

EHYDRO - KEY CUSTOMERS

Gerald Thornberry
Marine Information Specialist
Inland ENC Program

06 DEC 2022

USACE Hydrographic Surveys powered by eHydro

USACE District:
All

USACE Channel:
All

Channel ID:
All

Survey Type (New Feature)
No category selected

Survey Date Range:
 Predefined Custom Date Range

- All Surveys
- Last 60 days
- 2022
- 2021
- 2020

Select Survey:
List is limited to 50 records. To see older surveys, configure a custom date range or zoom in on the map to limit results.

- District: CEMVN
Name: SOUTHWEST PASS - SHEET 6
Survey Date: 12/1/2022
Download: SW_06_SWP_20221201_CS
- District: CEMVN
Name: SOUTHWEST PASS - SHEET 7
Survey Date: 12/1/2022
Download: SW_07_SWP_20221201_CS
- District: CEMVN
Name: SOUTHWEST PASS - SHEET 8
Survey Date: 12/1/2022
Download: SW_08_SWP_20221201_CS
- District: CEMVN
Name: SOUTHWEST PASS - SHEET 9
Survey Date: 12/1/2022
Download: SW_09_SWP_20221201_CS
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Name: SOUTHWEST PASS - SHEET 11
Survey Date: 12/1/2022
Download: SW_11_SWP_20221201_CS
- District: CEMVN
Name: SOUTHWEST PASS - SHEET 12
Survey Date: 12/1/2022
Download: SW_12_SWP_20221201_CS

Use the dropdown menus or simply pan and zoom on the map to filter the Hydrographic Survey data.

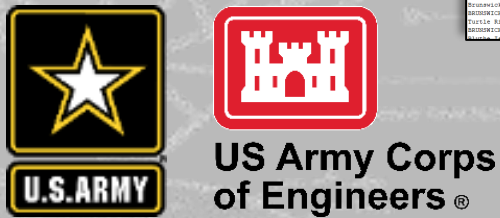
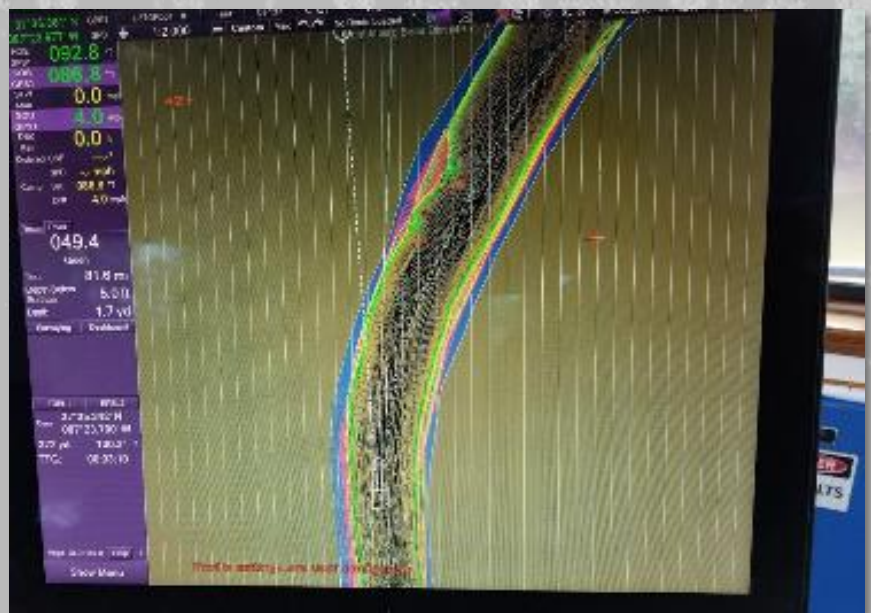
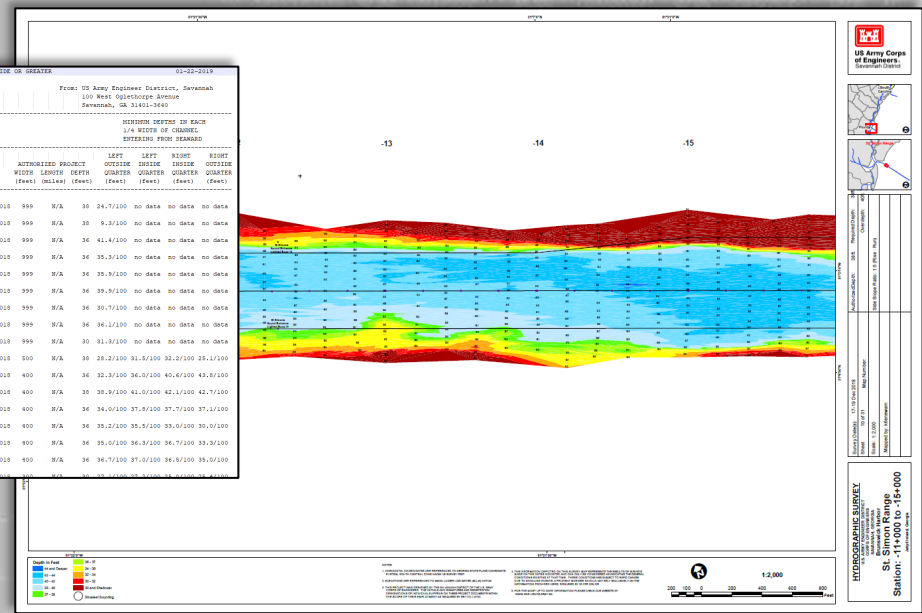
Use any combination to drill down to the data you are interested in. To remove the filter, set the filter to 'All'.

Number of Surveys

85,417

3,314 last 60 days

Source: Geography | Source: Data Branch (OP-1), U.S. Army Corps of Engineers (USACE). Powered by Esri.





EHYDRO



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Survey List Recently Updated

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Earthstar Geographics | Spatial Data Branch (OP-J), U.S. Army Corps of Engineers (USACE) Powered by Esri

<https://navigation.usace.army.mil>



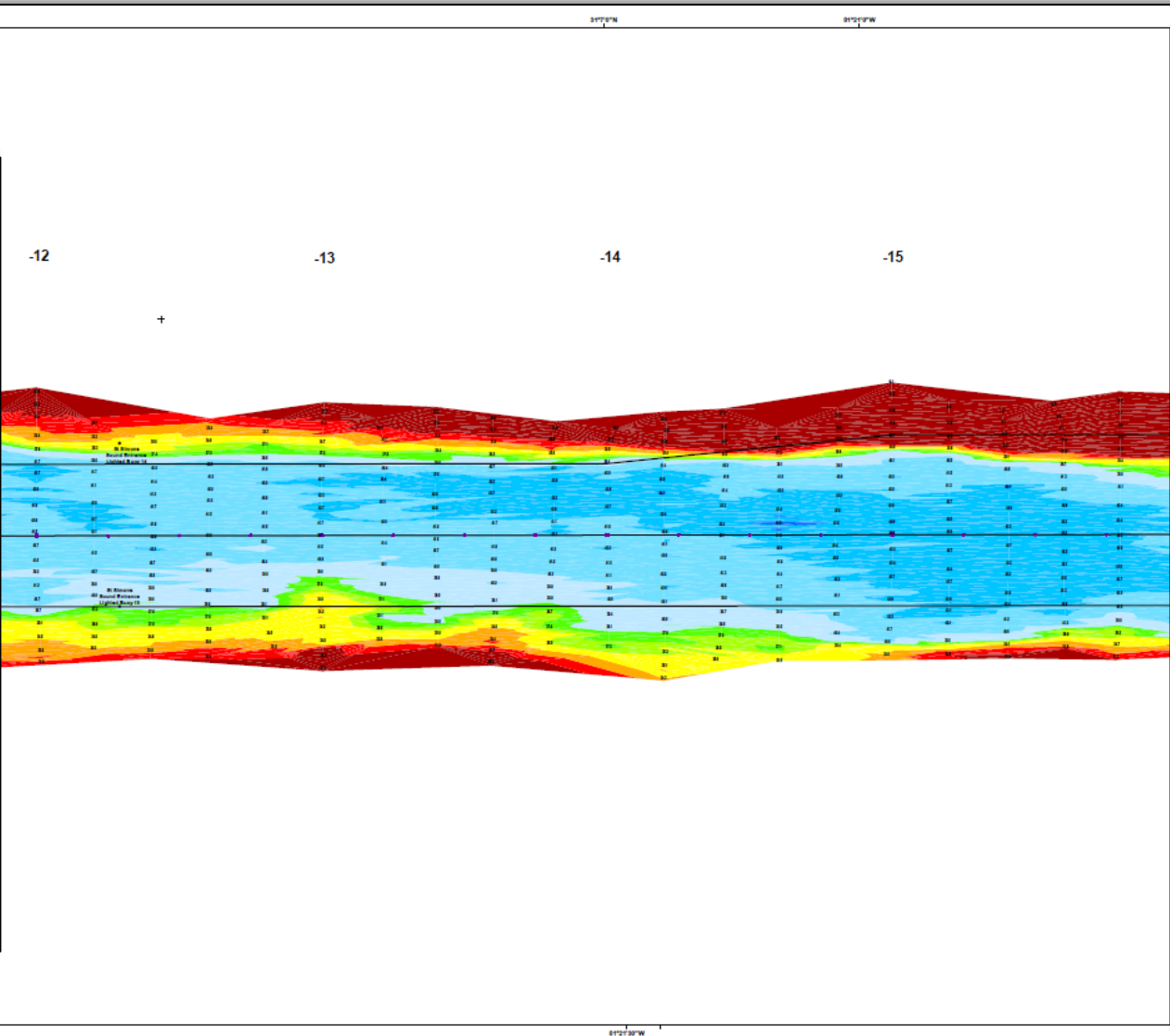
EHYDRO PRODUCTS



REPORT OF CHANNEL CONDITIONS 400 FEET WIDE OR GREATER 01-22-2019

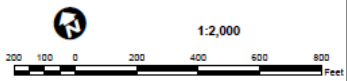
To: Navigation Interests From: US Army Engineer District, Savannah
100 West Oglethorpe Avenue
Savannah, GA 31401-3640

RIVER/HARBOR NAME AND STATE	MINIMUM DEPTHS IN EACH 1/4 WIDTH OF CHANNEL ENTERING FROM SEAWARD							
GEORGIA								
NAME OF CHANNEL	DATE OF SURVEY	AUTHORIZED WIDTH (feet)	PROJECT LENGTH (miles)	DEPTH (feet)	LEFT OUTSIDE QUARTER (feet)	LEFT INSIDE QUARTER (feet)	RIGHT INSIDE QUARTER (feet)	RIGHT OUTSIDE QUARTER (feet)
BRUNSWICK RIVER								
Basin or Widener 9	12-20-2018	999	N/A	38	24.7/100	no data	no data	no data
BRUNSWICK RIVER								
Basin or Widener 10	12-20-2018	999	N/A	38	9.3/100	no data	no data	no data
BRUNSWICK RIVER								
Basin or Widener 11	12-20-2018	999	N/A	36	41.4/100	no data	no data	no data
BRUNSWICK RIVER								
Basin or Widener 12	12-20-2018	999	N/A	36	35.3/100	no data	no data	no data
BRUNSWICK RIVER								
Basin or Widener 13	12-20-2018	999	N/A	36	35.9/100	no data	no data	no data
BRUNSWICK RIVER								
Basin or Widener 14	12-20-2018	999	N/A	36	39.9/100	no data	no data	no data
BRUNSWICK RIVER								
Basin or Widener 15	12-20-2018	999	N/A	36	30.7/100	no data	no data	no data
BRUNSWICK RIVER								
Basin or Widener 16	12-20-2018	999	N/A	36	36.1/100	no data	no data	no data
BRUNSWICK RIVER								
Basin or Widener 17	12-20-2018	999	N/A	30	31.3/100	no data	no data	no data
BRUNSWICK RIVER								
St. Simon Range	12-20-2018	500	N/A	38	28.2/100	31.5/100	32.2/100	25.1/100
BRUNSWICK RIVER								
Plantation Creek Range	12-20-2018	400	N/A	36	32.3/100	36.0/100	40.6/100	43.8/100
BRUNSWICK RIVER								
Plantation Creek Range	12-20-2018	400	N/A	38	38.9/100	41.0/100	42.1/100	42.7/100
BRUNSWICK RIVER								
Jekyll Island Range	12-20-2018	400	N/A	36	34.0/100	37.8/100	37.7/100	37.1/100
BRUNSWICK RIVER								
Cedar Hammock Range	12-20-2018	400	N/A	36	35.2/100	35.5/100	33.0/100	30.0/100
BRUNSWICK RIVER								
Brunswick Point Cut Range	12-20-2018	400	N/A	36	35.0/100	36.3/100	36.7/100	33.3/100
BRUNSWICK RIVER								
Turtle River Lower Range	12-20-2018	400	N/A	36	36.7/100	37.0/100	36.5/100	35.0/100
BRUNSWICK RIVER								
Jekyll Island Range	12-20-2018	300	N/A	30	27.1/100	27.2/100	25.0/100	25.4/100



NOTE:

- HORIZONTAL COORDINATES ARE REFERENCED TO GEODESIC STATE PLANE COORDINATE SYSTEM, SOUTH-CENTRAL ZONE, NAD83, IN FEET.
- VERTICAL COORDINATES ARE REFERENCED TO MEAN LOWER LOW WATER (MLLW) DATUM.
- THIS PROJECT WAS PERFORMED BY THE SAVANNAH DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE RESULTS AND INFORMATION ARE UNCLASSIFIED AND UNRESTRICTED EXCEPT WHERE SHOWN OTHERWISE ON THIS PROJECT DOCUMENTATION. OBSERVATIONS OF THIS DOCUMENT ARE REQUIRED BY 38 CFR 1.1032.
- THE INFORMATION CONTAINED ON THIS SURVEY MAP REPRESENTS THE RESULTS OF SURVEYS BASED ON THE DATUM AND COORDINATE SYSTEMS AND CAN ONLY BE CONSIDERED AS APPROXIMATE. DUE TO INCLUDING EVENTS, A PRELIMINARY REPORT SHOULD NOT BEYOND THE INFORMATION PROVIDED HEREIN. FOR THE MOST UP TO DATE INFORMATION PLEASE CHECK OUR WEBSITE AT WWW.AEC.USACE.ARMY.MIL.



Survey Date(s): 17-18 Dec 2018	Authorized Depth: 38 ft.	Required Depth: 38 ft.
Sheet: 10 of 31	Map Number:	Overlap: 40%
Scale: 1:2,000	Side Slope Ratio: 1.5 (Rate: Run)	
Mapped by: Mironwan		

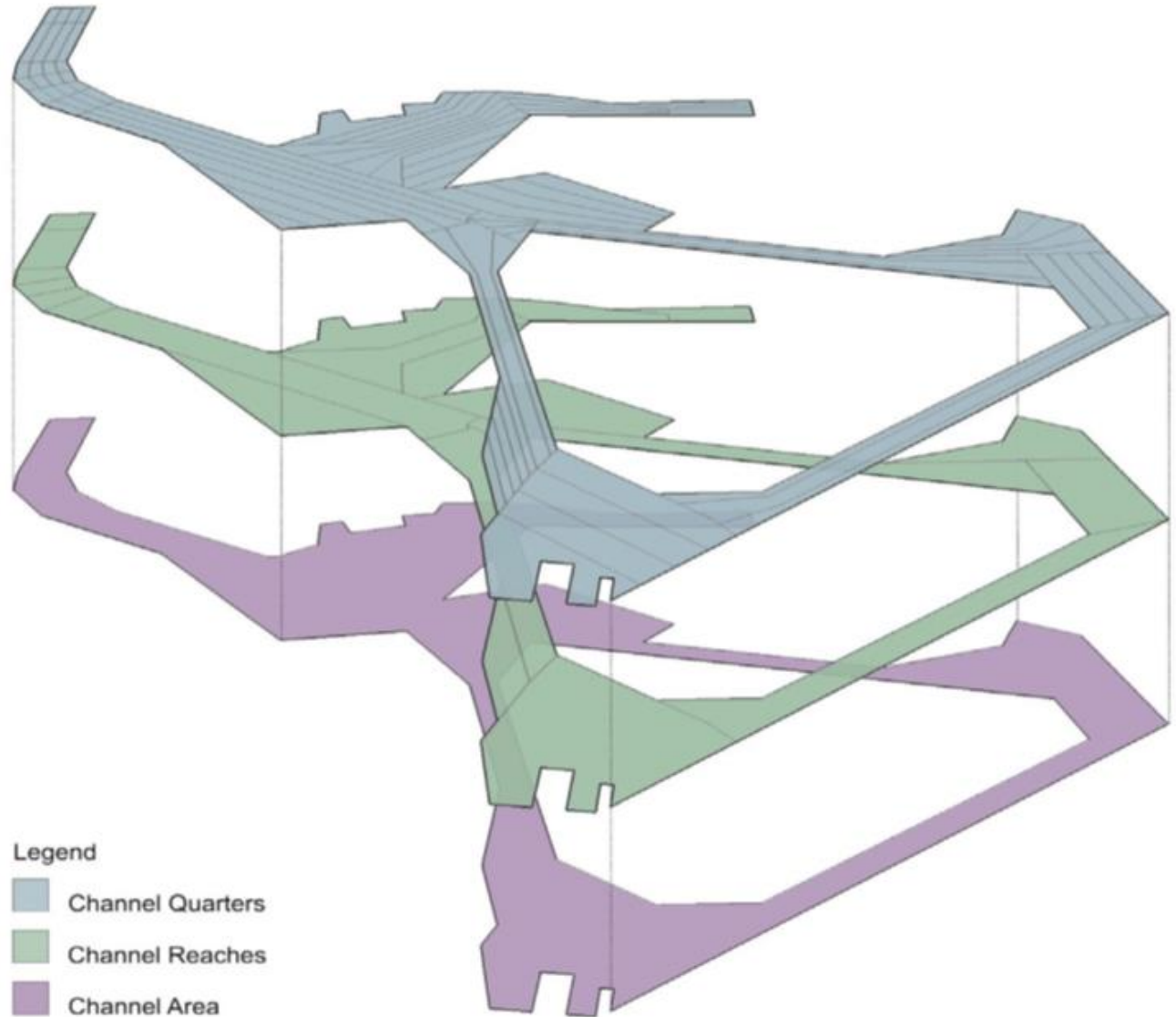
HYDROGRAPHIC SURVEY
U.S. ARMY ENGINEERS DISTRICT
Savannah District
St. Simon Range
Brunswick Harbor
Station: -11+000 to -15+000
Savannah, Georgia



NATIONAL CHANNEL FRAMEWORK



- Geometry
- Centerlines
 - Toe lines
 - Reaches/Cuts
 - Basins
 - Bulkheads
 - Station Points/Lines





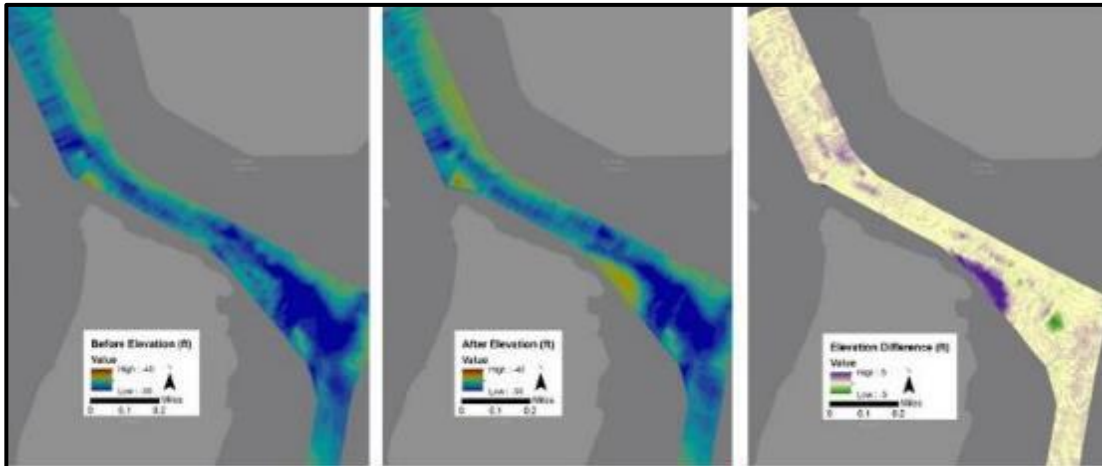
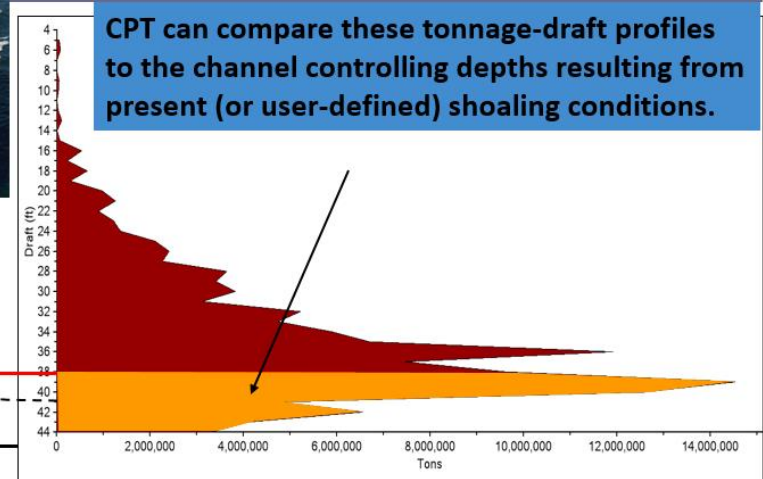
KEY USACE CUSTOMERS



- Navigation Data Integration Framework
 - Channel Portfolio Tool (CPT)
 - Corps Shoaling Analysis Tool (CSAT)
 - Dredge Quality Management (DQM)
- Studies
 - Civil Works Asset Management
 - Engineer R&D Center (ERDC)
 - Institute for Water Resources (IWR)
- Inland ENC Program



CPT can generate depth-utilization profiles showing the distribution of cargo across the range of depths for single, or multiple, navigation channels.





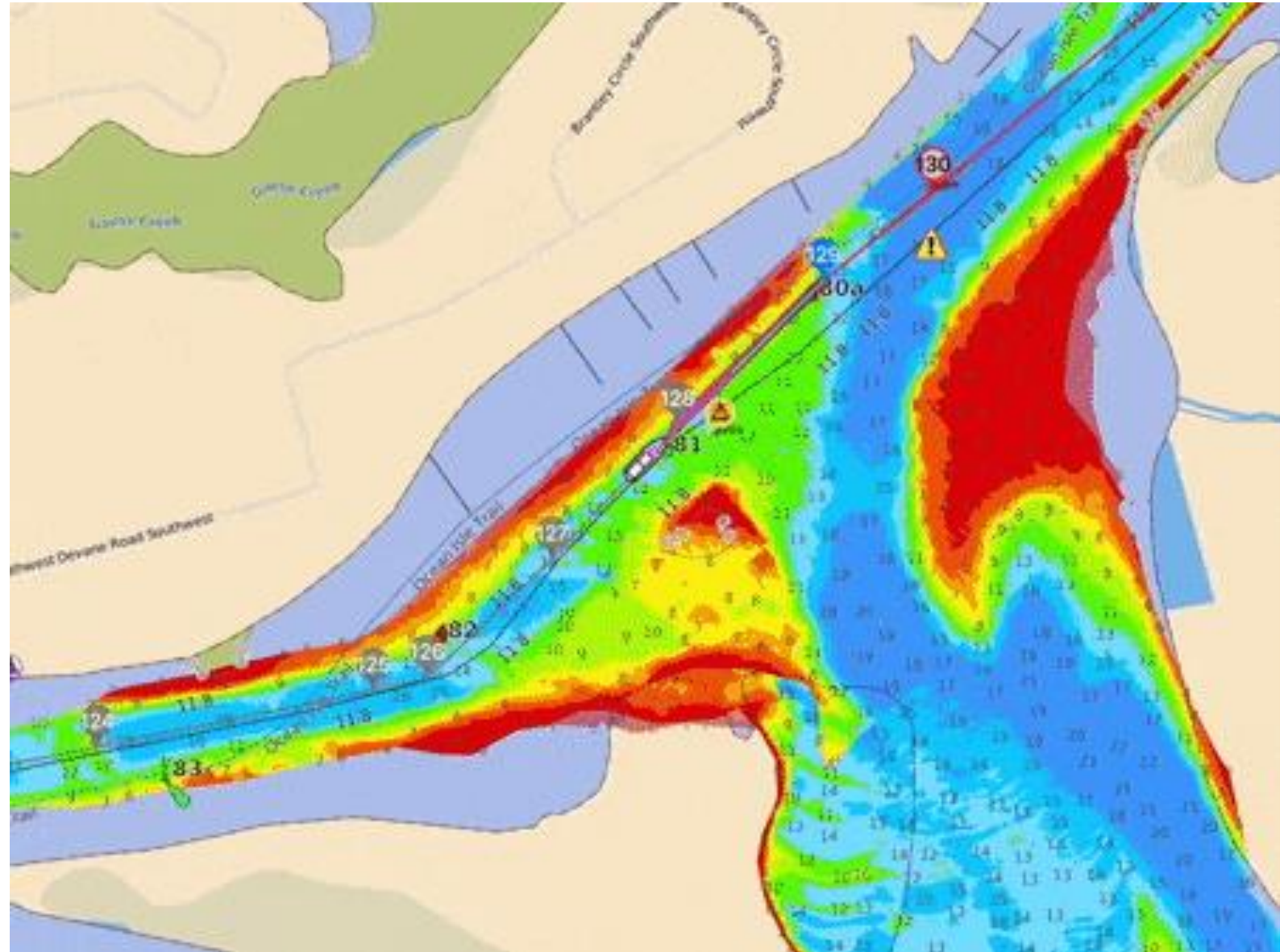
RECREATIONAL VESSEL SOFTWARE PARTNERS



GEC Aqua Map (Italy)



Aqua Map
Master





PORTABLE PILOT UNIT SOFTWARE PARTNERS





CFR TITLE 33 CHAPTER II PART 209 SECTION 325

- USACE will share channel limits, breakwaters, structures with USCG to aid in placement of Aids to Navigation (AtoNs)
- USACE will report channel location and channel conditions “promptly” to NOAA, NGA (formerly DMA), US Naval Oceanographic Office, and USCG using standard forms
 - ENG Form 4020-R for channels 400 feet wide and greater
 - ENG Form 4021-R for channels 100-400 feet wide





IENC OVERLAYS

A special IENC “usage”

- US Coast Guard only
- Contour lines and soundings

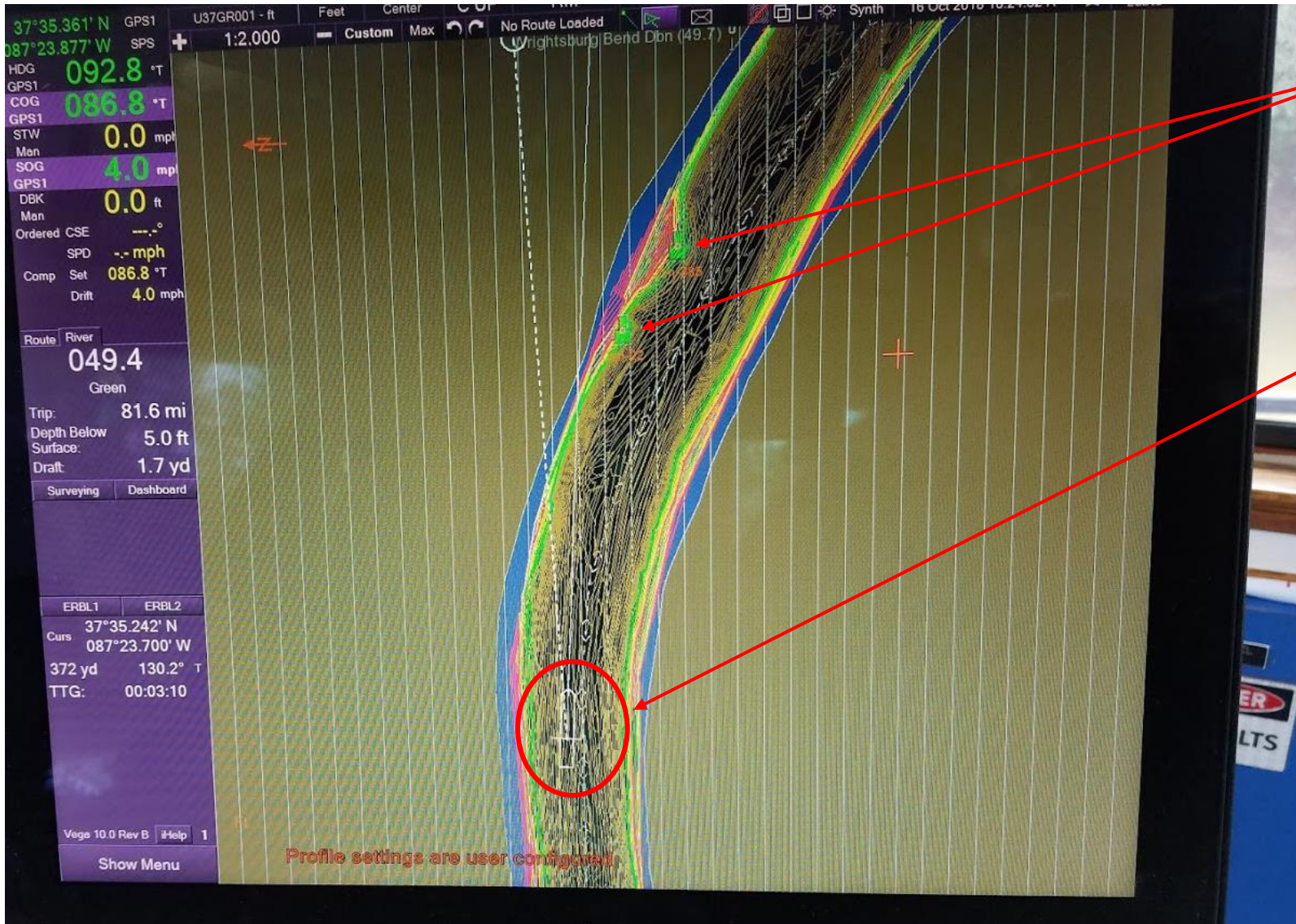
Enables

- Mission planning while in port
- Significant fuel and time savings
- Precise buoy placement





VEGA ECS WITH IENC OVERLAY



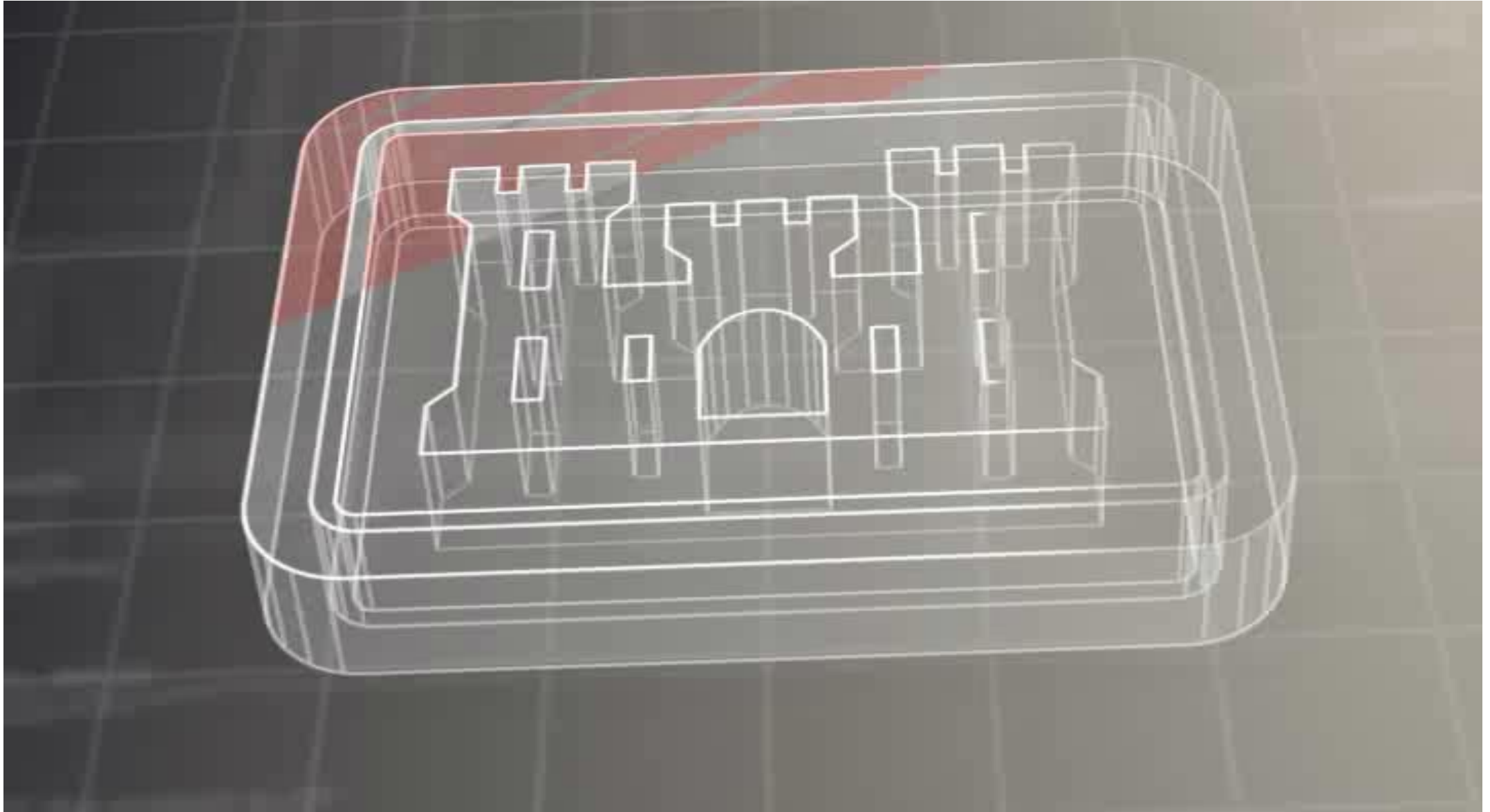
Buoy markers

Lining up the cutter for buoy placement using on-screen markers and an IENC overlay in the background

Profile settings are user configured



USCGC OBION (WLR-65503)





SINGLE BEAM TRANSDUCERS



Port transducer

Starboard transducer



IENC OVERLAY REQUESTS TO DATE



Fulfilled Requests by Calendar Year			
Year	Requests	Surveys	Overlays
2017	14	35	27
2018	43	164	187
2019	89	370	323
2020	61	289	286
2021	42	155	145
2022	19	168	134
TOTAL	268	1181	1102

Fulfilled Requests by Inland Cutter			
USCGC	Requests	Surveys	Overlays
SCIOTO	34	128	138
WYACONDA	33	166	199
OBION	29	100	113
SANGAMON	21	55	51
CHEYENNE	16	85	85
CHIPPEWA	13	30	35
GASCONADE	6	26	22
WEDGE	6	15	15
CIMMARON	3	3	3
CHENA	3	22	27
OSAGE	2	2	2
OUACHITA	1	1	1
PATOKA	1	1	1
KICKAPOO	1	1	1
GREENBRIER	1	2	2
TOTAL	170	637	695

Fulfilled Requests by Coastal Cutter			
USCGC	Requests	Surveys	Overlays
KENNEBEC	26	105	110
MAPLE	26	246	128
PAMLICO	10	74	57
AXE	6	14	8
ANT WANCHESE	5	15	11
HAMMER	4	6	6
SLEDGE	3	15	11
ELM	2	8	8
FRANK DREW	2	7	8
ANT EUFALA	2	2	3
SAGINAW	2	5	5
HARRY CLAIBORNE	1	5	5
ANT PANAMA CITY	1	2	2
ANVIL	1	3	3
WILLOW	1	5	5
WILLIAM TATE	1	8	23
BAYBERRY	1	7	6
BLUEFIN	1	13	3
POLAR STAR	1	2	2
DIAMONDBACK	1	1	1
WALNUT	1	1	2
TOTAL	98	544	407



AUTOMATION



CARIS Bathy DataBASE

– IIC Technologies

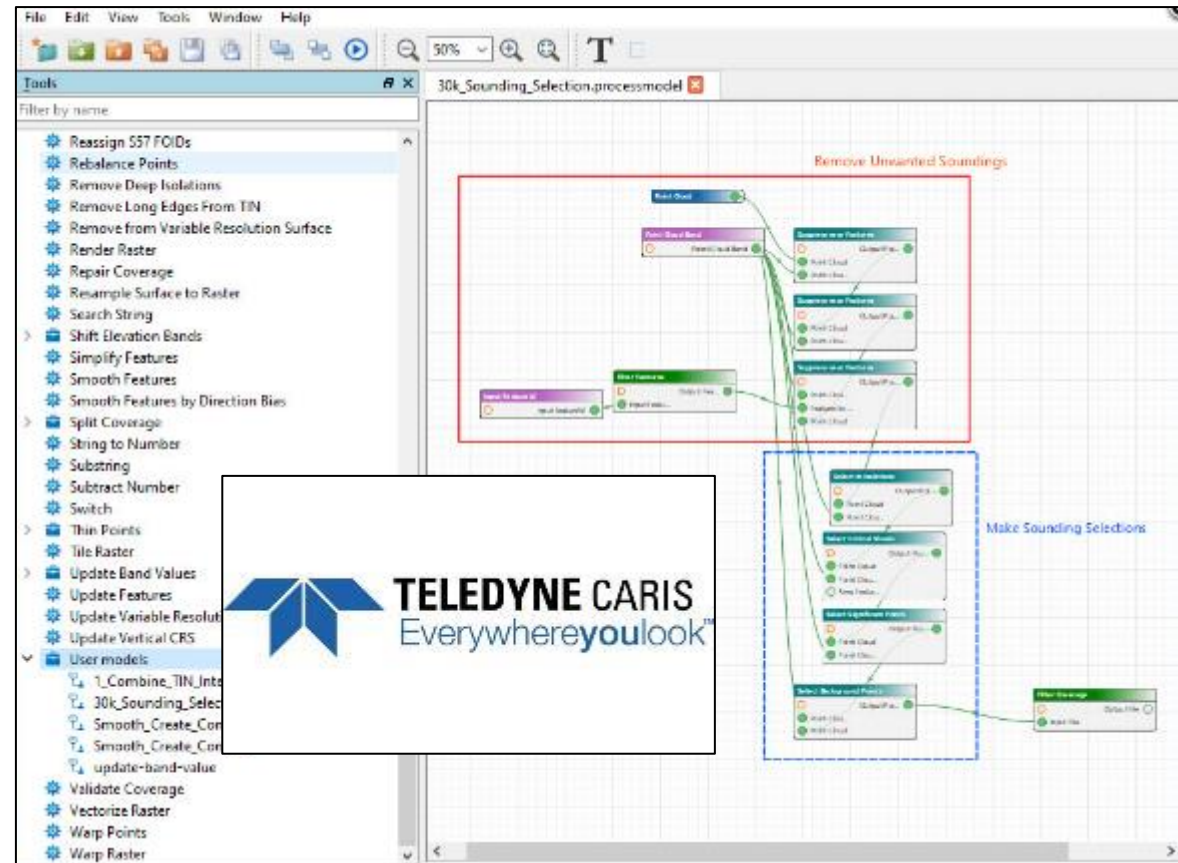
- Caris Batch
- Process Designer
- Python API

– USCG

- Future cutter connectivity
- Developing
 - Shore-base data repository
 - Automated delivery service
 - USACE may push overlays directly

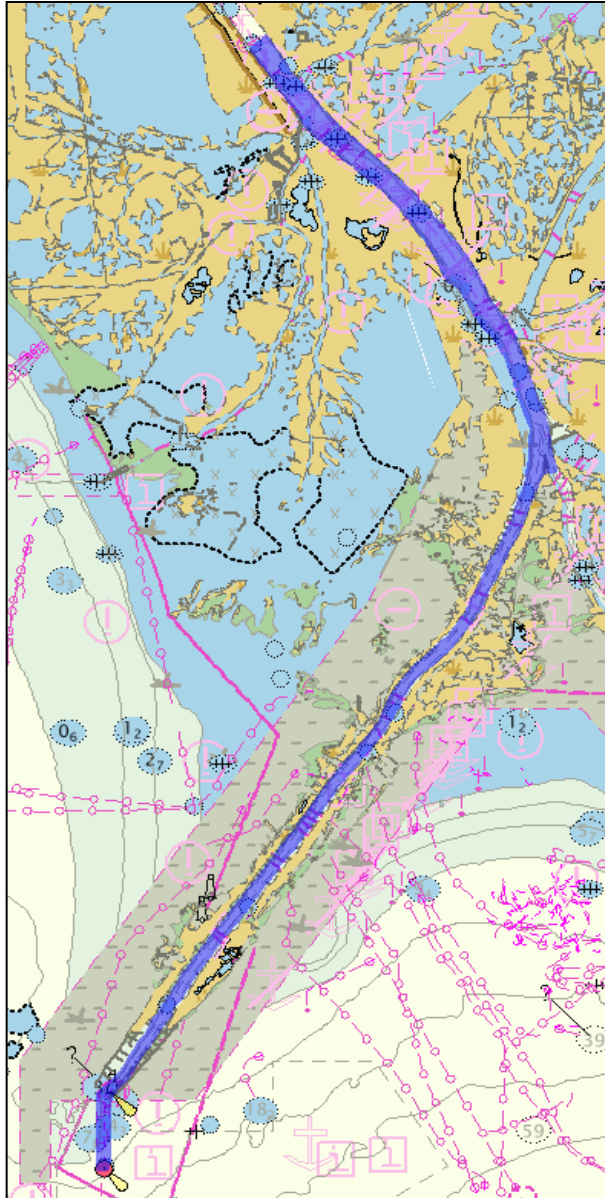
– Future Products

- DEPCNT for IENC
- S-401 Inland ENC
- S-402 Bathymetric Contour Overlay



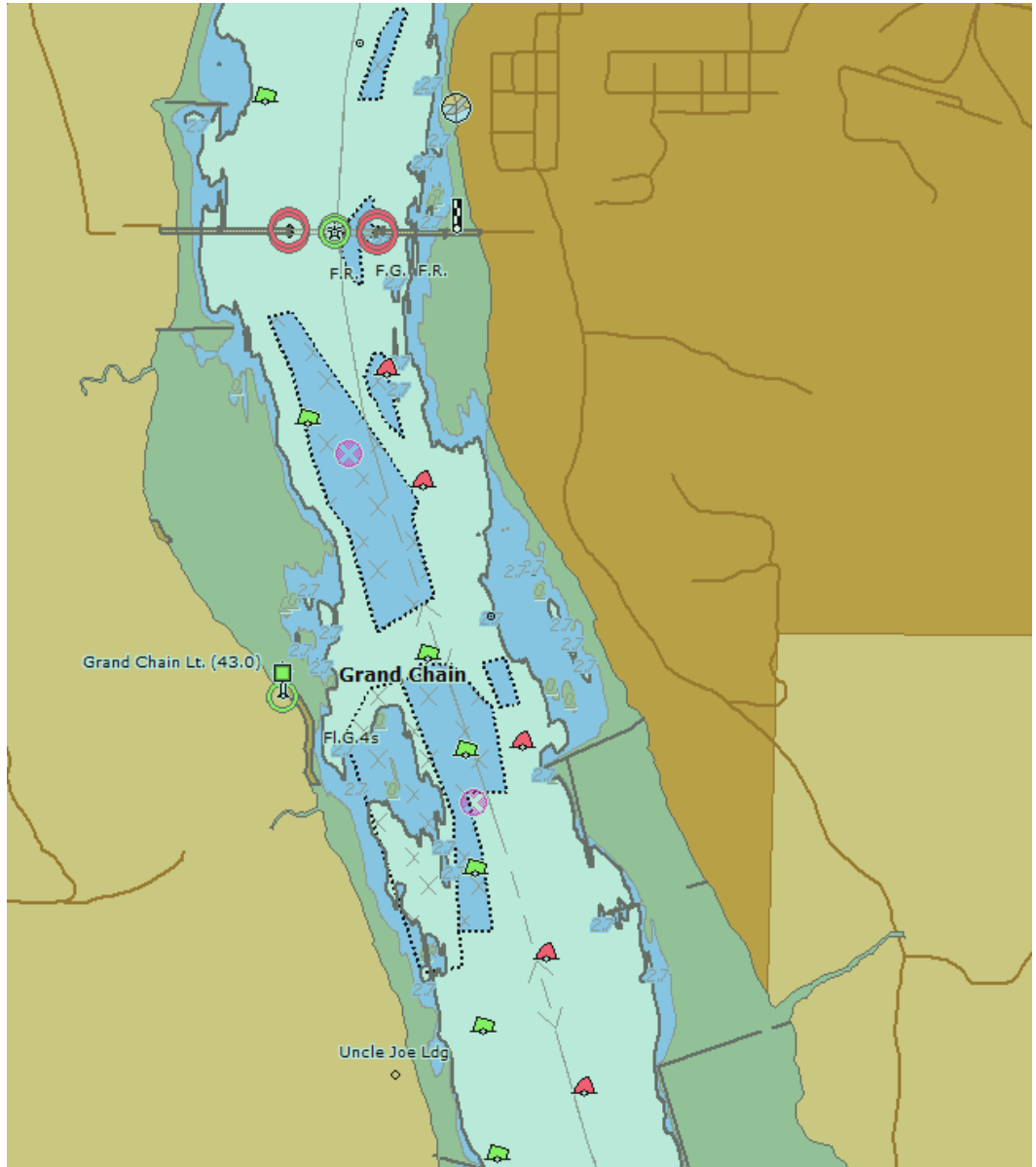


OVERLAYS FOR INDUSTRY



Southwest
Pass
(New Orleans)

Rock
Pinnacles
(St. Louis)





CATEGORY OF ZONE OF CONFIDENCE (CATZOC)

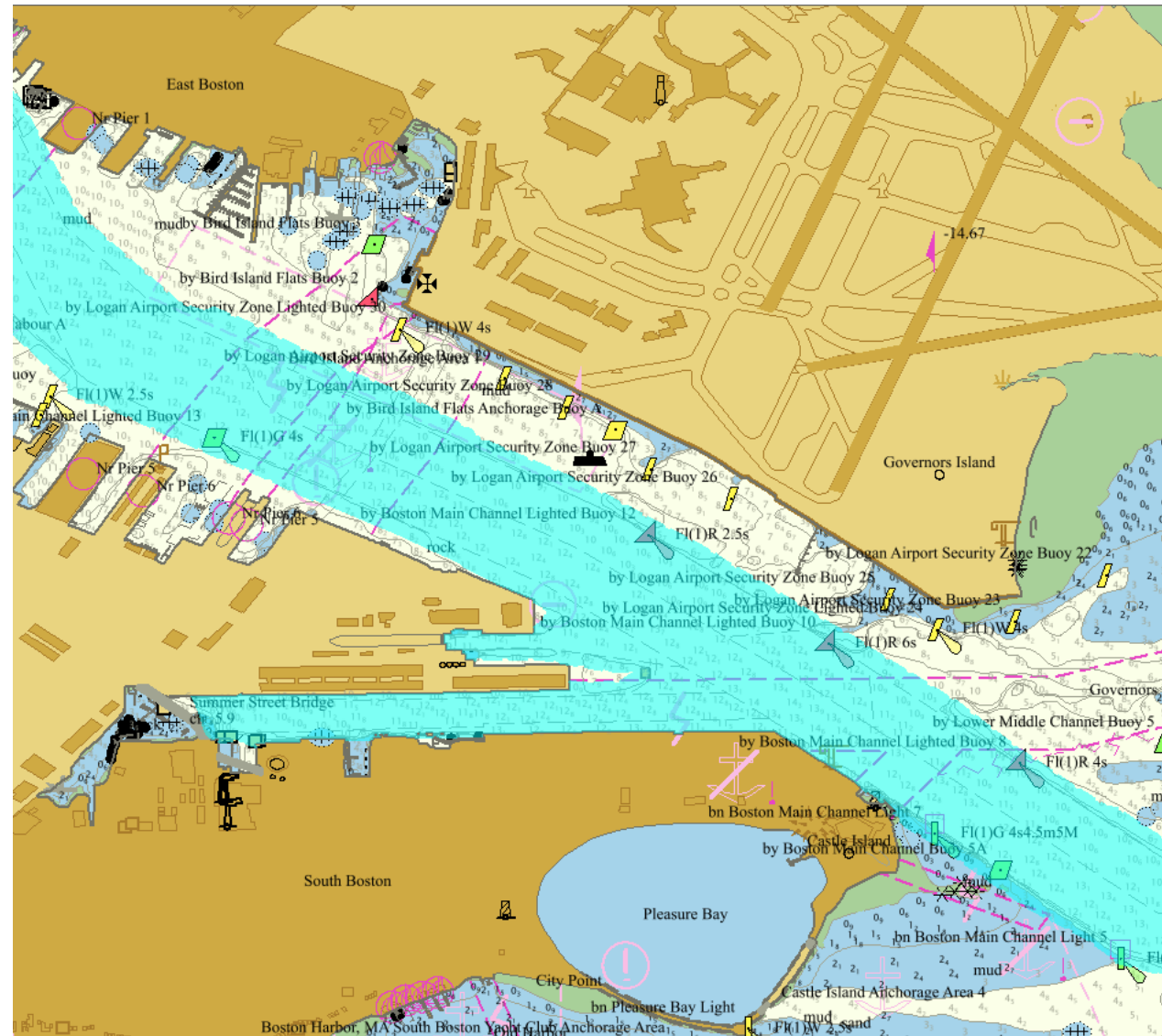
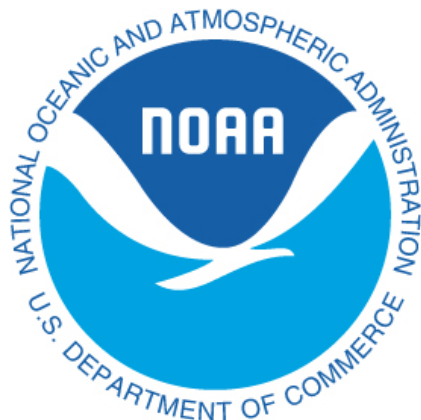


Evaluates:

- Survey seafloor coverage
- Positional accuracy
- Depth accuracy
- Feature detection and identification

USACE Channels

- 2001 - 2017
 - “U” (Unassessed)
- 2017
 - “B”
- 2018 forward
 - Upgrade key channels



Attributes - M_QUAL	
Attributes	
CATZOC	zone of confidence A2
DRVAL1	
DRVAL2	
POSACC	
SOUACC	
SUREND	
SURSTA	
TECSOU	
VERDAT	
NTXTDS	
TXTDSC	US5MA11E.TXT
INFORM	
NINFOM	
SORDAT	20180905
SORIND	US,US,reprt,L-1024-2018

CATZOC
Category of zone of confidence in data



CATZOC TABLE



ZOC ¹	Position Accuracy ²	Depth Accuracy ³		Seafloor Coverage	Typical Survey Characteristics ⁵	NOAA CATZOC Description
A1	± 5 m + 5% depth	= 0.50 + 1% <i>d</i>		Full area search undertaken. Significant seafloor features detected ⁴ and depths measured.	Controlled, systematic survey ⁶ achieving high position and depth accuracy	<ol style="list-style-type: none"> Any survey coverage that meets A1 feature detection and uncertainty requirements. Horizontal² and vertical³ uncertainty estimates must be computed and meet A1 accuracy standards at 95% confidence interval Examples may include object detection coverage, complete coverage (HSSD 5.2.2)
		Depth (m)	Accuracy (m)			
		10	± 0.6			
		30	± 0.8			
		100	± 1.5			
1000	± 10.5					
A2	±20 m	= 1.00 + 2% <i>d</i>		Full area search undertaken. Significant seafloor features detected ⁴ and depths measured.	Controlled, systematic survey ⁶ achieving position and depth accuracy less than A1	<ol style="list-style-type: none"> Any survey coverage that meets A2 feature detection and uncertainty requirements. Horizontal² and vertical³ uncertainty estimates must be computed and meet A2 accuracy standards at 95% confidence interval
		Depth (m)	Accuracy (m)			
		10	±1.2			
		30	±1.6			
		100	±3.0			
1000	±21.0					
B	±50 m	= 1.00 + 2% <i>d</i>		Full area search not achieved. Uncharted features hazardous to surface navigation are not expected but may exist.	Controlled, systematic survey ⁶ achieving position and depth accuracy less than A2	<ol style="list-style-type: none"> Any survey coverage that meets A1/A2 uncertainty requirements but fails to meet A1/A2 feature detection requirements Any survey coverage that meets B uncertainty requirements Examples may include set line spacing coverage, trackline coverage (HSSD 5.2.2)
		Depth (m)	Accuracy (m)			
		10	±1.2			
		30	±1.6			
		100	±3.0			
1000	±21.0					

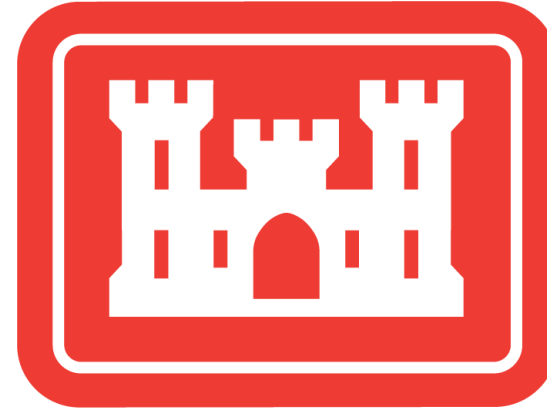


EHYDRO JOINT METADATA PROJECT



Goals

- ISO 19115
 - Vector point data
 - Data collection instruments
- Standardize USACE metadata
 - Consistent
 - Correct
 - Machine readable
- CATZOC evaluation
 - Enables automation into NBS
- 2023 adoption



The image shows three overlapping screenshots of the eHydro Metadata software interface. The windows display various metadata entry forms:

- Window 1 (Left):** Shows general survey information fields:

Title	ehydro survey nam
Responsible Party	George
Contact Info	Dave
Phone	(860) 635-1500
Address	56 Bradley St, Mid
E-Mail Address	George@comcast.
Online Resource	Note
Legal Constraint: License	Note
- Window 2 (Middle):** Shows acquisition and reference system details:

Acquisition Start Date	20190905
Acquisition End Date	20190905
Vertical Coordinate Reference System	Note
Vertical Unit of Measure	US Foot
Horizontal Coordinate Reference System	Note
Full Bathymetric Coverage	Yes
Resolution	5.0
- Window 3 (Right):** Shows sensor and equipment details:

Multibeam Sensor	NORBIT WBMS
Vertical Beam Sensor	
Sidescan Sensor	
Lidar Sensor	
Interferometric Sensor	
Attitude and Positioning Equipment	
Sound Velocity Sensors	
Sound Velocity Processing	
Vertical Datum Processing	
Processing Software	HYPACK
Data Quality Control	



HYPACK FEATURE DETECTION MODULE



Characteristics

- Critical to (potential) CATZOC upgrades nationwide
- Interactive, not automated
- Output CSV

Attributes for NOAA

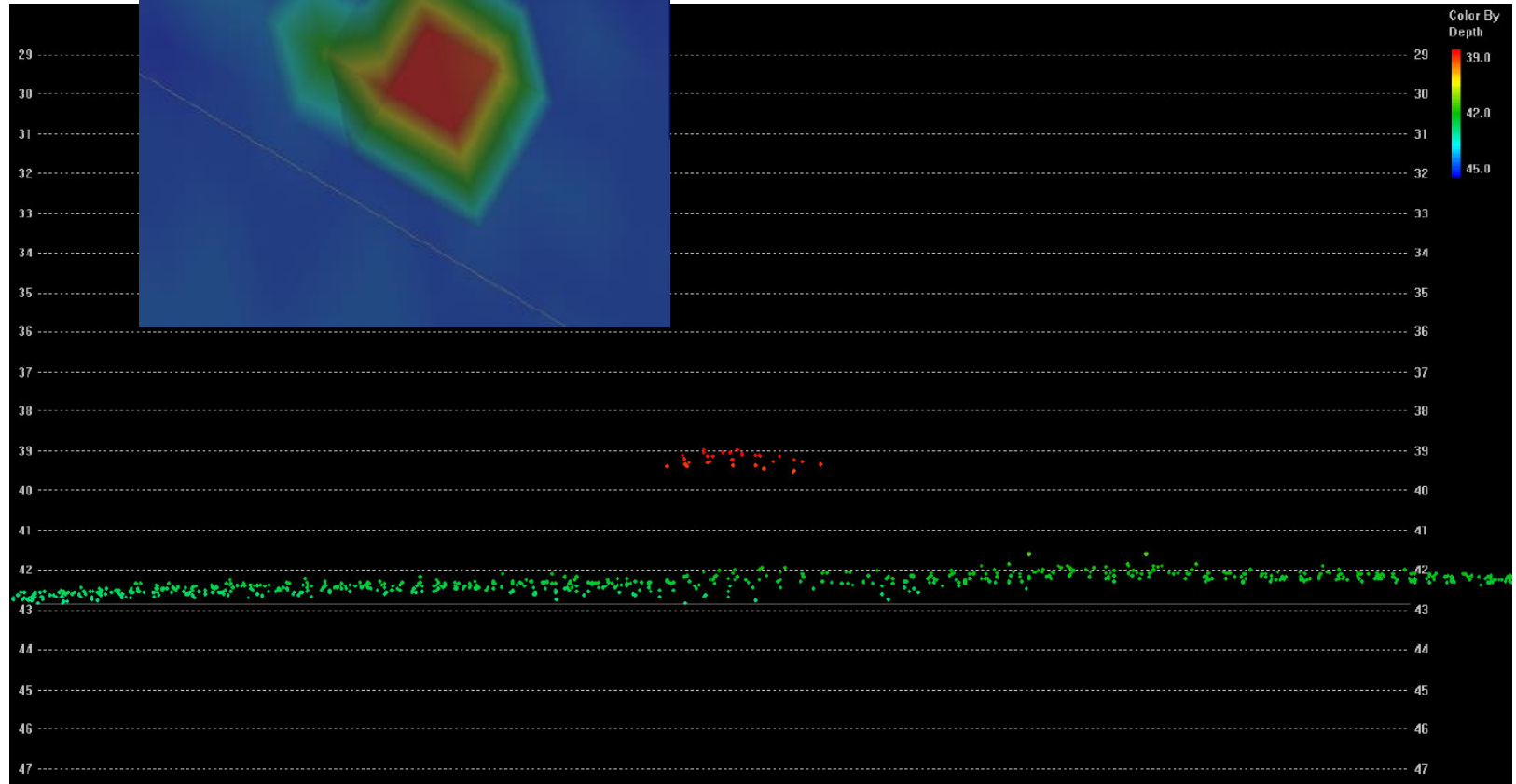
- Feature Type
- Surveyed Depth
- Least Depth Acquired? (Y/N)
- Feature Surveyed Date
- Latitude
- Longitude
- Comments

Future

- Automation



HYPACK
a xylem brand





THANK YOU



Gerald Thornberry
gerald.i.thornberry@usace.army.mil

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USACE Channel: All

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<https://navigation.usace.army.mil>