, facilities & ramps	5/2/2008
4	Homeland Security		-	V	Entire Cell	Removed intakes and pipeline products	5/2/2008
5	M_NPUB	M_NPUB	-	V	Entire Cell	M_NPUB Added to cell	5/1/2008
6	USCG LNM	D6 LNM 19/08	5/8/2008	R	Full File	IENC corrected through LNM 19/08.	5/8/2008

Source Application									
Date	Location: River Mile	Descending Bank	IENC OBJECTS	Local Notice to Mariner Feature	Addition or Revision	IENC Object SORDAT	IENC Object SORIND	Date Completed	
8	Chart	Chart	M_NPUB Text File - U30H912NP1.TXT	Text	Added text entry: MILE 953.0 - MILE 968.0 - LD REPAIRS/TOW RESTRICTIONS - UPDATE Removed text entry: MILE 935.0 - CONSTRUCTION OPERATION	20160504	US.U3.Light.USCG Light List - LNM 18/16	5/5/2016	IENC corrected through LNM 24/08.
8	922.3	Left	Island LIGHTS, DAYMAR, bcnlat	Federal Aid	"STRUCT DEST" removed from OBJNAM for Cumberland Island Junction Light (Master object only)	20160316 (Slave objects only)	US.U3.Light.USCG Light List No. 28145 - LNM 11/16 (Slave objects only)	5/5/2016	New project depth and shoreline
8	928.4	Left	LIGHTS, DAYMAR, bcnlat	Federal Aid	Ledbetter Light removed from USCG Light List and from IENC cell	-	-	5/5/2016	Sailing line modified.
IENC Cleared through week 19/16 (May 4, 2016)									
8	Chart	Chart	M_NPUB Text File - U30H912NP1.TXT	Text	Modified text entry: MILE 953.0 - MILE 968.0 - LD REPAIRS/TOW RESTRICTIONS	20160608	US.U3.Light.USCG Light List - LNM 23/16	6/13/2016	IENC corrected through LNM 30/08.
IENC Cleared through week 23/16 (June 8, 2016)									
8	Chart	Chart	M_NPUB Text File - U30H912NP1.TXT	Text	Removed text entries: MILE 953.0 - MILE 968.0 - LD REPAIRS/TOW RESTRICTIONS and MILE 940.0 - BRIDGE MAINTENANCE - UPDATE	20160713	US.U3.Light.USCG Light List - LNM 28/16	7/15/2016	Sailing line modified based on pilot comments
016	964.5	-	DAMCON, SLCONS, LDARE	-	Added footprint of current construction at Omatet Locks and Dam	20160711	US.U3.shape.USACE_Louis_vile_OIS	7/15/2016	New project depth added based on survey provided by USACE Louisville
IENC Cleared through week 28/16 (July 13, 2016)									
016	964.5	Left	DEPONT, DEPAARE	-	Connected two nodes to ensure topology was complete.	-	-	8/2/2016	IENC cleared through LNM 33/08
IENC Cleared through week 28/16 (July 13, 2016)									
261	USCG LNM	Section 7: General	-	-	Added text entry: MILE 953.0 - MILE 968.0 - LD TOW RESTRICTIONS	20160817	US.U3.Light.USCG Light List - LNM 33/16	8/18/2016	M_NPUB modified
IENC Cleared through week 33/16 (August 17, 2016)									
263	USCG LNM	Section 7: General	-	-	Added text entry: MILE 953.0 - MILE 968.0 - LD RESTRICTIONS Removed text entry: MILE 953.0 - MILE 968.0 - LD TOW RESTRICTIONS	20160914	US.U3.Light.USCG Light List - LNM 37/16	9/21/2016	IENC corrected through LNM 42/08
264	Email	Email from G. Thornberry - "RECTRC misalignment at Cairo"	-	9/20/2016	981	-	RECTRC	-	M_NPUB modified
IENC Cleared through week 37/16 (September 14, 2016)									
265	USCG LNM	Section 7: General	-	-	Added text entry: MILE 962.6 - LD REPAIR	20161012	US.U3.Light.USCG Light List - LNM 41/16	10/14/2016	IENC corrected through LNM 46/08
IENC Cleared through week 41/16 (October 12, 2016)									
267	USCG LNM	Section 7: General	-	-	Added text entry: MILE 953.0 - MILE 968.0 - LD TOW RESTRICTIONS	20161012	US.U3.Light.USCG Light List - LNM 41/16	10/14/2016	M_NPUB modified
IENC Cleared through week 45/16 (November 5, 2016)									

STATUS REPORT



US Army Corps of Engineers
Louisville District
PO Box 59
Louisville, KY 40201
Ph: 502-315-6926

IENC MAINTENANCE STATUS REPORT - PROJECT DETAILS

Project: IENC Monthly Maintenance **Prepared by:** Denise LaDue
Date: March 8, 2017 **E-Mail Address:** Denise.R.LaDue@usace.army.mil

1. PROJECT SCHEDULE UPDATE

IENC Cell No.	Chart Name (River Miles)	Update Date: 11/9/2016	Update Date: 12/14/2016	Update Date: 1/18/2017	Update Date: 2/8/2017	Update Date: 3/8/2017
		Corrected/Cleared through: LNM 45/16 (November 9, 2016)	Corrected/Cleared through: LNM 50/16 (December 14, 2016)	Corrected/Cleared through: LNM 03/17 (January 18, 2017)	Corrected/Cleared through: LNM 06/17 (February 8, 2017)	Corrected/Cleared through: LNM 10/17 (March 5, 2017)
U37AG001	Allegheny River (001 to 046)	✓	U37AG001.003 Ed. 10.3	✓	✓	✓
U37CL007	Clinch River (007 to 062)	U37CL007.012 Ed. 4.12	✓	✓	✓	✓
U37CR003	Cumberland River (003 to 075)	U37CR003.004 Ed. 13.4	U37CR003.000 Ed. 14.0	U37CR003.001 Ed. 14.1	U37CR003.002 Ed. 14.2	U37CR003.003 Ed. 14.3
U37CR075	Cumberland River (075 to 149)	U37CR075.005 Ed. 9.5	U37CR075.000 Ed. 10.0	U37CR075.001 Ed. 10.1	✓	✓
U37CR149	Cumberland River (149 to 221)	U37CR149.012 Ed. 10.12	U37CR149.000 Ed. 11.0	U37CR149.001 Ed. 11.1	✓	✓
U37CR221	Cumberland River (221 to 307)	✓	✓	✓	✓	✓
U37CR307	Cumberland River (307 to 381)	U37CR307.001 Ed. 8.2	✓	✓	✓	✓
U37GR001	Green River (001 to 108)	✓	✓	✓	✓	U37GR001.000 Ed. 9.0
U37KA001	Kanawha River (001 to 024)	U37KA001.006 Ed. 12.6	U37KA001.007 Ed. 12.7	U37KA001.008 Ed. 12.8	✓	✓
U37KA024	Kanawha River (024 to 050)	U37KA024.014 Ed. 13.14	U37KA024.015 Ed. 13.15	U37KA024.016 Ed. 13.16	✓	✓
U37KA050	Kanawha River (050 to 065)	✓	U37KA050.014 Ed. 12.14	U37KA050.015 Ed. 12.15	U37KA050.016 Ed. 12.16	✓
U37KA065	Kanawha River (065 to 091)	U37KA065.010 Ed. 11.10	U37KA065.011 Ed. 11.11	U37KA065.012 Ed. 11.12	U37KA065.013 Ed. 11.13	U37KA065.014 Ed. 11.14
U37MN001	Monongahela River (001 to 042)	✓	✓	✓	✓	✓
U37MN042	Monongahela River (042 to 086)	U37MN042.002 Ed. 12.2	U37MN042.003 Ed. 12.3	✓	U37MN042.004 Ed. 12.4	U37MN042.005 Ed. 12.5

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- Monthly change log
 - Current edition
 - Which cells changed
 - Descriptive summary of changes
- Summary of all History files in a small package



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QA

Inland Electronic Navigational Charts District QA Chart Documentation Sheet

Delivery Cycle Date: **12 APR 17** Date QA Started: **18 APR 17** Date QA Completed: **18 APR 17**
 Chart Name: **OH736** Edition and Update #: **28.2** Date Produced: **12 APR 17**
 River Name: **Ohio** River Section Covered: From mile: **736** To mile: **852**
 USACE District: **Lt** Chart Producer: **Denise LaDue**

Deliverables:

- ☒ Chart Exchange Set (*.000 file(s), catalog file(s), Image file(s))
- ☒ Final Report
- ☒ Metadata File
- ☐ Error Report
- ☒ Final Chart Production Files
- ☐ Other files requested in Scope/Task Order:

S-57/IENC Compliance:

Performed by: **GL**

Compiler / Reviewer Information

Source Application Item No.s	Completed By	Date Complete	Reviewed By	Review Complete; Ready for USACE Review	USACE Reviewer	Approved Date	Notes
166-168	Denise LaDue CELRL-OP-E	12/16/2013	Todd Davis CELRL-OP-TM				Sharps Bar light removed in Dec. delivery. Removed 1 MORFAC at Mile 961.0 and 1 at Mile 961.4 (Verified)
169-170	Denise LaDue CELRL-OP-E	1/14/2014	Todd Davis CELRL-OP-TM				Metropolis Light has been removed
171-172	Denise LaDue CELRL-OP-E	2/13/2014	Todd Davis CELRL-OP-TM				Added text entry: MILE 962.5-MILE 966.0 - USACE VESSEL RESTRICTION Removed text entry: MILE 963.0 - MILE 966.0 - NO PASSING ZONE/CHANGE IN L/D OPERATING HOURS VERIFIED BY LOOKING AT TXT FILE
173-175	Denise LaDue CELRL-OP-E	3/19/2014	Todd Davis CELRL-OP-TM				Owens Island Light changed from 934.6 to 934.2
177-179	Denise LaDue CELRL-OP-E	5/8/2014	Todd Davis CELRL-OP-TM				Verified - SCAMIN changed to 60,000 for LINDRGN (P) & (V) Verified - Modified text entry: MILE 962.5-MILE 966.0 - USACE RESTRICTION
180-184	Denise LaDue CELRL-OP-E	6/17/2014	Todd Davis CELRL-OP-TM				Verified - Added CATSEA, Added CATCBL, Bird Nesting Platform Added text entry
185-186	Denise LaDue CELRL-OP-E	7/10/2014	Todd Davis CELRL-OP-TM				Verified-Added test entries: MILE 925.0 - DREDGE OPERATION at 963.0-MILE966.0 - USACE VESSEL RESTRICTION. Removed text: MILE 962.5-MILE 966.0 - USACE VESSEL RESTRICTION
187-189	Gerald Thornberry CELRL-OP-E	8/28/2014	Todd Davis CELRL-OP-TM				Verified-"DISCONTINUED" added to OBJNAM for Grand Chain La Daybeacon / Removed text entries: MILE 925.0 - DREDGE OPERA
198-199	Denise LaDue CELRL-OP-E	8/28/2014	Todd Davis CELRL-OP-TM				

- Contains QA comments
 - "PASSED" if all is okay
 - Otherwise, a statement describing the problem with the edit to help the Producer resolve the issue

Discrepancy Reports

Discrepancy Report No.	Reference Source Application	Discrepancy Description	Date Reported	Date Resolved
248		small DEPARE and DEPCNT from 20140820 remains inside new DEPARE and DEPCNT in Lock 53 pool at mile 956.6 (Sharps Bar)	5/9/2016	
249		small DEPARE and DEPCNT from 20141209 remains inside new DEPARE and DEPCNT in Lock 52 pool, backchannel of Cumberland Island at Cumberland River mile 1.0	5/9/2016	



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IENC CLOUD



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IENC CLOUD BACKGROUND



- Federal Geographic Data Committee (FGDC) issued an RFP in Dec, 2011 to sponsor pilot project with 10 Federal agencies to distribute their public data free for one year on Amazon Web Services (cloud), ending March, 2013. Named the **Geocloud Program**.
- IENC was chosen because of relatively small dataset and expertise with ArcGIS. Approval was given by CIO, USACE to distribute public navigation data on AWS
- <https://www.ienccloud.us>



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IENC CLOUD BACKGROUND



- Advantages include
 - very high reliability of server performance
 - cost effective data hosting
 - scalable CPU availability
 - remote access for data updates
- ArcGIS Server 10.1
 - Over 6000 GIS layers uploaded
 - Clients
 - ArcMap, ArcGIS Explorer
 - ArcGIS JavaScript
 - Google Earth
 - ArcGIS.com
- Experienced over 9 million downloads



IENC CLOUD: DOWNLOADABLE FILES

- IENC
 - “S-57” Exchange Set
 - Shapefile
 - KML/KMZ
 - GeoPDF
- USCG Buoys
 - “S-57” Exchange Set
 - Shapefile
 - KML/KMZ
 - Updated every Tuesday



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IENC CLOUD: SPECIAL DOWNLOADABLE FILES

- Southwest Pass
 - Wilkenson to Smoke Bend
 - Belmont
 - Fairview
-
- S57 Exchange Set only
 - Use with NOAA ENC
 - Soundings and contours
 - Southwest Pass is updated weekly

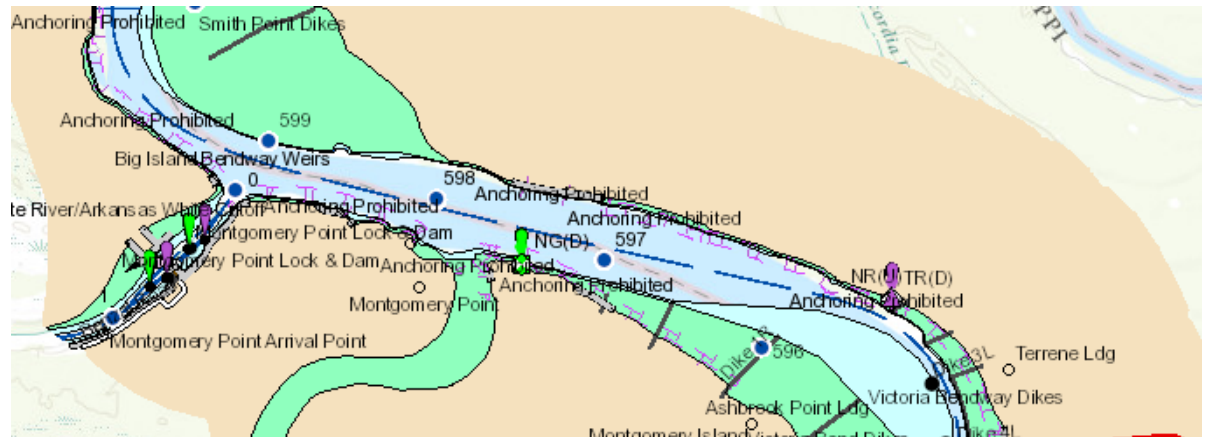


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IENC CLOUD: IENC WEB SERVICES

- ArcMap Service
 - Online viewer
 - REST Service
- Web Map Service (WMS)
- Web Feature Service (WFS)
- KML Service
 - Google Earth
- Services by
 - IENC cell
 - IENC object
 - Entire dataset



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IENC CLOUD: USCG BUOY WEB SERVICES

- ArcMap Service
 - Online viewer
 - REST Service
- KML Service
 - Google Earth
- Updated weekly



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IENC CLOUD: CATALOG WEB SERVICES

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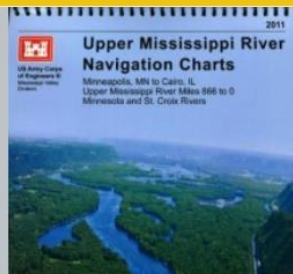


PAPER CHARTS

GOVERNMENT PUBLISHING OFFICE (GPO)

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INLAND ELECTRONIC NAVIGATIONAL CHARTS

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Inland Chart Books

Current USACE chart books can be purchased from the Government Publishing Office (GPO) bookstore, by accessing the USACE Navigational Chart "store". Charts may be available at a lower cost directly from the Corps Districts, however, for consumer convenience, charts are now available for purchase through the GPO. Many hard copy chart books are available from the Corps districts. The cost, scale, features, and update cycles may be different from district to district.



Alabama River

Last published in 2014, the Alabama River Navigation Charts are available to download in pdf format (11 x 17 inches) from the Mobile District.

Allegheny River

Last published in 2004, the Allegheny River Navigation Charts are available to download in pdf format (14 x 8.5") from the Pittsburgh District or for hardcopy purchase from the GPO Bookstore.

Arkansas River

Last published in 2003, the McClellan-Kerr Navigation Charts are available for download in pdf format (16 x 8") and can be ordered as hard copy books from the Tulsa District.



Lower Mississippi River

Last published in 2015, the Lower Mississippi River Navigation Charts are available for download in pdf format (11 x 17") from the New Orleans District and are also available for hardcopy purchase from the GPO Bookstore.

Missouri River

Published in 2014, the Missouri River Navigation Charts (Miles 0-499) are available for download in PDF format (14 x 8.5") from the Kansas City District.

Published in 2014, the Missouri River Navigation Charts (Miles 499-735) are available for download here in PDF format (14 x 8.5") from the Omaha District.



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“PRINT ON DEMAND” PAPER CHARTS GOVERNMENT PUBLISHING OFFICE (GPO)

The screenshot shows the U.S. Government Bookstore website. The top navigation bar includes links for 'My Account', 'Federal Agencies', 'Non-USA Customers', and 'Help & Contact'. A search bar is prominently displayed with the text 'Search our store by keyword, title, agency, ISBN or ID'. Below the search bar, there are tabs for 'Browse ALL Topics', 'New Releases', 'Read Sellers', 'News & Features', 'eBooks', 'Data Products', 'CFRs', 'Subscriptions & Magazines', 'Standing Orders', 'Flyers & Catalogs', and 'Sale & Clearance'. The main content area is titled 'USACE Navigational Charts' and features a large image of a river navigation chart. Text on the page describes the U.S. inland navigation system, which consists of 8,200 miles of navigable rivers maintained by the U.S. Army Corps of Engineers. It also mentions that the U.S. Coast Guard requires commercial vessels to maintain on-board navigation charts or maps appropriate to the area of operation. A sidebar on the left lists various topics such as '00% OFF GPO Week SALE', 'Inventory Reduction SALE', 'AWARD WINNERS & FEATURES', 'eBOOKS & e-MAGAZINES', 'GIFT GUIDES & CALENDARS', 'MAGAZINES & JOURNALS', 'MULTIMEDIA & MICROFORM', 'Art, Maps & Travel', 'Budget & the Economy', 'Business & Finance', 'Citizenship & Politics', 'Consumer, Home & Family', 'Education & Libraries', 'Environment & Nature', 'Government Forms & Phone Directories', 'Health & Benefits', 'International & Foreign Affairs', 'Law & Regulations', 'Minorities, Cultures & Languages', 'Science & Technology', 'Security, Defense & Law Enforcement', 'State Processes & Procedures', 'Statistics & Data', 'Transportation & Navigation', and 'US & Military History'. At the bottom, there is a section for 'Browse by Agency' with links to various federal agencies including the Department of Agriculture (USDA), Department of Commerce (DOC), Department of Defense (DOD), and Department of the Army.

A One-Stop-Shop for all USACE Paper Chart Books

– 20/22 Chart Books Available

- 1 to be released in 2017
- 1 to be released in 2018

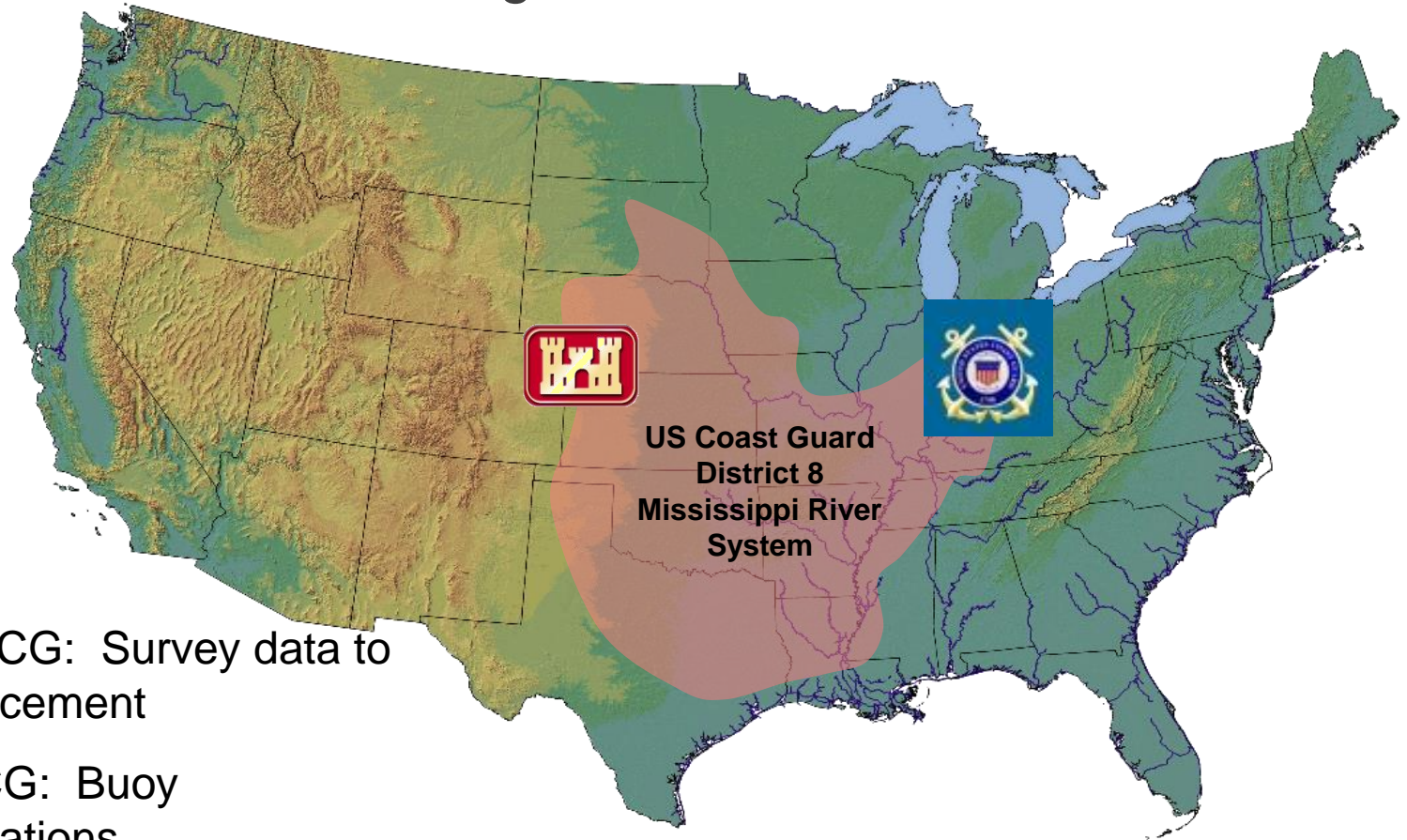
Current production guidance – EP 1130-2-520 NAVIGATION AND DREDGING OPERATIONS AND MAINTENANCE GUIDANCE AND PROCEDURES

<https://bookstore.gpo.gov/agency/1784>



PARTNERING: USCG

Buoy Placement Data Sharing



USACE → USCG: Survey data to aid in buoy placement

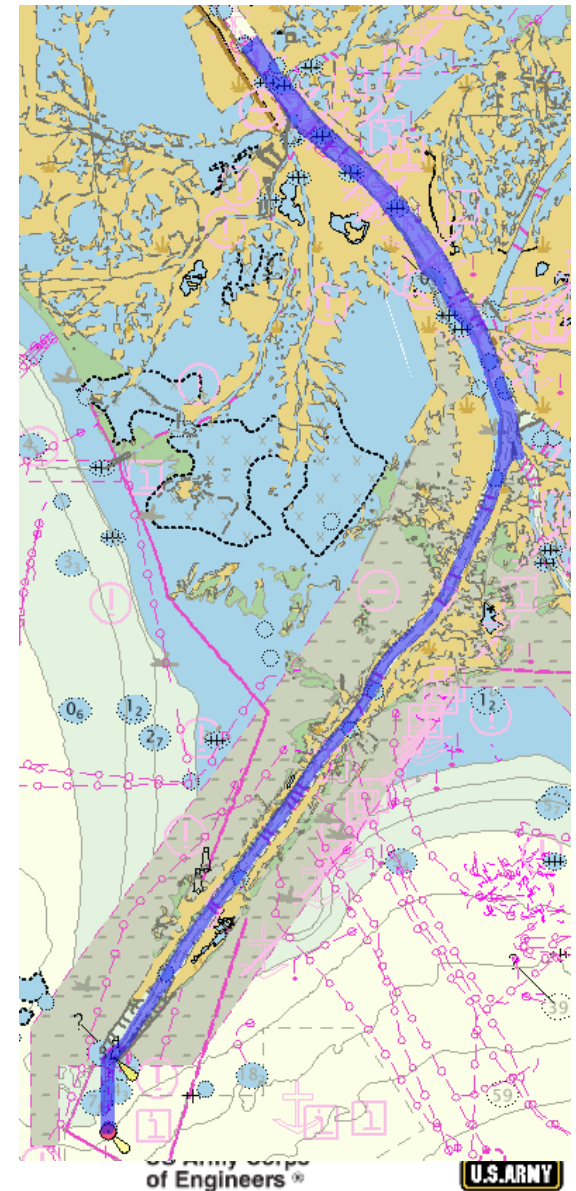
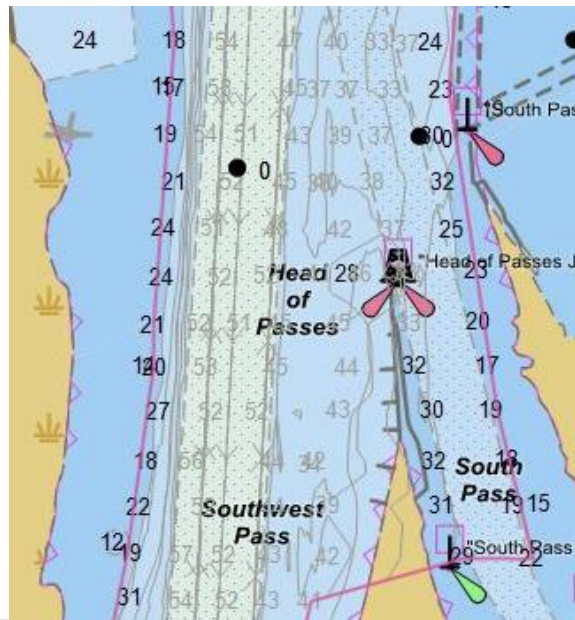
USCG → USACE: Buoy Coordinate locations

Buoy IENC Overlay updated and published weekly by USACE



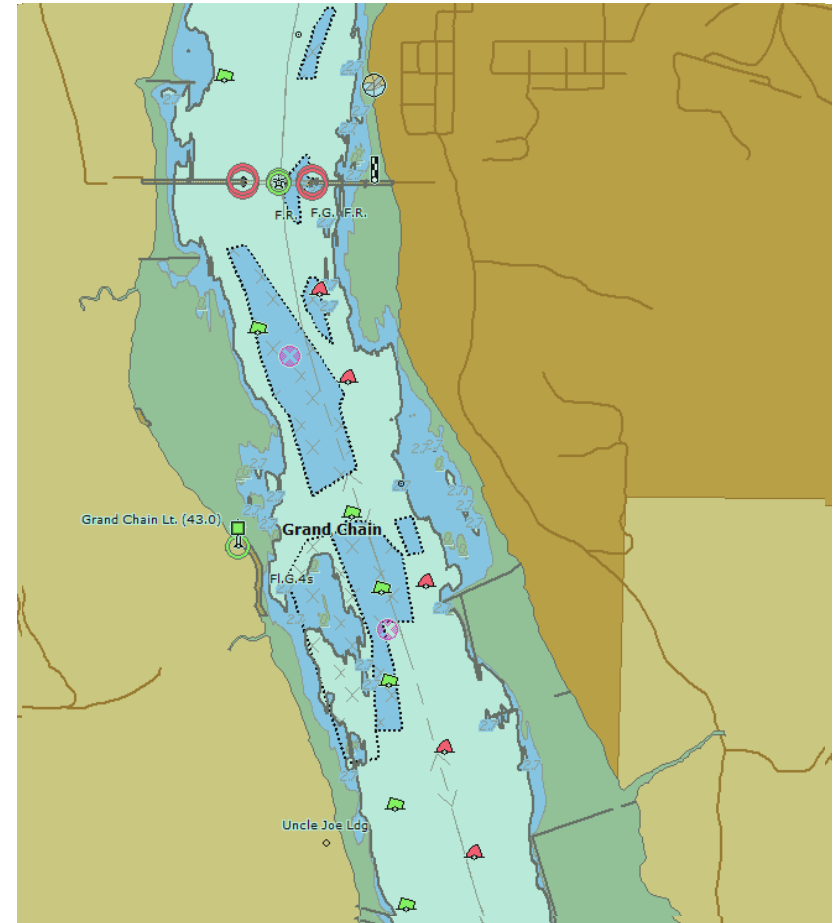
IENC OVERLAY: MISSISSIPPI RIVER (SOUTHWEST PASS)

- USACE survey data for SW Pass → updated weekly
- Overlay file, 3UASW000 overlays on NOAA ENC's (US4LA30M & US4LA33M)
- USACE Survey data for 3 other areas on the Lower MS River → updated monthly or as needed



IENC OVERLAYS: USCG BUOY PLACEMENT DURING LOW WATER EVENT 2022

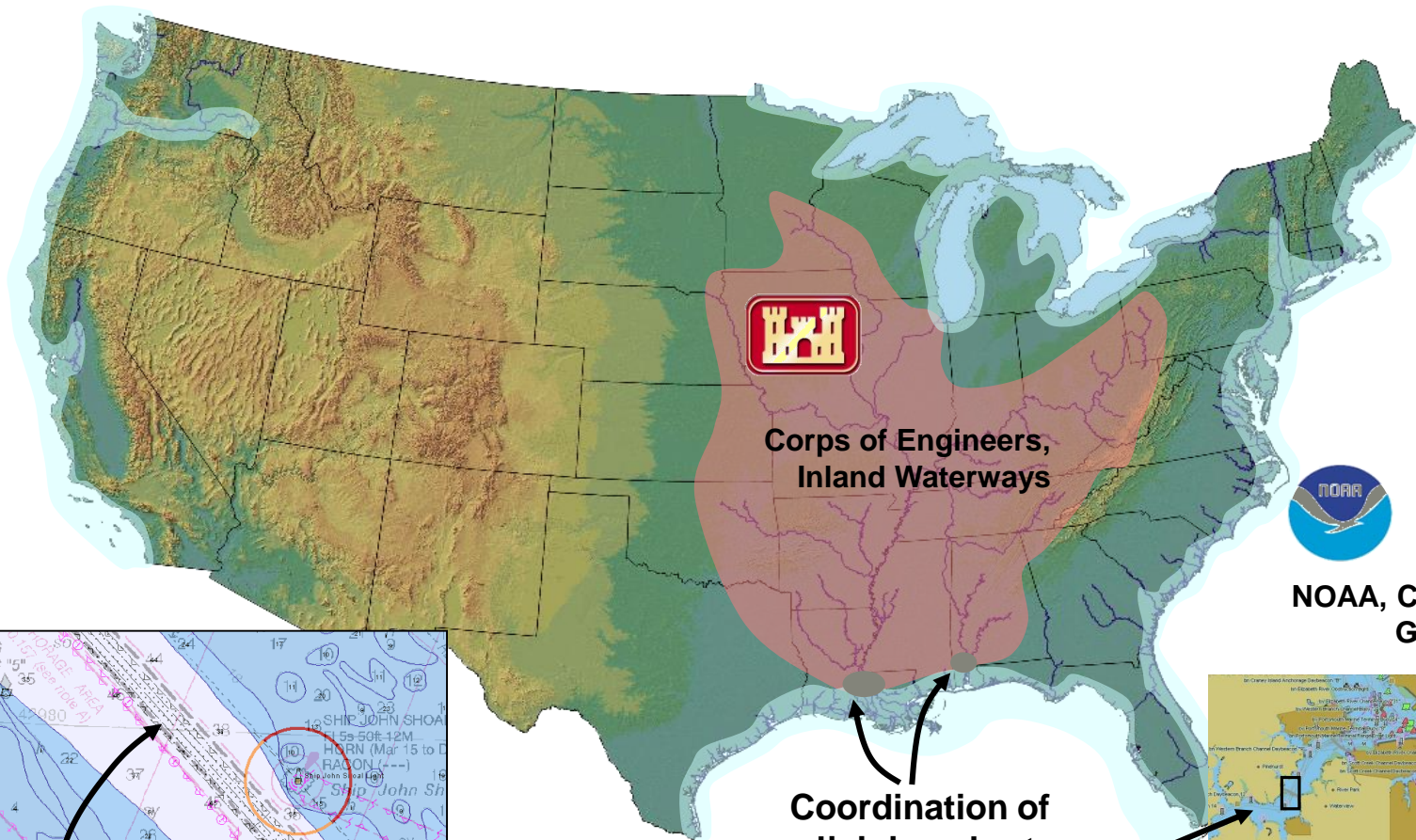
- USACE Survey data → USCG for rock pinnacle area on Upper Miss River near Grand Chain
- USCG Cutters used surveys to place buoys
- USCG → Excel file with Buoy Locations
- USACE created Buoy Overlay for USCG & Towing



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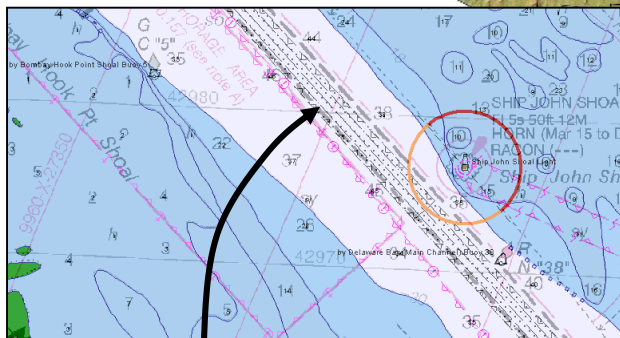
PARTNERING: NOAA COORDINATION AND DATA SHARING



Corps of Engineers,
Inland Waterways

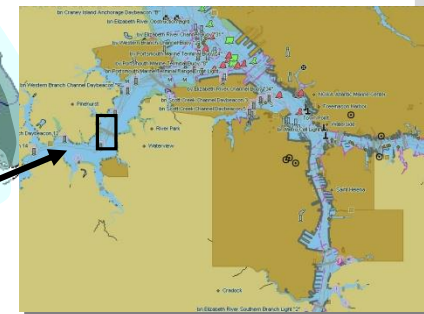


NOAA, Coastal and
Great Lakes



More consistent and reliable
channel data from Corps for
NOAA charts

Coordination of
adjoining charts
for seamless
use by chart
systems



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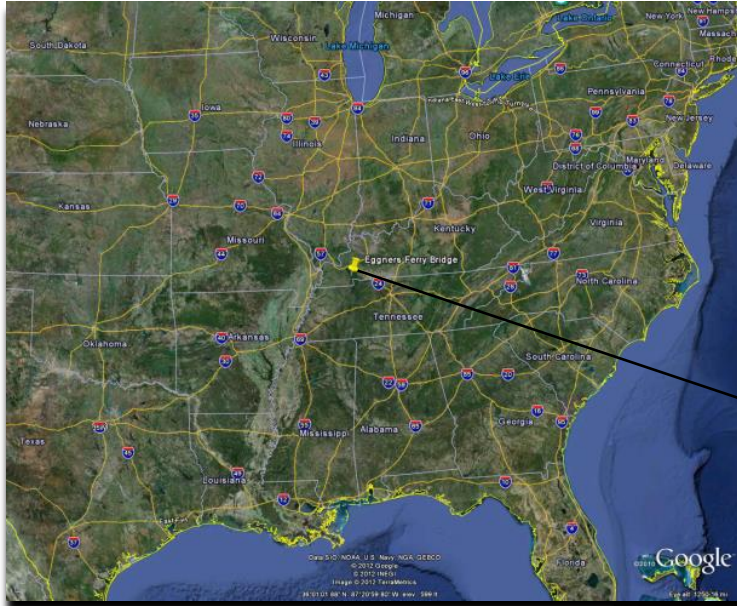
SAFE NAVIGATION A CAUTIONARY TALE



US Army Corps
of Engineers[®]



EGGERS FERRY BRIDGE



26 Jan 2012
Tennessee River Mile 41.7

EGGERS FERRY BRIDGE COLLISION

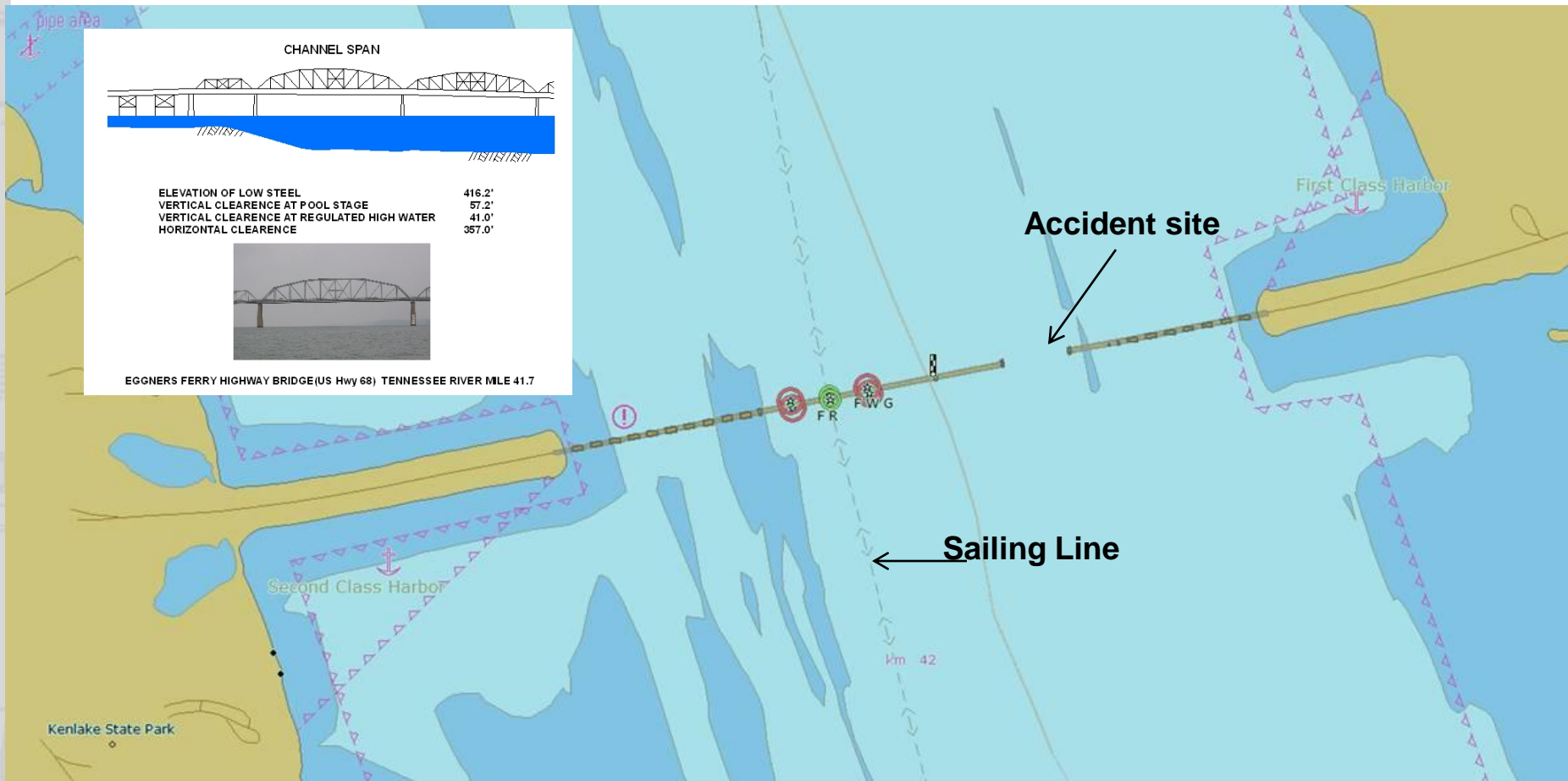
Delta Mariner transited the
wrong navigation span



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of Engineers ®



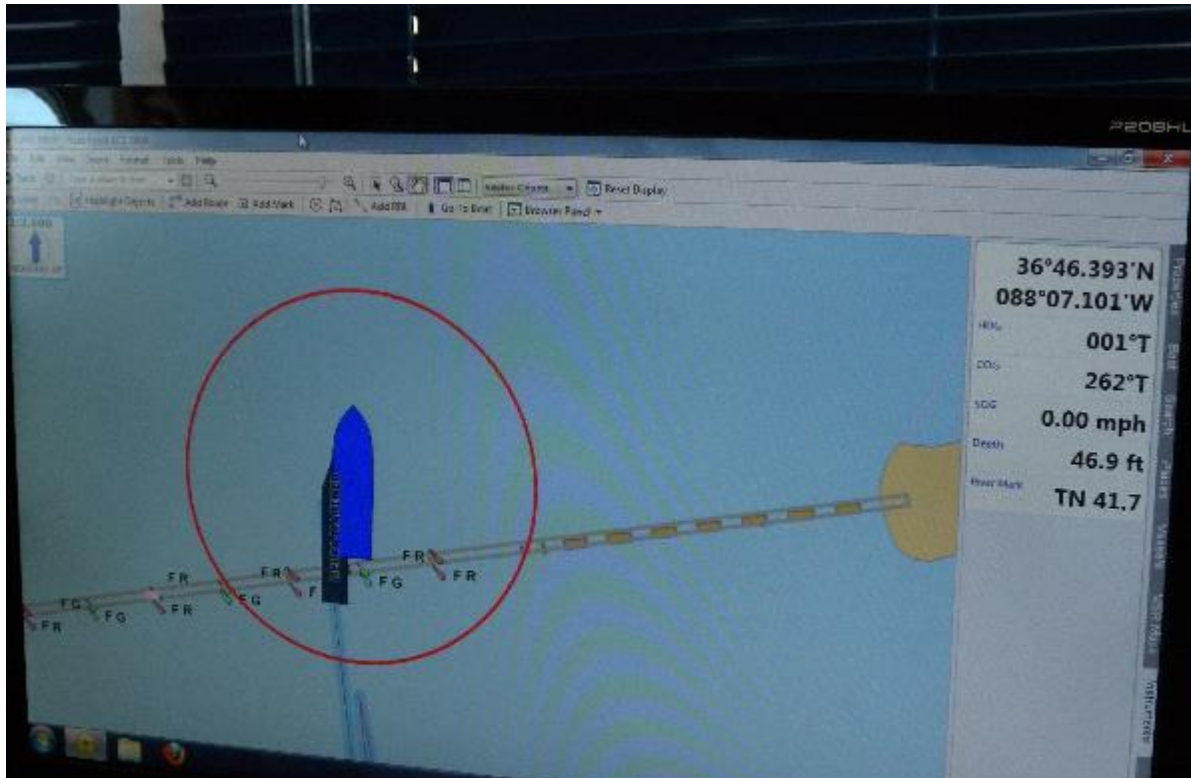
EGGERS FERRY BRIDGE COLLISION



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EGGERS FERRY BRIDGE COLLISION



- Boat was empty, therefore higher in the water
- Pilot turned off all safety depth information in Rose Point
- Display has no sailing line or river miles



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**TN River Mile 41.7
HWY68-80 Bridge
completed in 2016**



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Tows can turn the lights off by going to a marine channel, and click 3 times rapidly.



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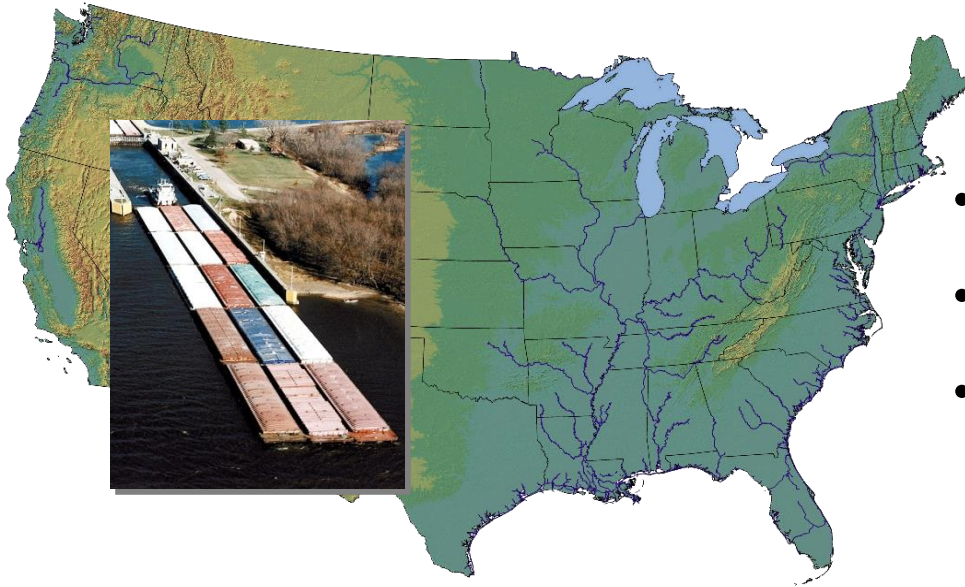
EFFICIENT NAVIGATION



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SAFE AND EFFICIENT NAVIGATION



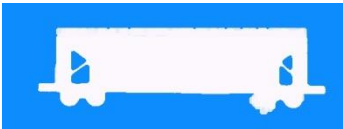
- 25,000 miles of waterways
- 239 lock chambers lifting 6,100'
- 565.9 million tons of commodities
 - ▷ 29% petroleum
 - ▷ 22% coal / coke
 - ▷ 17% other raw materials
 - ▷ 16% food & farm products
 - ▷ 9% chemical
 - ▷ 7% manufactured products

Equivalent Units

22,500 Tons =



One 15 Barge Tow



225 Railroad Cars



900 Large Semi Trucks

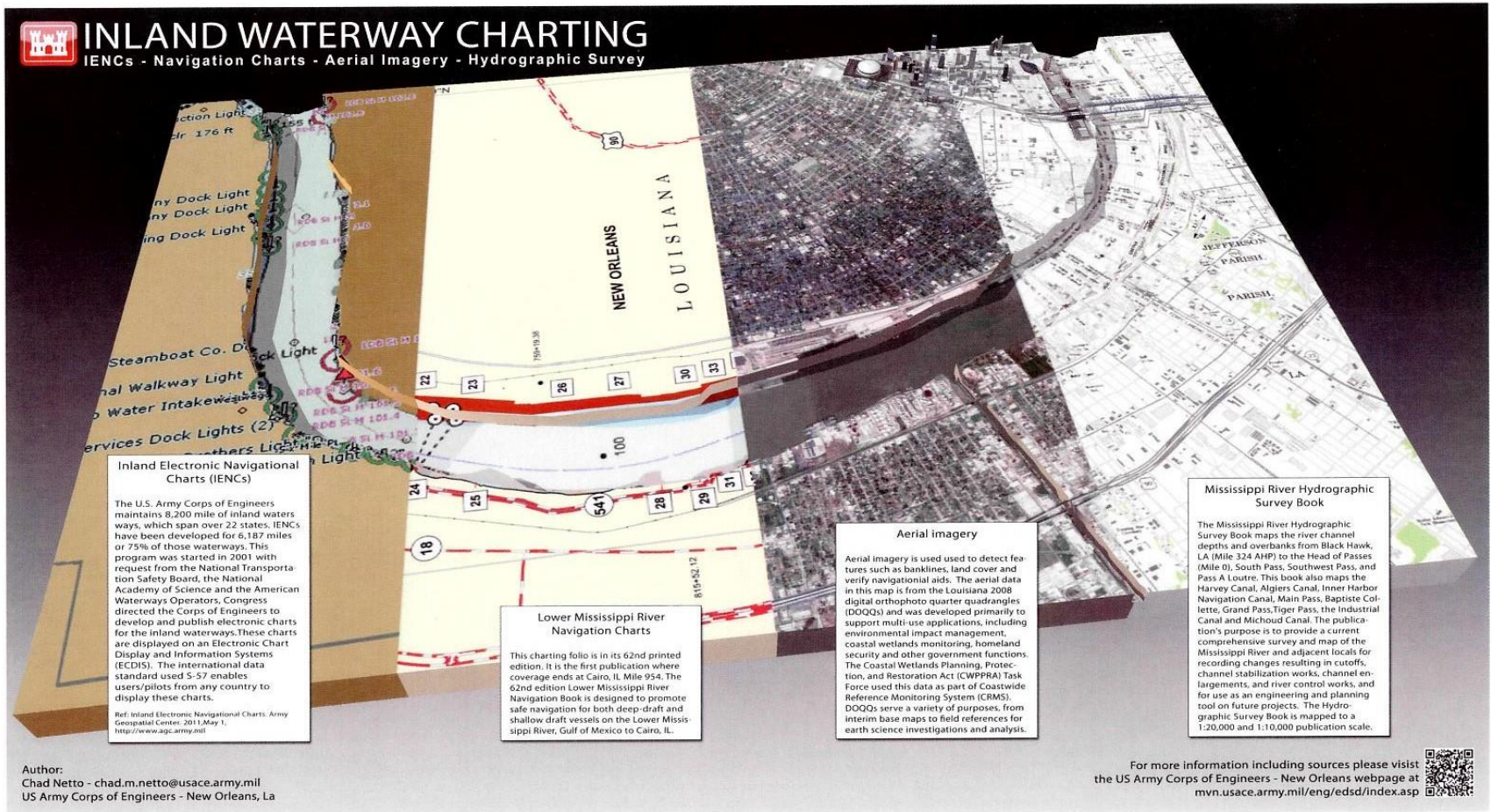
Source: Navigation Data Center "TRANSPORTATION FACTS & INFORMATION", 2016



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QUESTIONS?



INLAND WATERWAY CHARTING
IENCs - Navigation Charts - Aerial Imagery - Hydrographic Survey

Inland Electronic Navigational Charts (IENCs)

The U.S. Army Corps of Engineers maintains 8,200 mile of inland waterways, which span over 22 states. IENCs have been developed for 6,187 miles or 75% of those waterways. This program was started in 2001 with request from the National Transportation Safety Board, the National Academy of Science and the American Waterways Operators. Congress directed the Corps of Engineers to develop and publish electronic charts for the inland waterways. These charts are displayed on an Electronic Chart Display and Information Systems (ECDIS). The international data standard used 5:57 enables users/pilots from any country to display these charts.

Ref: Inland Electronic Navigational Charts: Army Geospatial Center, 2011, May 1, <http://www.agc.army.mil>

Lower Mississippi River Navigation Charts

This charting folio is in its 62nd printed edition. It is the first publication where coverage ends at Cairo, IL, Mile 954. The 62nd edition Lower Mississippi River Navigation Book is designed to promote safe navigation for both deep-draft and shallow draft vessels on the Lower Mississippi River, Gulf of Mexico to Cairo, IL.

Aerial imagery


Aerial imagery is used to detect features such as banklines, land cover and verify navigational aids. The aerial data in this map is from the Louisiana 2008 digital orthophoto quarter quadrangles (DOQQs) and was developed primarily to support multi-use applications, including environmental impact management, coastal wetlands monitoring, homeland security and other government functions. The Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Task Force used this data as part of Coastwide Reference Monitoring System (CRMS). DOQQs serve a variety of purposes, from interim base maps to field references for earth science investigations and analysis.

Mississippi River Hydrographic Survey Book

The Mississippi River Hydrographic Survey Book maps the river channel depths and overbanks from Black Hawk, LA (Mile 324 AHP) to the Head of Passes (Mile 0), South Pass, Southwest Pass, and Pass A Loutre. This book also maps the Harvey Canal, Algiers Canal, Inner Harbor Navigation Canal, Main Pass, Baptiste Collette, Grand Pass, Tiger Pass, the Industrial Canal and Michoud Canal. The publication's purpose is to provide a current comprehensive survey and map of the Mississippi River and adjacent locals for recording changes resulting in cutoffs, channel stabilization works, channel enlargements, and river control works, and for use as an engineering and planning tool on future projects. The Hydrographic Survey Book is mapped to a 1:20,000 and 1:10,000 publication scale.

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For more information including sources please visit the US Army Corps of Engineers - New Orleans webpage at mvn.usace.army.mil/eng/edsd/index.asp



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