H13195

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service

DESCRIPTIVE REPORT

Type of Survey:	Navigable Area
Registry Number:	H13195

LOCALITY

State(s):	Louisiana
General Locality:	Mississippi River
Sub-locality:	Mississippi River, Vicinity of Mile 54 to 26

2018

CHIEF OF PARTY
Jonathan L. Dasler, PE, PLS, CH

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Date:

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER:
HYDROGRAPHIC TITLE SHEET	**H13195**

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State(s):	**Louisiana**
General Locality:	**Mississippi River**
Sub-Locality:	**Mississippi River, Vicinity of Mile 54 to 26**
Scale:	**5000**
Dates of Survey:	**08/09/2018 to 04/30/2019**
Instructions Dated:	**08/08/2019**
Project Number:	**OPR-J347-KR-18**
Field Unit:	**David Evans and Associates**
Chief of Party:	**Jonathan L. Dasler, PE, PLS, CH**
Soundings by:	**Multibeam Echo Sounder**
Imagery by:	**Multibeam Echo Sounder Backscatter**
Verification by:	**Atlantic Hydrographic Branch**
Soundings Acquired in:	**meters at LW Reference Plane 2007**

Remarks:

Any revisions to the Descriptive Report (DR) applied during office processing are shown in red italic text. The DR is maintained as a field unit product, therefore all information and recommendations within this report are considered preliminary unless otherwise noted. The final disposition of survey data is represented in the NOAA nautical chart products. All pertinent records for this survey are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via https://www.ncei.noaa.gov/. Products created during office processing were generated in NAD83 UTM 16N, LWRP. All references to other horizontal or vertical datums in this report are applicable to the processed hydrographic data provided by the field unit.

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Descriptive Report to Accompany Survey H13195

Project: OPR-J347-KR-18

Locality: Mississippi River

Sublocality: Mississippi River, Vicinity of Mile 54 to 26

Scale: 1:5000

August 2018 - April 2019

David Evans and Associates

Chief of Party: Jonathan L. Dasler, PE, PLS, CH

A. Area Surveyed

David Evans and Associates, Inc. (DEA) conducted a hydrographic survey of the assigned area in the Mississippi River. Survey H13195 was conducted in accordance with the November 19, 2018 Statement of Work and Hydographic Survey Project Instructions dated August 8, 2019.

The Hydrographic Survey Project Instructions reference the National Ocean Service (NOS) Hydrographic Surveys Specifications and Deliverables Manual (HSSD) (March, 2018) as the technical requirements for this project.

A.1 Survey Limits

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
29° 36' 41.03" N 89° 52' 45.97" W	29° 21' 37.44" N 89° 32' 2.2" W

Table 1: Survey Limits

Survey Limits were surveyed in accordance with the requirements in the Project Instructions and the HSSD.

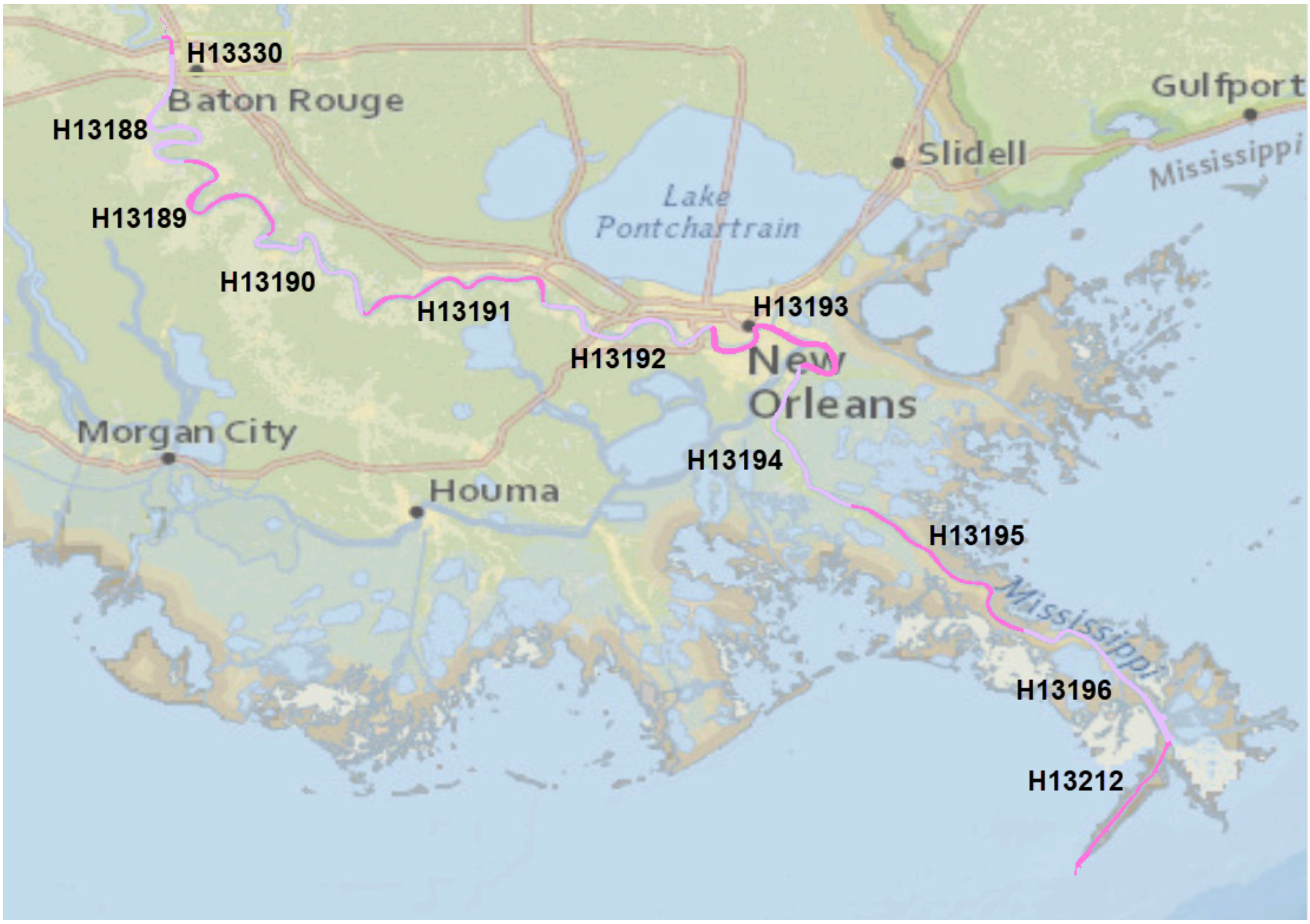


Figure 1: OPR-J347-KR-18 Survey Areas

A.2 Survey Purpose

The Ports of Southern Mississippi River represent the largest port complex in the world and one of the most heavily trafficked waterways in the United States. Annually, over 500 million tons of cargo is moved on the Lower Mississippi. This project area includes the Port of South Louisiana, the Port of New Orleans, the Port of Greater Baton Rouge, and Plaquemines Port, all ranking in the top 12 ports for annual tonnage in the United States. The Port of South Louisiana, river mile 114.9 to 168.5, is the largest tonnage port in the western hemisphere, handling approximately 262 million tons. The Port of New Orleans, river mile 81.2 to 114.9, handles approximately 90 million tons annually. The Port of Greater Baton Rouge, river mile 168.5 to 253, and Plaquemines Port, river mile 0 to 81.2, handle approximately 73 and 57 million tons annually, respectively.*

Critical Charting updates are needed for the Mississippi River, especially for areas outside of the U.S. Army Corps of Engineers (USACE) federally maintained channel areas. These areas outside of the federally maintained channel account for the majority of the navigable river and include ports and terminals essential for commerce and trade. The new bathymetric data in this project area, encompassing 89 SNM, will support high resolution charting products for maritime commerce and update National Ocean Service (NOS) nautical charting products.

* U.S. Army Corps of Engineers, Navigation Data Center, Waterborne Commerce Statistics Center, Principal Ports of the United States, www.navigationdatacenter.us/data/datappor.htm

A.3 Survey Quality

The entire survey is adequate to supersede previous data.

The river bottom is continuously changing due to currents, vessel propeller wash, dredging activity, construction and/or other factors present in the river environment. Changes in the river bed were observed during acquisition, primarily due to sediment migration. Section B.2.6 of this report further discusses these issues and impacts to the final deliverable data. In all cases the hydrographer has verified that soundings accurately depicted the river bed at the time of acquisition.

A.4 Survey Coverage

The following table lists the coverage requirements for this survey as assigned in the project instructions:

Water Depth	Coverage Required
All waters in survey area	Object Detection Coverage (HSSD Section 5.2.2.2)

Table 2: Survey Coverage

Project Instructions called for high resolution charting at 1:5,000 survey scale to support NOAA’s Precision Navigation initiative for the Mississippi River including: Object Detection Coverage for all waters in the survey area to the 2-meter depth contour; Ellipsoid Reference Survey (ERS) using a custom separation model for the Mississippi River; verification of ATONs; assignment of shoreline and nearshore features (including bridges, overhead wires, revetments, assigned existing terminals, and all uncharted features) to be obtained by a vessel based mobile laser scanning technology and imaging system; and delivery of LAS data referenced using ERS methods. Operational challenges included, but were not limited to: conducting surveys in a heavily congested industrial waterway; high river current velocities and transiting debris from high water levels; over 465 miles of shoreline surveys in restricted waters with small launch operations in close proximity to terminals, large barge fleets, wrecks, ruins, submerged piling, and numerous snags; minimal river access for provisioning and refueling; dynamic sediment migration exceeding 0.25 meters per hour in some areas; resolution of chart datum and revisions to the separation model; coordinating mapping efforts with ships at berth; dense fog; on-going dredging operations; and various navigational trials associated with a heavily trafficked industrial waterway. To mitigate these challenges and with the volume of shoreline operations required, survey operations were conducted during daylight hours only, AIS and internet vessel tracking systems were utilized, and continuous communications were made to terminal operators and vessel captains by radio and phone.

Object detection coverage was obtained over the survey area in depths greater than 2 meters relative to chart datum using 100% multibeam echosounder (MBES) and backscatter unless otherwise discussed in individual sections of this report. This coverage type follows Option A of the Object Detection Coverage requirement specified in Section 5.2.2 of the 2018 HSSD. Historic flooding of the Mississippi River during OPR-J347-KR-18 survey impacted safe operations in high currents and restricted operations. Many features were in locations that restricted a 90-degree pass due to strong currents and proximity to shoreline, fixed structures or barge fleeting. Further, flooding and strong river currents resulted in significant sediment migration during and between survey operations, evident on this survey sheet.

Unavoidable coverage gaps are evident in some areas and are primarily due to large barge fleeting areas. Other features that blocked or impeded safe vessel operations resulting in data gaps included: berthed vessels that remained during survey operations; low wires behind structures; mooring lines; in-water facilities and ruins. Significant efforts were expended to maximize coverage to the extent possible in these areas. Section B.2.10 of this report discusses issues restricting this survey coverage in greater detail. Figure 2 depicts the survey outline that was obtained for H13195.

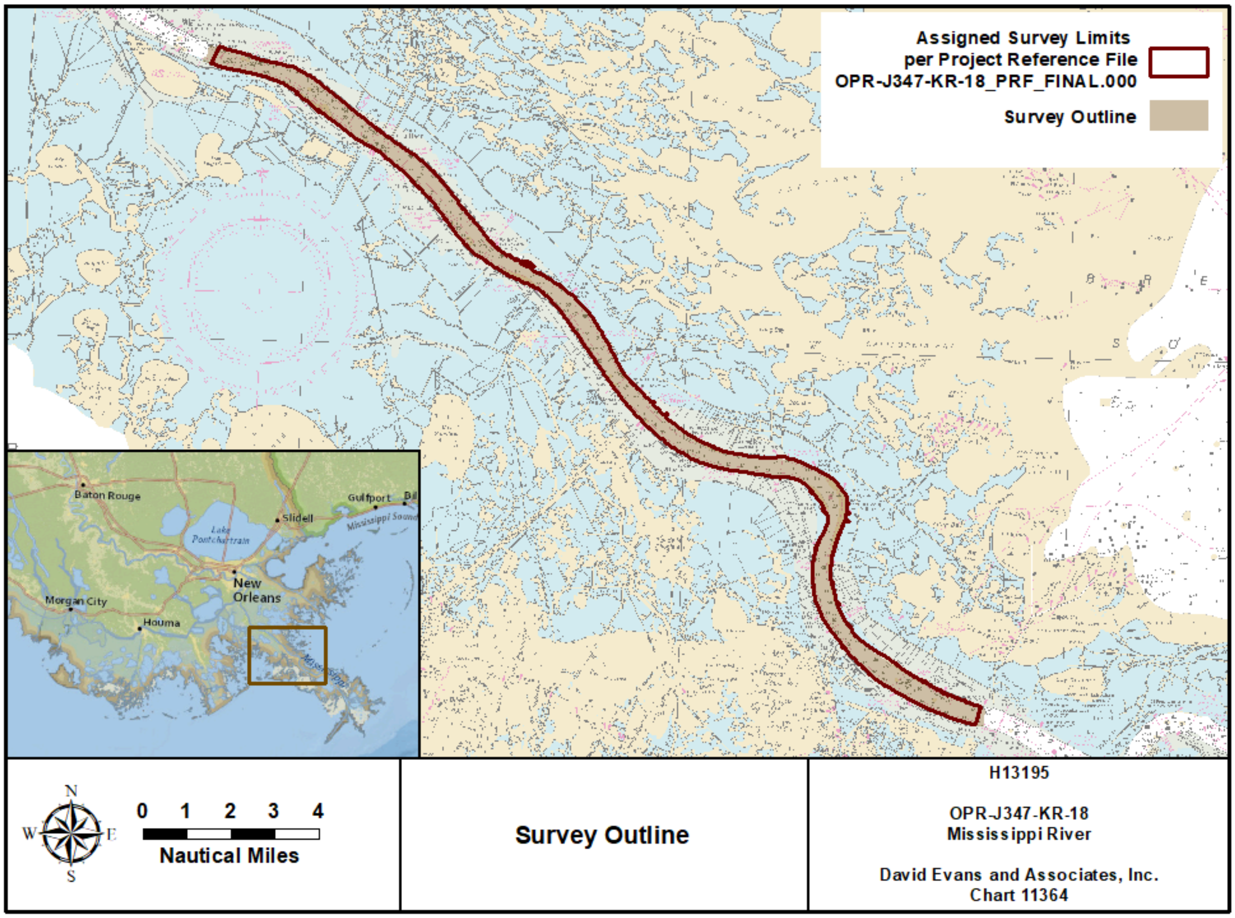


Figure 2: H13195 Survey Outline

A.6 Survey Statistics

The following table lists the mainscheme and crossline acquisition mileage for this survey:

	HULL ID	*S/V Blake*	*RHIB Sigsbee*	*Total*
LNM	**SBES Mainscheme**	0	0	0
	MBES Mainscheme	411.05	255.65	666.70
	Lidar Mainscheme	56.00	0	56.00
	SSS Mainscheme	0	0	0
	SBES/SSS Mainscheme	0	0	0
	MBES/SSS Mainscheme	0	0	0
	SBES/MBES Crosslines	26.60	2.32	28.92
	Lidar Crosslines	0	0	0
Number of Bottom Samples				0
Number Maritime Boundary Points Investigated				0
Number of DPs				0
Number of Items Investigated by Dive Ops				0
Total SNM				10.~~33~~*27*

Table 3: Hydrographic Survey Statistics

The following table lists the specific dates of data acquisition for this survey:

Survey Dates	Day of the Year
08/09/2018	221

Survey Dates	Day of the Year
08/10/2018	222
01/16/2019	16
01/17/2019	17
01/18/2019	18
01/19/2019	19
01/20/2019	20
01/21/2019	21
01/22/2019	22
01/23/2019	23
01/24/2019	24
01/26/2019	26
01/27/2019	27
01/29/2019	29
02/22/2019	53
04/30/2019	120

Table 4: Dates of Hydrography

B. Data Acquisition and Processing

B.1 Equipment and Vessels

The OPR-J347-KR-18 Data Acquisition and Processing Report (DAPR), submitted with this survey, details equipment and vessel information as well as data acquisition and processing procedures. There were no vessel or equipment configurations used during data acquisition that deviated from those described in the DAPR.

B.1.1 Vessels

The following vessels were used for data acquisition during this survey:

Hull ID	*S/V Blake*	*RHIB Sigsbee*
LOA	83 feet	18 feet
Draft	4.5 feet	1.0 feet

Table 5: Vessels Used

Figure 3: S/V Blake

Figure 4: RHIB Sigsbee

B.1.2 Equipment

The following major systems were used for data acquisition during this survey:

Manufacturer	Model	Type
Teledyne RESON	SeaBat T50-R	MBES
Teledyne RESON	SeaBat T50-P	MBES
RIEGL	VUX-1HA	Lidar System
Applanix	POS MV 320 v5	Positioning and Attitude System
Applanix	POS LV 620	Positioning and Attitude System
iXblue	Hydrins	Positioning and Attitude System
Trimble	SPS851	Positioning System
Trimble	SPS855	Positioning System
Intuicom	RTK Bridge-X	Positioning System
AML Oceanographic	SmartX	Sound Speed System
AML Oceanographic	SmartX	Sound Speed System
AML Oceanographic	BaseX	Sound Speed System
Sea-Bird Scientific	SBE 19plus	Conductivity, Temperature, and Depth Sensor

Table 6: Major Systems Used

B.2 Quality Control

B.2.1 Crosslines

Multibeam/single beam echo sounder/side scan sonar crosslines acquired for this survey totaled 4.34% of mainscheme acquisition.

Lidar crosslines acquired for this survey totaled 0.00% of mainscheme acquisition.

Multibeam crosslines were run across the entire survey area to provide a varied spatial and temporal distribution for analysis of internal consistency within the survey data.

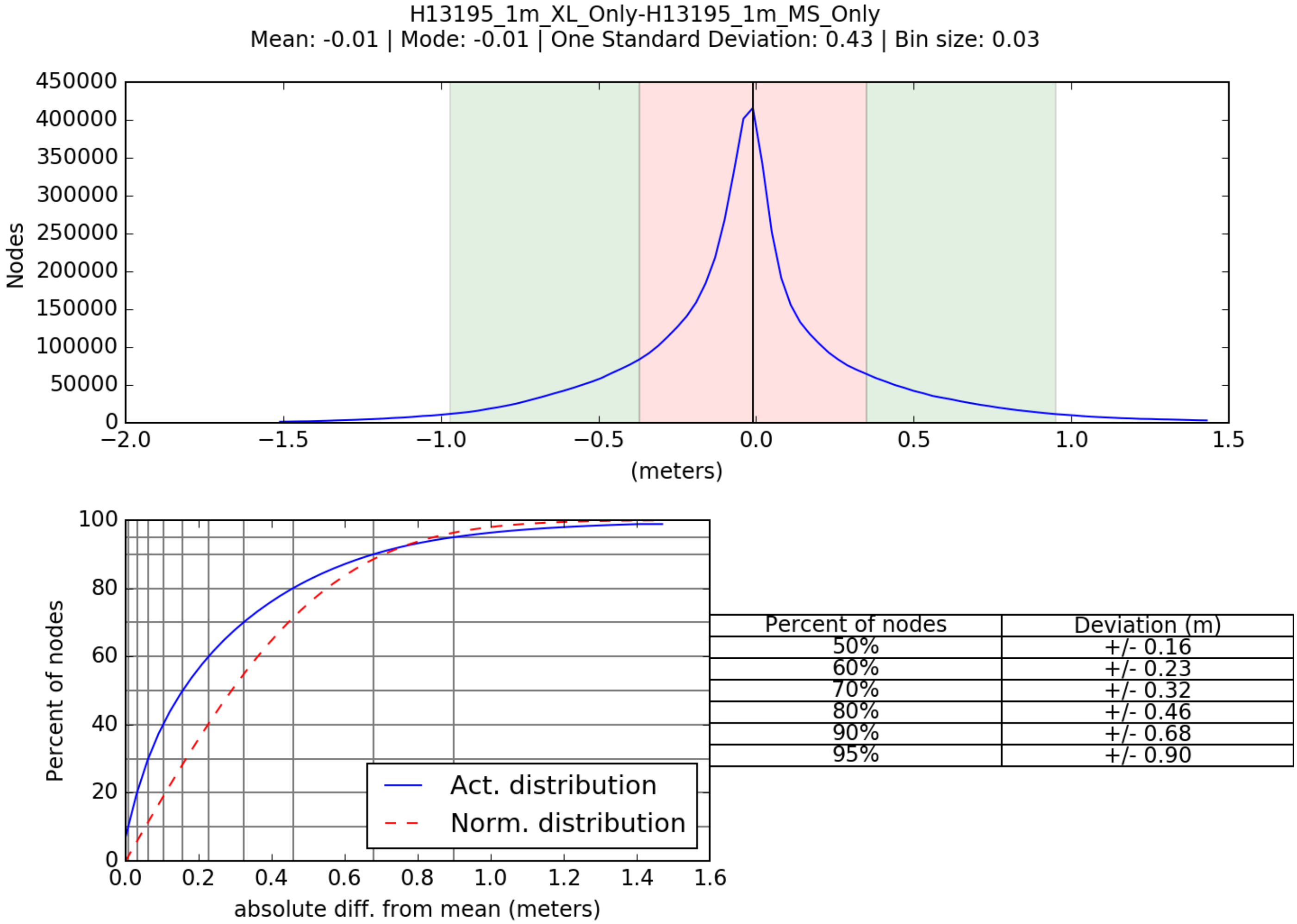
Crossline analysis was performed using the CARIS Hydrographic Information Processing System (HIPS) Quality Control (QC) Report tool, which compares crossline data to a gridded surface and reports results by beam number. Crosslines were compared to a 1-meter CUBE surface encompassing mainscheme, fill, and investigation data for the entire survey area. The QC Report tabular output and plots for both survey vessels are included in Separate II Checkpoint Summary and Crossline Comparison. For the S/V Blake the output and plot contain data from a dual-head system, beams 1 to 256 are from the starboard head while 257 to 512 are from the port head.

Due to significant sediment migration occurring within the survey, crosslines were generally conducted on the same day as mainscheme acquisition in order to reduce the impact of the changing riverbed on crossline agreement. This resulted in a time differential of over eight hours between mainscheme and crossline acquisition and significant change in the riverbed was still apparent. Tests run prior to the 2019 flooding event, which was in full swing during this survey, showed sediment wave movement at a rate of 0.25 meters per hour with even higher rates observed during flooding. Even with these operational adjustments, crossline statistics from the S/V Blake, which operated in deeper water over the main channel, exceed International Hydrographic Organization (IHO) Order 1 specification as reported by the CARIS HIPS QC Report tool.

DEA performed an additional crossline analysis using the NOAA Pydro Compare Grids tool to analyze the differences between gridded mainscheme depths and gridded crossline depths. Input grids were 1-meter resolution CUBE surfaces of mainscheme and crossline depths. Results from the crossline to mainscheme difference analysis are depicted in Figures 5 and 6. Figure 6 depicts a difference surface portraying the sediment migration seen throughout the duration of survey. This figure details crosslines conducted at the end of a survey day, approximately seven hours after the first mainscheme line was acquired for the day of acquisition. Change is significant in the sediment wave field with horizontal migration of up to 13 meters occurring between mainscheme and crossline acquisition. The shape of the waves is apparent in both the difference image and multibeam hillshade. Shades of yellow and red indicate shoaling and shades of blue indicate deepening with both following the form of the wave field as sediment waves migrate. Shades of grey indicate areas that meet requirements and are generally outside the sediment wave field where there has been less change.

DEA remains confident that data consistency was maintained during acquisition based on swath to swath comparison of two vessel platforms and three sonars operating simultaneously in the same survey area. DEA confirmed that a systematic error, such as positioning or sound speed measurements, was not a factor leading to these large differences based on weekly system comparisons detailed in Separate I Acquisition and Processing Logs of this report. To further document the system performance, an additional crossline report was run on data acquired in the vicinity of Gulfport Channel, near the project's mobilization grounds and outside of the influence of sediment migration. The output of this report confirms the S/V Blake's sonar and acquisition and processing procedures are capable of acquiring data that exceeds IHO specification for Order 1 and Special Order as reported by the HIPS QC Report tool. Output from the report is included in Separate II Checkpoint Summary and Crossline Comparison.

This issue was not limited to this survey area; sediment migration affected the entire OPR-J347-KR-18 project area. Impacts of sediment migration are further discussed in section B.2.6 of this report.



Percent of nodes	Deviation (m)
50%	+/- 0.16
60%	+/- 0.23
70%	+/- 0.32
80%	+/- 0.46
90%	+/- 0.68
95%	+/- 0.90

Figure 5: H13195 Crossline Difference Distribution Summary Plot

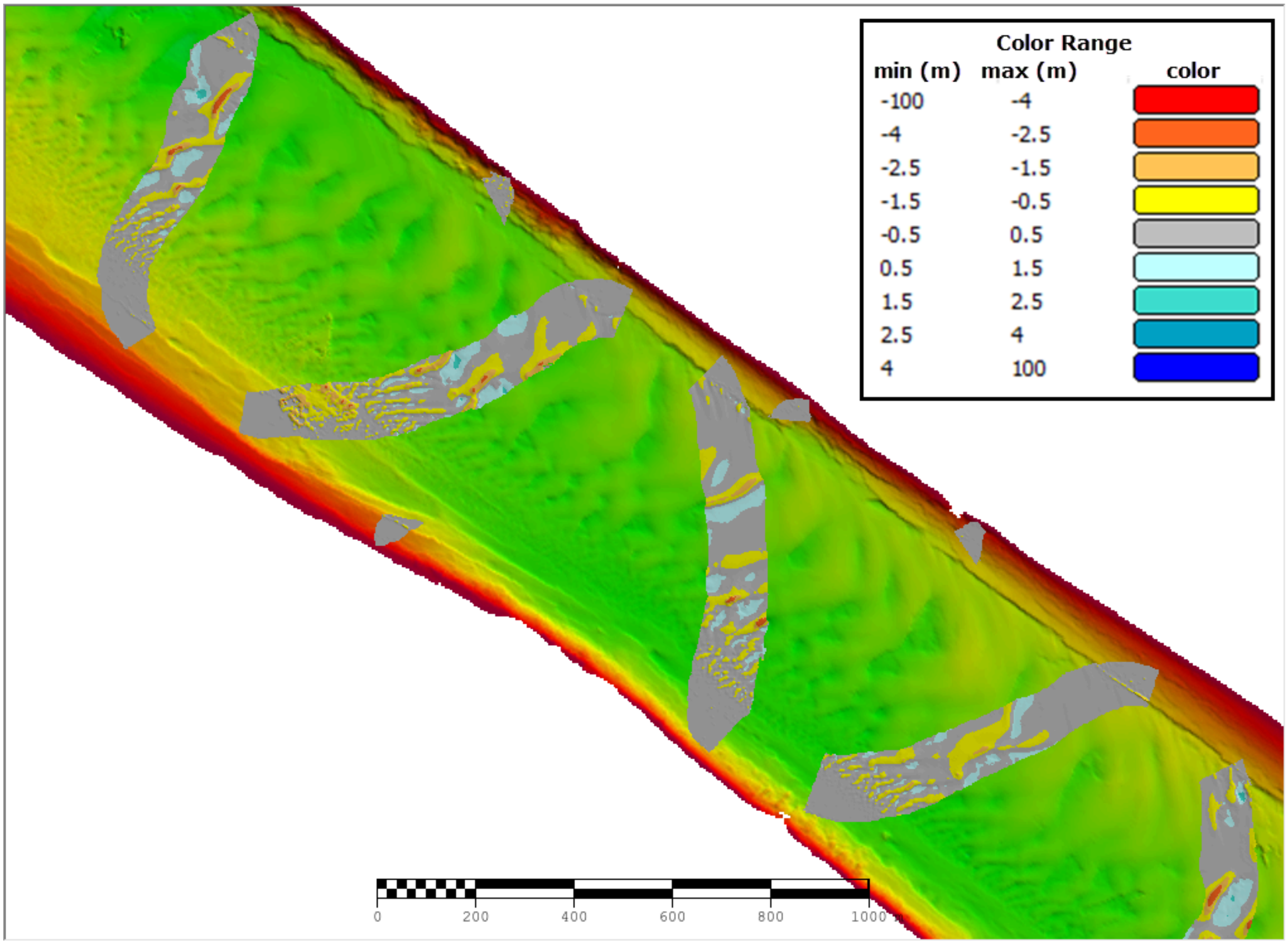


Figure 6: H13195 Crossline Difference Surface portraying sediment migration

B.2.2 Uncertainty

The following survey specific parameters were used for this survey:

Method	Measured	Zoning
ERS via VDATUM	0.030 meters	0.084 meters

Table 7: Survey Specific Tide TPU Values.

Hull ID	Measured - CTD	Measured - MVP	Surface
S/V Blake	N/A	1.0 meters/second	0.5 meters/second
RHIB Sigsbee	1.0 meters/second	N/A	0.5 meters/second

Table 8: Survey Specific Sound Speed TPU Values.

Additional discussion of these parameters is included in the DAPR. Sound speed profiles collected from the RHIB Sigsbee were acquired with AML BaseX or AML SmartX sound speed sensors. The measurement uncertainty for these sensors is listed in the CTD column in Table 8.

During surface finalization in HIPS, the "Greater of the two values" option was selected, where the calculated uncertainty from Total Propagated Uncertainty (TPU) is compared to the standard deviation of the soundings influencing the node, and where the greater value is assigned as the final uncertainty of the node. The uncertainty of the finalized surfaces increased for nodes where the standard deviation of the node was great than the TPU.

To determine if the surface grid nodes met IHO Order 1 specification, a ratio of the final node uncertainty to the allowable uncertainty at that depth was determined. As a percentage, this value represents the amount of error budget utilized by the total vertical uncertainty (TVU) at each node. Values greater than 100% indicate nodes exceeding the allowable IHO uncertainty. The resulting calculated TVU values of all nodes in the submitted finalized surfaces are shown in Figures 7 through 9.

The finalized surfaces include occasional large vertical uncertainties which exceed IHO Order 1 allowances. These high uncertainties were caused by introducing areas of high depth standard deviation associated with steep slopes when finalizing surfaces with the greater of the two option; and incorporating erroneous real-time sonar uncertainty values during TPU computation. On occasion, the real-time uncertainty logged during acquisition included a sounding with an extremely high depth uncertainty which was well outside of realistic values. During processing, an IHO filter was applied to all sounding data, with rejecting soundings exceeding IHO Order 1 thresholds for TVU. These rejected soundings have at times been reaccepted after thorough review by the hydrographer. This issue appears to have been caused by an unresolved software bug in either the sonar top side unit or acquisition system impacting the reported uncertainty, but not the actual depth.

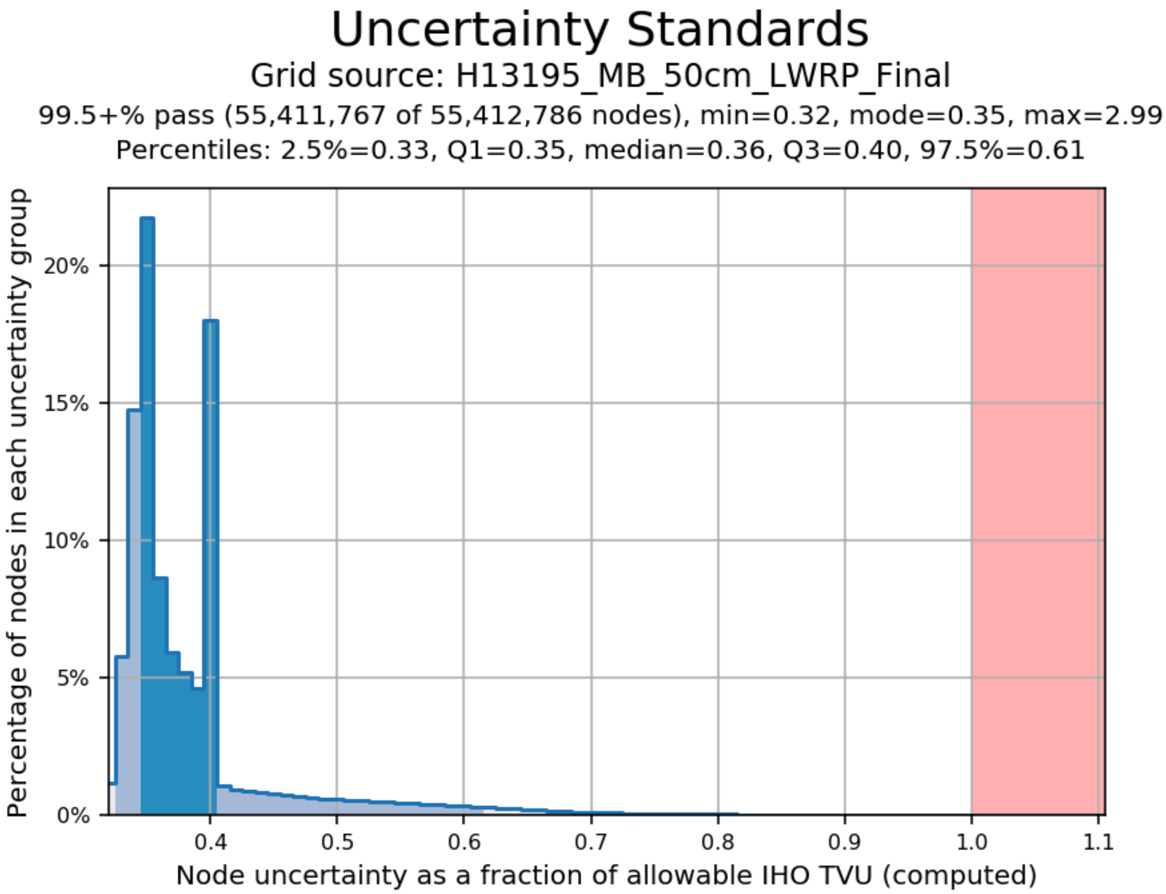


Figure 7: Node TVU statistics - 50cm finalized

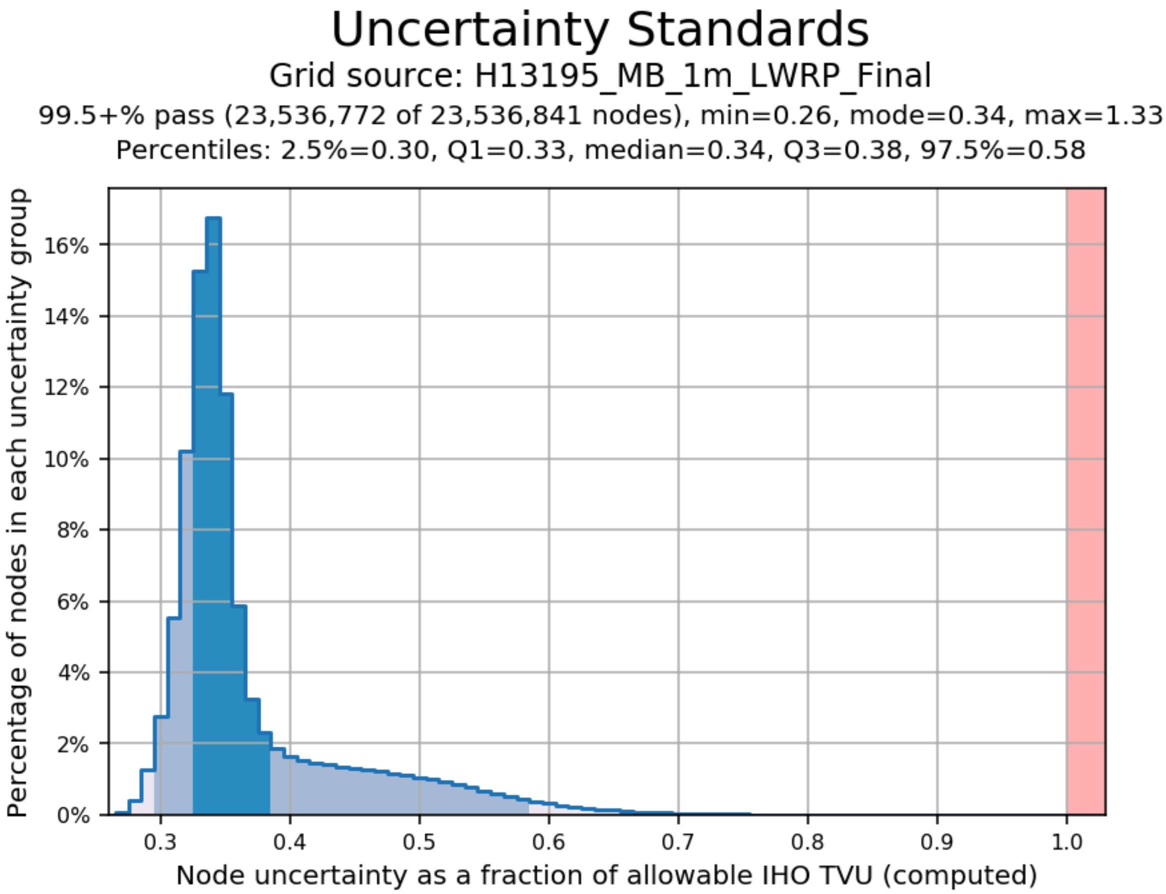


Figure 8: Node TVU statistics - 1m finalized

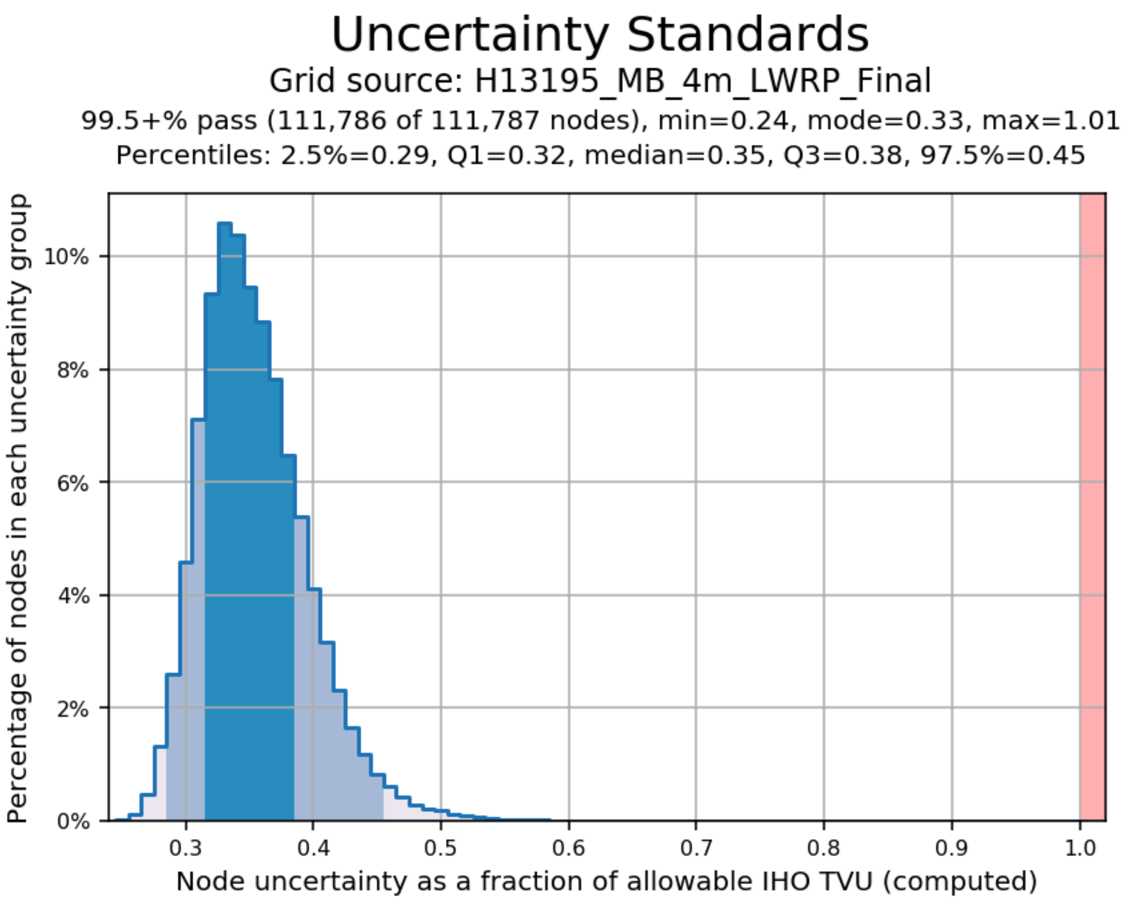


Figure 9: Node TVU statistics - 4m finalized

B.2.3 Junctions

Survey H13195 junctions with current surveys H13194 and H13196. No prior surveys were specified as junctions in the Project Instructions.

The following junctions were made with this survey:

Registry Number	Scale	Year	Field Unit	Relative Location
H13194	1:5000	2018	David Evans & Associates, Inc.	W
H13196	1:5000	2018	David Evans & Associates, Inc.	E

Table 9: Junctioning Surveys

H13194

At the time of writing, data from survey H13194 was still being processed. The Descriptive Report for H13194 will include the junction analysis with H13195.

H13196

At the time of writing, data from survey H13196 was still being processed. The Descriptive Report for H13196 will include the junction analysis with H13195.

B.2.4 Sonar QC Checks

Quality control is discussed in detail in Section B of the DAPR. Results from weekly position checks and weekly multibeam bar checks are included in Separate I Acquisition and Processing Logs of this report. Sound speed checks can be found in Separate II Sound Speed Data Summary of this report.

Multibeam data were reviewed at multiple levels of data processing including: CARIS HIPS conversion, subset editing, and analysis of anomalies revealed in CUBE surfaces.

B.2.5 Equipment Effectiveness

High Frequency artifact in dual-head MBES system

High frequency artifacts are visible periodically in the data collected with the dual-head system on the S/V Blake. Despite extensive testing and troubleshooting of mount stability under a range of vessel motion dynamics and speed, applied offsets, and application of patch tests bias, no single source of the artifact could be identified. The high frequency artifact was transient and unrelated to vessel dynamics and loading on sonar mounts at different speeds and induced rolling during testing and is periodically present in both sonars, with a higher magnitude observed on the port sonar. From the findings of the troubleshooting, it is the hydrographer's belief that this is not related to mount instability relative to the IMU of patch test bias values applied and may be related to minor transient timing issues in the dual head system relative to the application of motion data (primarily role). Under this assumption, the further away the sensor is from the ship reference point, the great the magnitude of the error. In this case, while the artifact negatively affects the aesthetic of the final surface deliverable, it is well within IHO specifications for this survey. Figures 10 and 11, display the artifact for the dual-head operations.

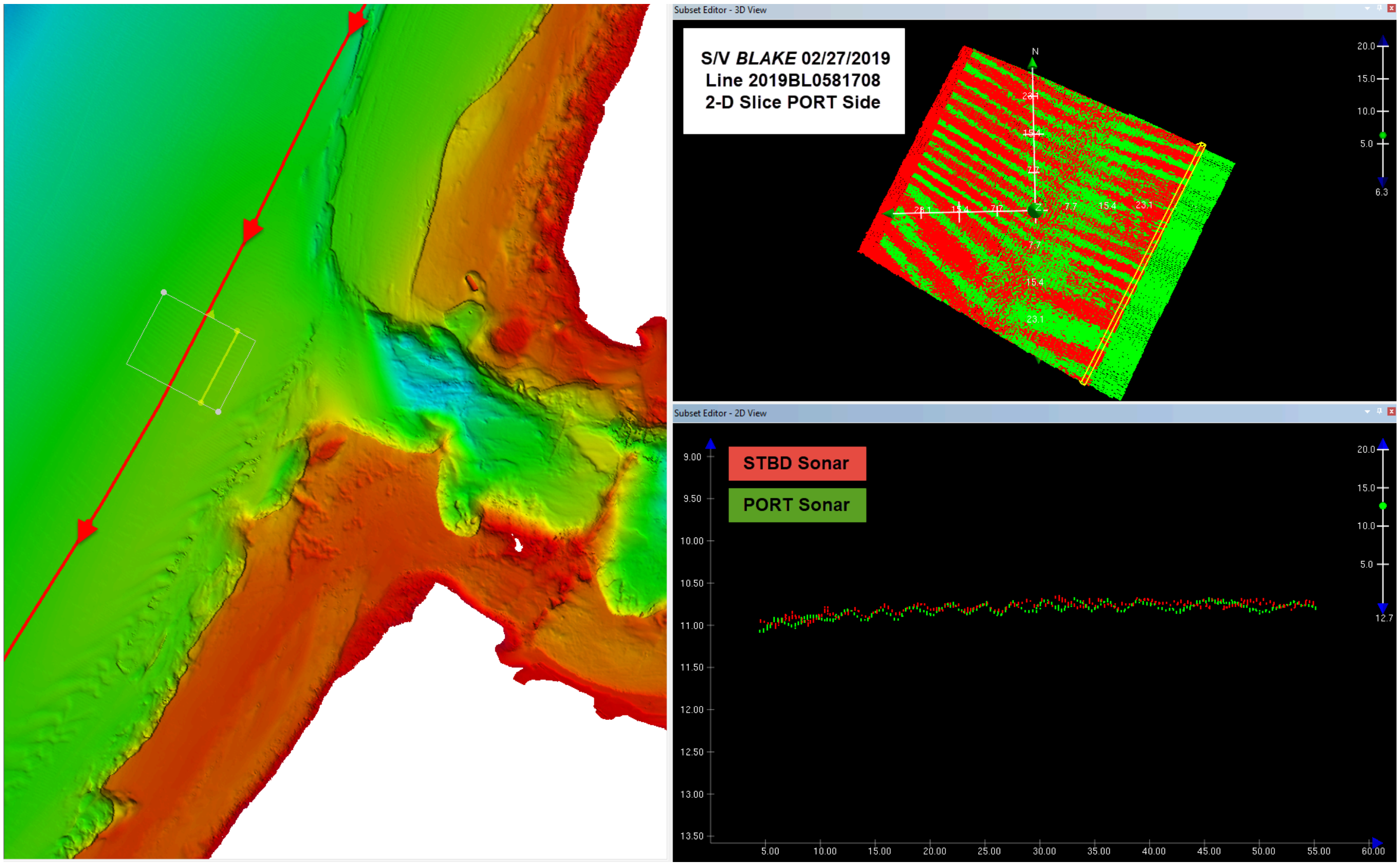


Figure 10: Example of high frequency artifact shown in surface and along track subset. Subsets of differing magnitudes between separate sonar heads of dual-head system shown on port side of swath (starboard beams shown in red, port beams in green)

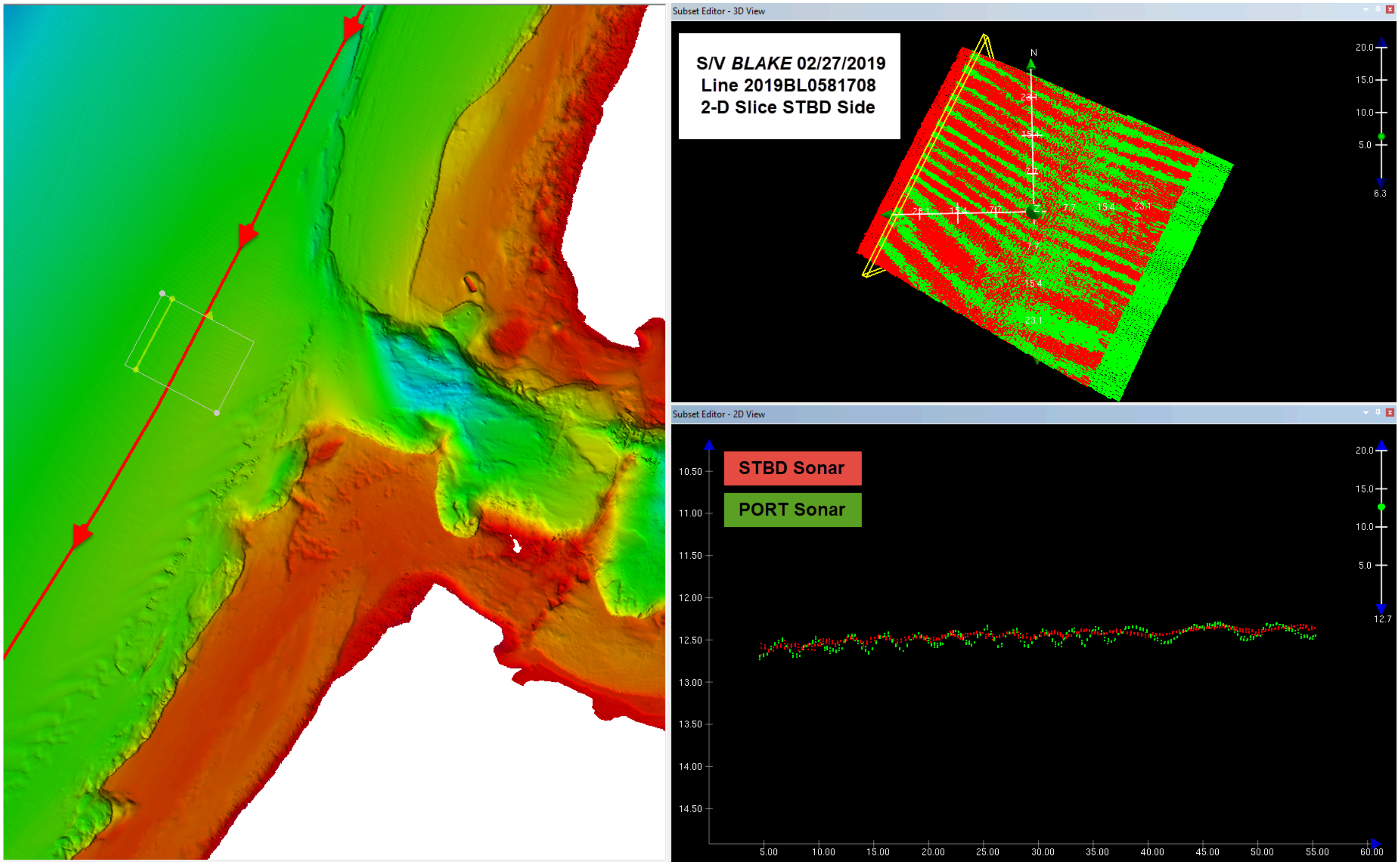


Figure 11: Example of high frequency artifact shown in surface and along track subset. Subsets of differing magnitudes between separate sonar heads of dual-head system shown on starboard side of swath (starboard beams shown in red, port beams in green)

Bottom tracking in shallow water

During survey acquisition, it was apparent that the combination of shallow water and the river bottom type (an assumption of soft silty mud) made it difficult to get a clean bottom track return from the MBES system. This most frequently was displayed in shallow, flat areas out of the main channel current. To try to mitigate the effects, sonar settings were changed by the hydrographer during acquisition, including changing power, gain, time variable gain (TVG) settings, and pulse length. In the end no clear solution fixed the issue and the hydrographer continuously tuned the sonar for what received the best return at the time. This is likely a limitation of the instrument and the physics of acoustics in the depths being surveyed. The HDCS dataset was well cleaned to mitigate the effects to the final surfaces. However, artifacts within IHO specifications, will be apparent in the final delivered surface as shown in Figure 12.

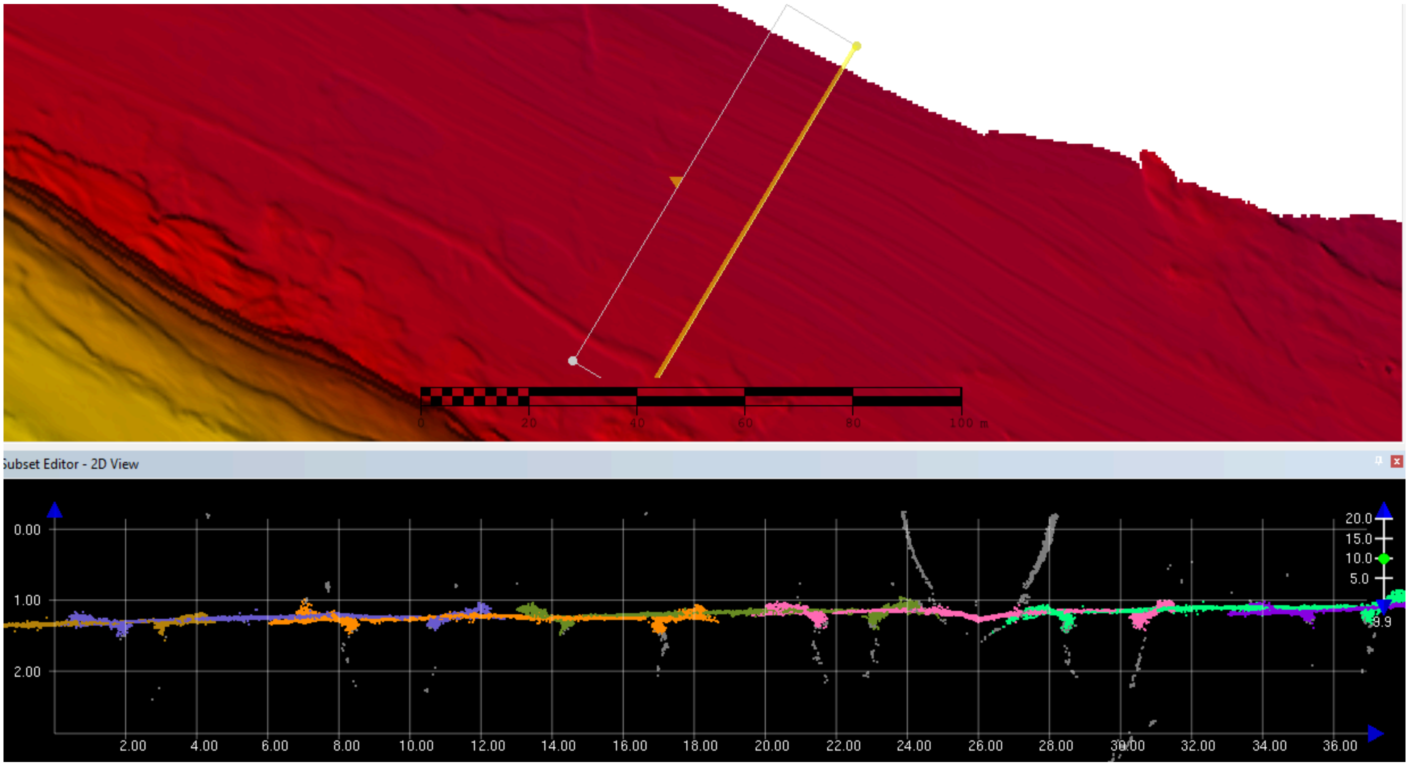


Figure 12: Example of erroneous bottom tracking of flat shoal areas in HDCS data and resultant surface artifact (gray soundings rejected manually by hydrographer to limit effects to the surface)

Delayed Heave

Delayed heave was applied to data collected by the S/V Blake using the POS M/V .000 file logged during acquisition. This file is loaded using the CARIS Import Auxillary Data tool. Delayed heave is chosen during the SVC and Merge processing steps.

Delayed heave was applied to data collected by the RHIB Sigsbee using the IXSEA Output_E.log file logged during acquisition. This file is formatted similarly to the POS M/V .000 file for delayed heave, but does not contain any position, motion, or associated RMS values. The Output_E.log file was loaded using the CARIS Import Auxillary Data tool and applied during the SVC and Merge processing steps.

B.2.6 Factors Affecting Soundings

Sediment Migration

Sediment migration on the river bottom was evident throughout the course of this survey. Crosslines and fill lines that were run hours after mainscheme acquisition still exceeded the allowable vertical uncertainty in some areas. Following guidance from HSD OPS and the Atlantic Hydrographic Branch, the hydrographer allowed the CUBE algorithm to estimate a gridded depth in these areas without manual cleaning of the sounding data. The submitted surface has numerous artifacts resulting from these areas of disagreement. When reviewed, soundings deemed as fliers were still rejected. It is the hydrographer's belief that the submitted depths were accurate at the time of the survey.

Some areas of the greatest disagreement have been noted in the H13195_Notes_for_Reviewer.hob file with the SNDWAV area feature class, submitted in Appendix II Supplemental Survey Records of this report. This is not an exhaustive list of areas but should detail those that show the major surface artifacts resulting from sediment migration.

While in an area of significant sediment migration, a field test was conducted to attempt to quantify the amount of change the river bottom experienced at that time of survey. The same line was run upstream at similar speeds with time elapsing between subsequent passes. A subset of the results is shown in Figures 13 and 14. A high vertical exaggeration is used in Figure 14 to highlight the magnitude of the sediment migration.

The hydrographer's best estimate is that the smaller waves on top are migrating at nearly 1 meter/hour while the larger waves, nearly two meters high, are migrating at 5 meters/day.

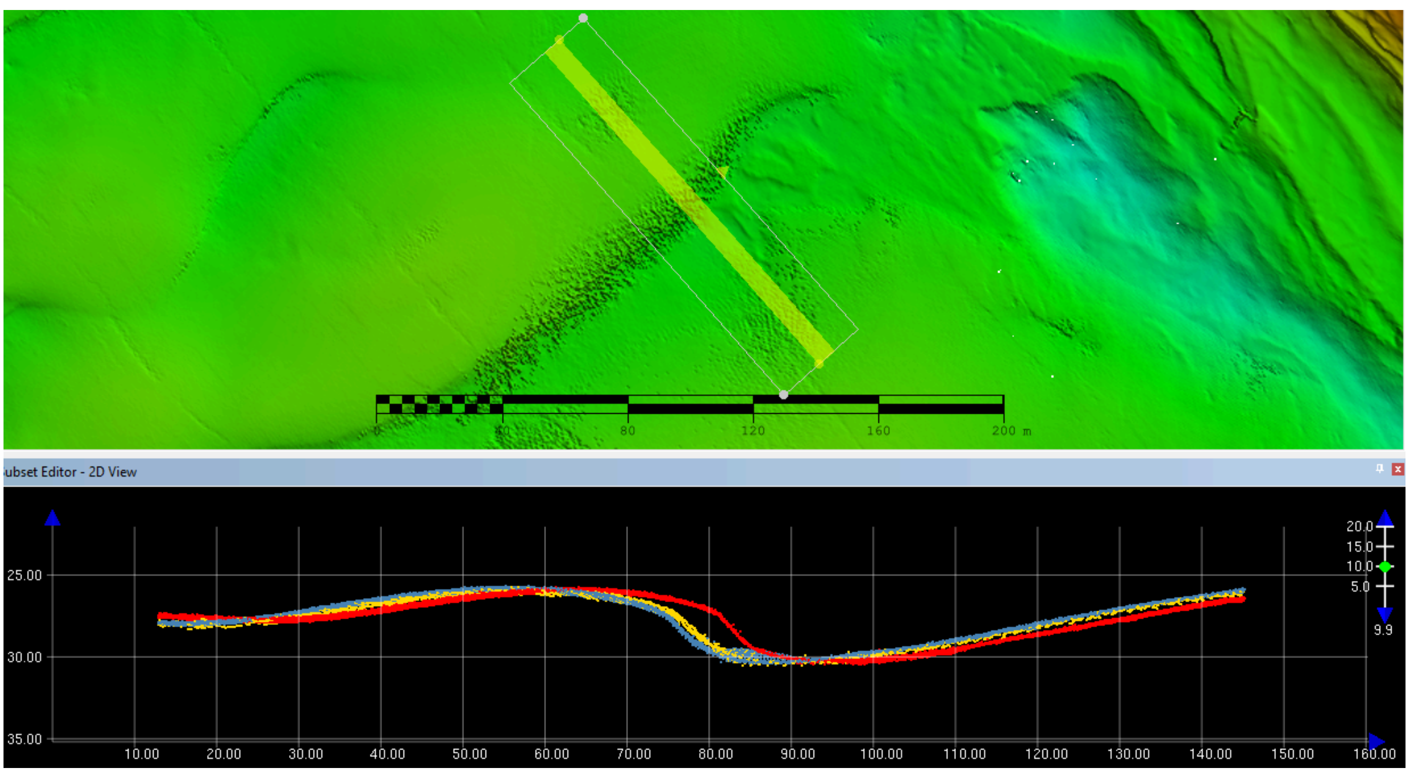


Figure 13: Example of artifacts caused by sediment migration during H13195 operations

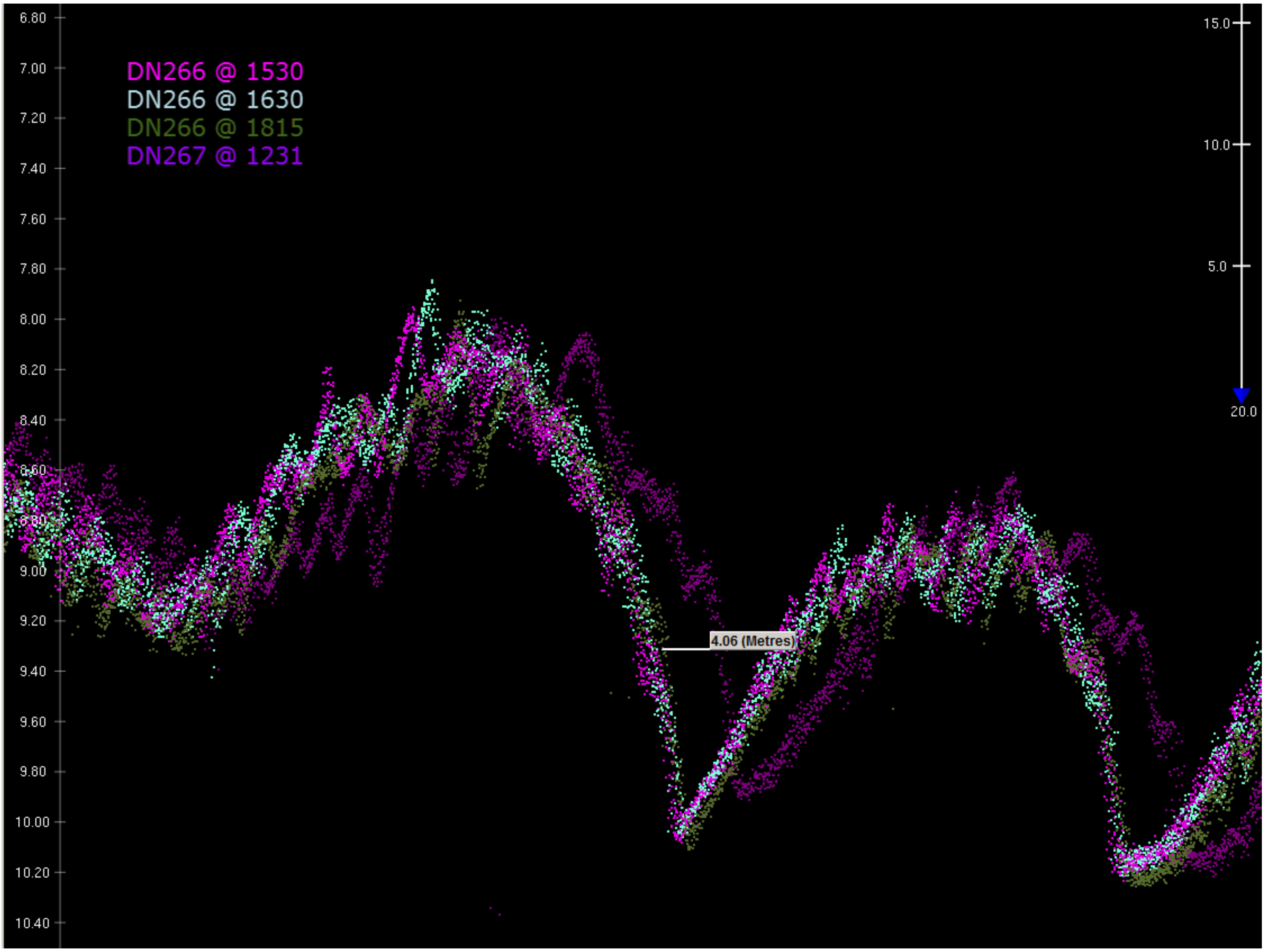


Figure 14: Along-track subset view of field test portraying river bottom changes due to sediment migration

B.2.7 Sound Speed Methods

Sound Speed Cast Frequency: Approximately 4 hour intervals

An AML Oceanographic Moving Vessel Profiler (MVP) and an AML SmartX or BaseX were the primary instruments used to acquire sound speed readings during multibeam operations for the S/V Blake and the RHIB Sigsbee, respectively. Due to the consistent sound speed profile encountered in this reach of the river, sound speed profiles were measured at approximately one to two-hour intervals during survey operations. Sound speed readings were applied in CARIS at an approximate interval of four hours based on consistent profiles observed throughout the day of survey. During H13195 survey operations, sound speed was observed to be well mixed with very little temporal or spatial variation. Additional discussion of sound speed methods can be found in the DAPR.

All sound speed measurements were made within 250 meters of the planned survey boundary.

In general, a sound speed measurement was made immediately preceding bathymetric operations, per HSSD. Occasionally a sound velocity profile was taken before survey operations and then rejected during data QC or taken shortly after the start of acquisition. Figure 15 details all instances when there was a deviation from the HSSD for H13195.

Day Number	Vessel	Time of first ping (UTC)	Time of first SSP (UTC)	Comments
2019-016	S/V Blake	1320	1349	There was an SV taken preceeding acquisition that was rejected during final processing. Data analyzed, SV changes minimal.
2019-022	RHIB Sigsbee	1351	1542	There was an SV taken preceeding acquisition that was rejected during final processing. Data analyzed, SV changes minimal.
2019-026	RHIB Sigsbee	1352	1353	SV taken on-line, approximately one minute after starting acquistion. Data analyzed, SV changes minimal.
2019-029	RHIB Sigsbee	1046	1431	SV taken 25 minutes after starting acquisition. Data analyzed, SV changes minimal.

Figure 15: Sound speed measurement exceeding start of operations specification

B.2.8 Coverage Equipment and Methods

Survey speeds were typically maintained to meet or exceed along-track density requirements. However, due to conditions present, including swift current and vessel traffic, occasional along-track low-density areas are present in the final data. These typically are narrow swaths centered along nadir and do not impact meeting density requirements for 95% of all nodes.

Mobile lidar coverage was obtained on the full extents of both river banks spanning the survey area with one exception. A 1-mile gap in coverage exists on the West bank between river miles 33 and 34 where the vessel veered away from the shoreline to capture a mid-channel buoy. The section was later investigated by the RHIB Sigsbee. No assigned features were present, and no uncharted features were observed within the gap in data.

B.2.9 Density

The sounding density requirement of 95% of all nodes, populated with at least five soundings per node, was verified by analyzing the density layer of each finalized surface. Individual surface results are stated in Figures 16 through 18.

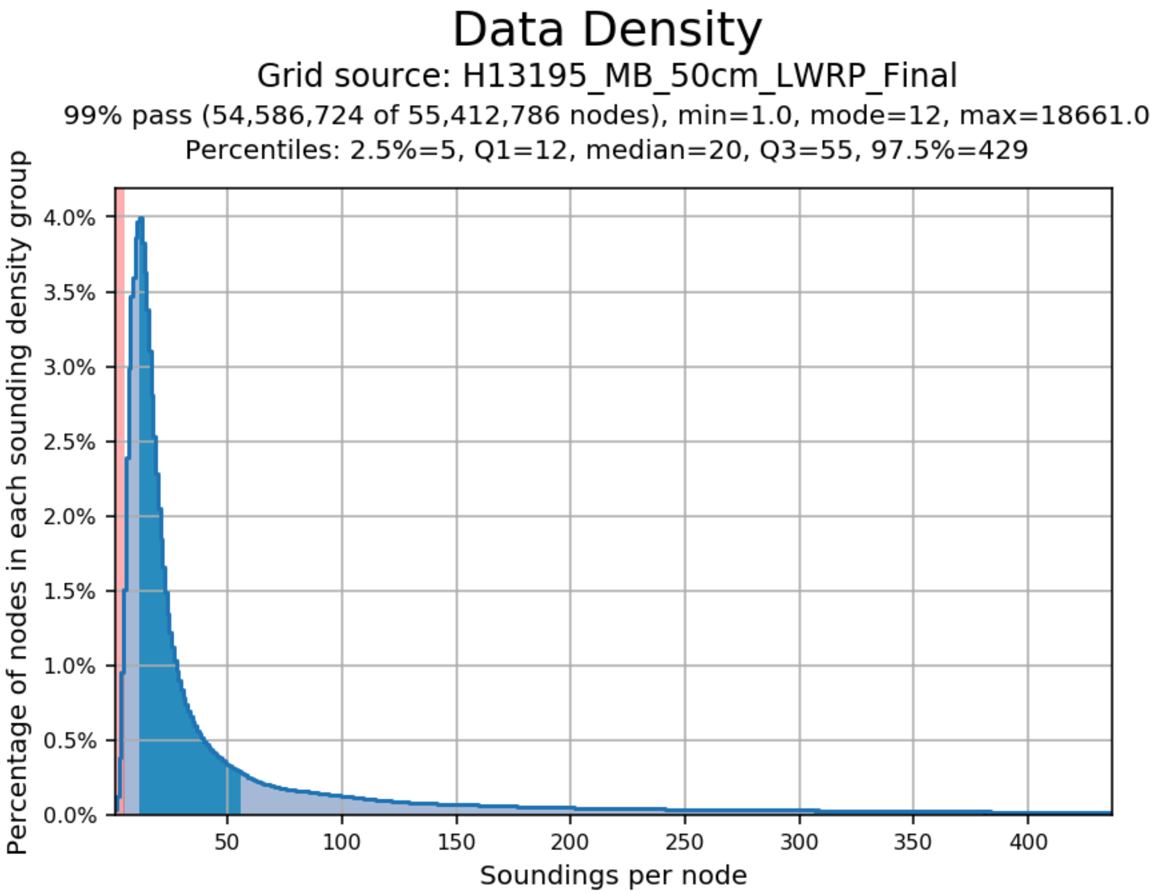


Figure 16: Node density statistics - 50cm finalized

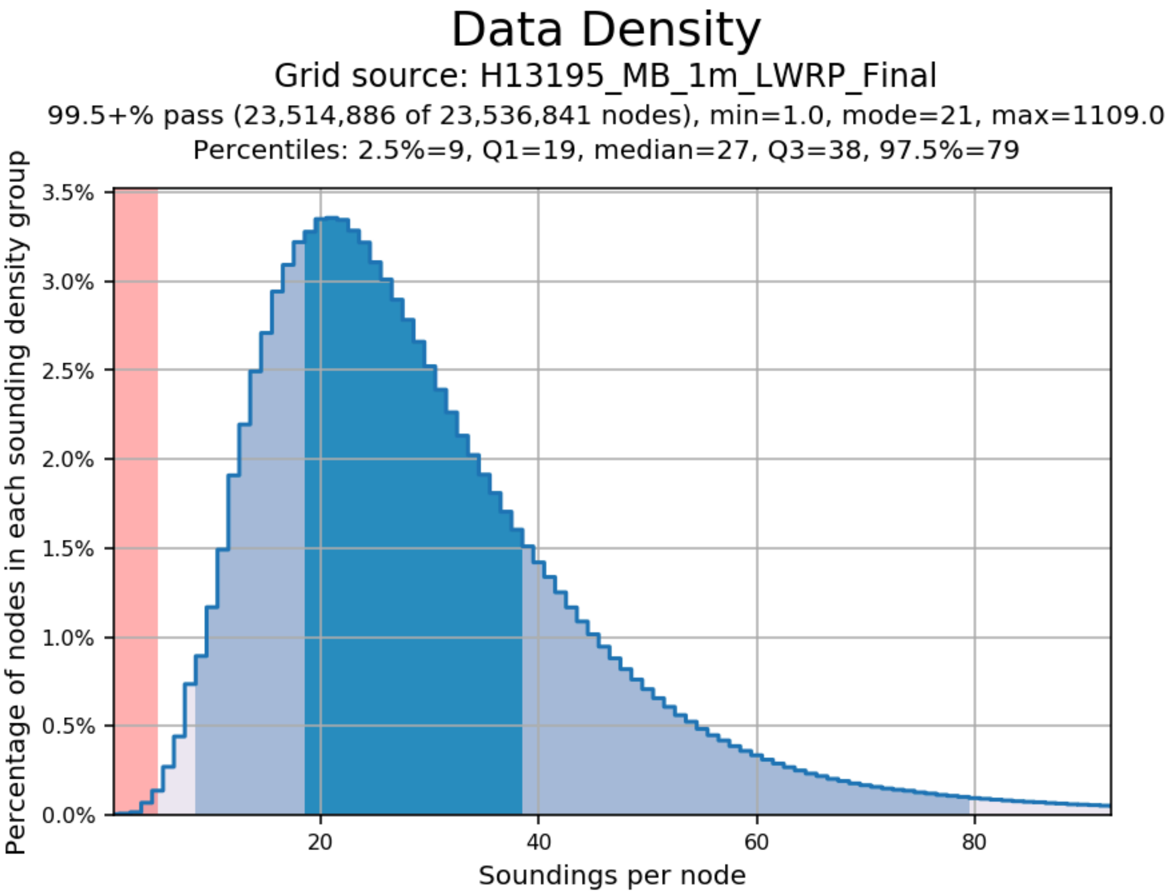


Figure 17: Node density statistics - 1m finalized

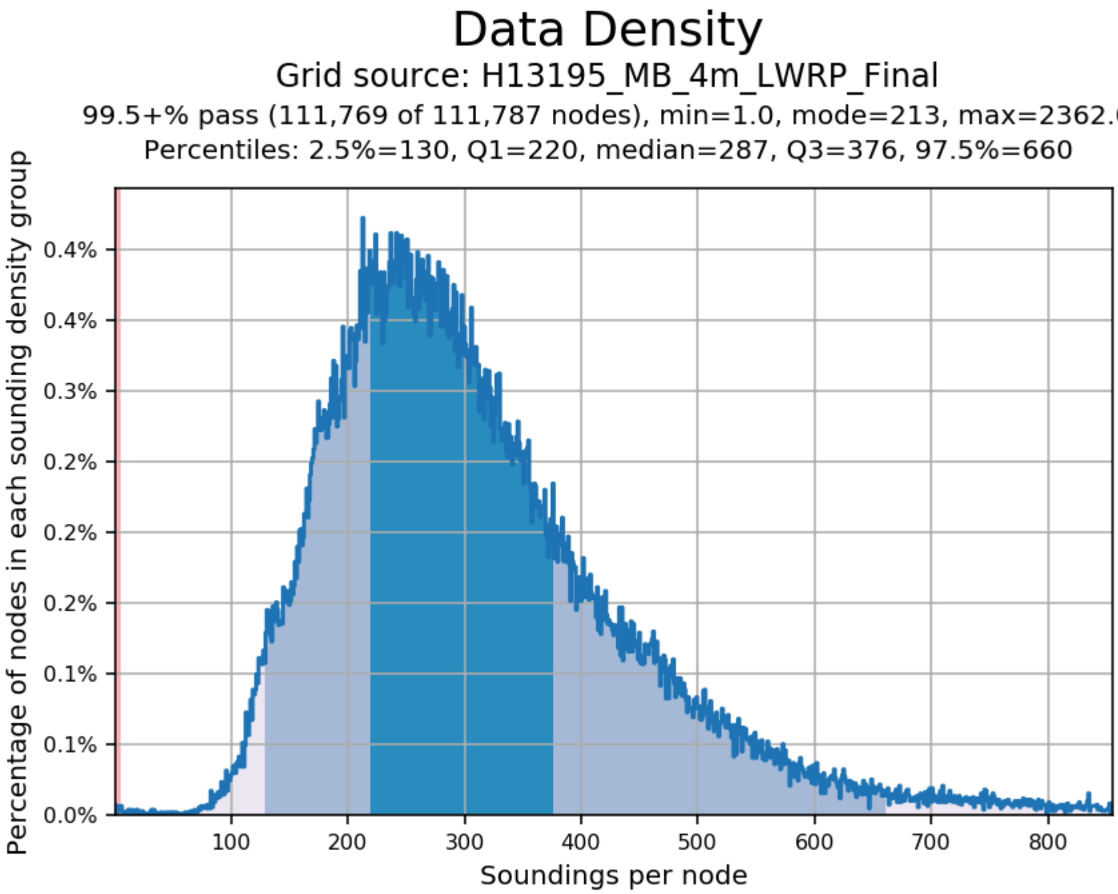


Figure 18: Node density statistics - 4m finalized

B.2.10 Data gaps in bathymetric coverage

Occasional data gaps in the final Object Detection surfaces exist due to operational restrictions at time of survey. These data gaps were further analyzed after acquisition and determined to be unattainable due to safety or other factors impacting vessel operations. Significant effort was expended during survey operations to maximize object detection coverage in these areas.

Some of the sources for these data gaps include:
- Holidays or 2-meter coverage gaps behind pier structures where field unit was physically unable to operate, or safety concerns limited their ability.
- Holidays beyond the 2-meter curve (NALL) which were not further investigated due to safety concerns in shallow water.
- Holidays or 2-meter coverage gaps underneath barge fleets or anchored/moored vessels. These were revisited at least one other time in subsequent days. Typically, the field hydrographer would acquire data along the achievable extents of the gap, and document the existence of the barge fleet or vessel with targets and/or photos. AIS or internet-based vessel tracking tools were used to alert the field unit when vessels were underway.

- Holidays created beneath baring structures that met the area requirements were rejected in the survey data for final delivery.

Holidays that exist in the final surfaces have been noted in the H13195_Notes_for_Reviewer.hob with the cvrage area feature class, submitted in Appendix II, and attributed with remarks stating the contributing factor leading to the data gap. Areas were the 2-meter curve was not met are included in the H13195_Notes_for_Reviewer.hob with SLCONS feature class and attributed with remarks stating the contributing factor for this deficiency.

B.3 Echo Sounding Corrections

B.3.1 Corrections to Echo Soundings

All data reduction procedures conform to those detailed in the DAPR.

B.3.2 Calibrations

All sounding systems were calibrated as detailed in the DAPR.

B.4 Backscatter

Multibeam backscatter was logged in Hypack 7k format and included with the H13195 digital deliverables. Data were processed periodically in CARIS HIPS to evaluate backscatter quality, but the processed data is not included with the deliverables. For dual-head MBES data on S/V Blake, individual 7k files were logged for each sonar head in order to better facilitate additional changes required between systems.

For data management purposes, the names of multibeam crosslines have been appended with the suffix _XL. This change was made to HIPS files only. The original file names of raw data files (Hypack HSX and 7k) have been retained.

Backscatter processing to be performed at the Branch deviates from the current OCS Backscatter Processing SOP dated 02/21/2020. Specifically, for the dual-head sonar configuration used in this survey, the processed depth files in the HDCS survey lines contain combined bathymetric data from both sonar heads. However, due to software limitations, the resulting GSF format data files and backscatter mosaic are based on time series data in .7k files (snippets data) from one individual sonar head, paired with the dual-head sounding data. This is represented in the backscatter mosaic with the vessel name BlakeDHS or BlakeDHP, indicating one set of .7k files from the starboard or port head, respective of the dual-head system was paired with the combined-head HDCS. The naming convention for the MBAB

mosaic is H13195_MBAB_2m_BlakeDHS_350kHz_1of2.tiff (DHS for the starboard head of a dual head configuration). This product is the best available from the files associated with this particular dual-head sonar configuration and combined-head acquisition process.

B.5 Data Processing

B.5.1 Primary Data Processing Software

The following software program was the primary program used for bathymetric data processing:

Manufacturer	Name	Version
CARIS	HIPS/SIPS	10.4.5

Table 10: Primary bathymetric data processing software

The following Feature Object Catalog was used: NOAA Profile Version 5.7.

A detailed listing of all data processing software, including software used to process the mobile lidar data, is included in the DAPR.

B.5.2 Surfaces

The following surfaces and/or BAGs were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H13195_MB_50cm_LWRP	CARIS Raster Surface (CUBE)	0.5 meters	-0.798 meters - 55.808 meters	NOAA_0.5m	Object Detection
H13195_MB_1m_LWRP	CARIS Raster Surface (CUBE)	1 meters	-0.759 meters - 55.719 meters	NOAA_1m	Object Detection
H13195_MB_4m_LWRP	CARIS Raster Surface (CUBE)	4 meters	-0.683 meters - 55.636 meters	NOAA_4m	Object Detection
H13195_MB_50cm_LWRP_Final	CARIS Raster Surface (CUBE)	0.5 meters	-0.798 meters - 20.000 meters	NOAA_0.5m	Object Detection

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
H13195_MB_1m_LWRP_Final	CARIS Raster Surface (CUBE)	1 meters	18.000 meters - 40.000 meters	NOAA_1m	Object Detection
H13195_MB_4m_LWRP_Final	CARIS Raster Surface (CUBE)	4 meters	36.000 meters - 55.636 meters	NOAA_4m	Object Detection

Table 11: Submitted Surfaces

Bathymetric grids were created relative to LWRP in CUBE format using Object Detection resolution requirements as described in the HSSD.

Grids were originally submitted by the field unit as 50 cm, 1 m and 4 m finalized single resolution grids and were accepted by the Branch as meeting specifications during the H13195 RSA. After additional review during the SAR, it was found some grids required additional re-computation and re-finalization due to minor revisions of the sounding data and FFF. It was agreed amongst both PHB and AHB to modify the final grid products from single resolution to variable resolution (VR) grids following the NOAA object detection depth based (ranges) estimation method parameters. The effect was improved grid management reducing the number of total number grids from eight (8) to three (3). Given final products are now submitted as VR, no final combined surface is included with this submission.

B.5.3 Designated Soundings

A total of 92 soundings in H13195 were designated in bathymetric data: 79 features to facilitate feature management for inclusion in the H13195 Final Feature File (FFF), and 13 to override the gridded surface model.

B.5.4 CARIS HDCS Navigation Sources

During processing of S/V Blake HDCS lines, navigation information was imported from POS M/V .000 files while importing delayed heave, motion and associated RMS values. This navigation source, Applanix.ApplanixGroup1, is automatically applied at merge when it exists. However, when a CARIS project file is rebuilt, CARIS will report that the navigation source is the HDCSNav. This is a display issue only and does not change the navigation source.

This is not an issue for data collected by the RHIB Sigsbee, which relies on HDCS navigation, and does not apply logged navigation, motion and RMS.

Additionally, when a line is renamed, such as with the suffix _XL, the HDCSNav source disappears from the metadata display. Again, this appears to be a display issue only and does not change any navigation sources.

B.5.5 Mobile Laser Scanner Data

A vessel based Mobile Mapping System (MMS) was used to acquire lidar and imagery data along the survey area's shoreline in order to facilitate the survey, management, and reporting of shoreline and nearshore features. Processed LAS data from the laser scanner are included with the survey deliverables in the Processed directory. Imagery data collected by the MMS were used for feature interpretation during processing. Photos of individual features were extracted from the imagery data or taken during hydrographic survey operations and included with the images attribute in the FFF.

C. Vertical and Horizontal Control

A complete description of the horizontal and vertical control for survey H13195 can be found in the OPR-J347-KR-18 Horizontal and Vertical Control Report (HVCR), to be submitted with the final survey for this project. A summary of horizontal and vertical control for this survey follows.

C.1 Vertical Control

The vertical datum for this project is LW Reference Plane 2007.

ERS Datum Transformation

The following ellipsoid-to-chart vertical datum transformation was used:

Method	Ellipsoid to Chart Datum Separation File
ERS via VDATUM	NAD83-LWRP2007_RM13.4_MLLW2012-2016_Geoid12B.csar

Table 12: ERS method and SEP file

While ERS via VDATUM is listed in Table 12, it was one of the limited options available in the XML DR schema's enumerated values. The separation model covering the H13195 survey area was constructed by the HSD Operations Branch specifically for this survey project using NAVD88 (GEOID 2012B) to Mississippi River Low Water Reference Plane of 2007 (LWRP 2007) values published by USACE. Refer to the HVCR submitted under separate cover for additional information.

C.2 Horizontal Control

The horizontal datum for this project is North American Datum of 1983 (NAD 83).

The projection used for this project is Universal Transverse Mercator (UTM) Zone 16.

RTK

During acquisition, RTK correctors were obtained from Louisiana State University's (LSU) Center for Geoinformatics (C4G) service via a dedicated cellular modem. These correctors provided RTK level of accuracy for horizontal and vertical positions for all survey data. If a loss of service was experienced during acquisition it was noted by the field watch stander, and those data were further analyzed to be resurveyed. No prolonged outages were experienced during survey acquisition of H13195. Verification of the C4G Network correctors were conducted by the field unit at various monuments established by USACE along the shoreline of the OPR-J347-KR-18 project area. Methods, analysis and results of these monument check-ins are further documented in the project wide HVCR.

C.3 Additional Horizontal or Vertical Control Issues

C.3.1 Water Level Floats

Water level floats were conducted by the field unit at the location of each USACE or NOAA gauge within the OPR-J347-KR-18 project area. Methods, analysis and results of these floats are further documented in the project wide HVCR. In general, these floats helped identify issues between the USACE and NOAA datums and that of the LWRP 2007 separation model utilized during acquisition. These tests resulted in iterations to the model by NOAA, discussed in detail in the HVCR.

C.3.2 Separation model change and re-processing

As discussed in section C4 of the DAPR and the project wide HVCR, due to a revision of the separation model used during acquisition, all ERS water levels were reprocessed after the revised model was issued. Refer to section B4.c of the DAPR for an outline of the processing steps.

D. Results and Recommendations

D.1 Chart Comparison

The chart comparison was performed by comparing H13195 survey depths to a digital surface generated from electronic navigational charts (ENCs) covering the survey area. A 10-meter product surface was generated from a triangular irregular network (TIN) created from the ENC's soundings, depth contours, and depth features. An additional 10-meter HIPS product surface of the entire survey area was generated from the 4-meter CUBE surface. The chart comparison was conducted by creating and reviewing a difference surface using the ENC surface and survey surface as inputs. The chart comparison also included a review of all assigned charted features within the survey area. The results of the comparison are detailed below. Sediment migration and other river environmental conditions contribute to a continually changing river bottom resulting in large differences observed by the field unit daily.

The relevant charts used during the comparison were reviewed to check that all US Coast Guard (USCG) Local Notice to Mariners (LNMs) issued during survey acquisition, and impacting the survey area, were applied and addressed by this survey.

D.1.1 Electronic Navigational Charts

The following are the largest scale ENCs, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US6LA53M	1:12000	8	10/23/2018	04/04/2019	NO

Table 13: Largest Scale ENCs

<u>US6LA53M</u>

ENC US6LA53M covered the full extents of survey H13195. Large differences exist between the surveyed depths and charted soundings mainly contributed to the continuously changing river environment. Figures 19 through 30 show the magnitude of differences along the comparison area.

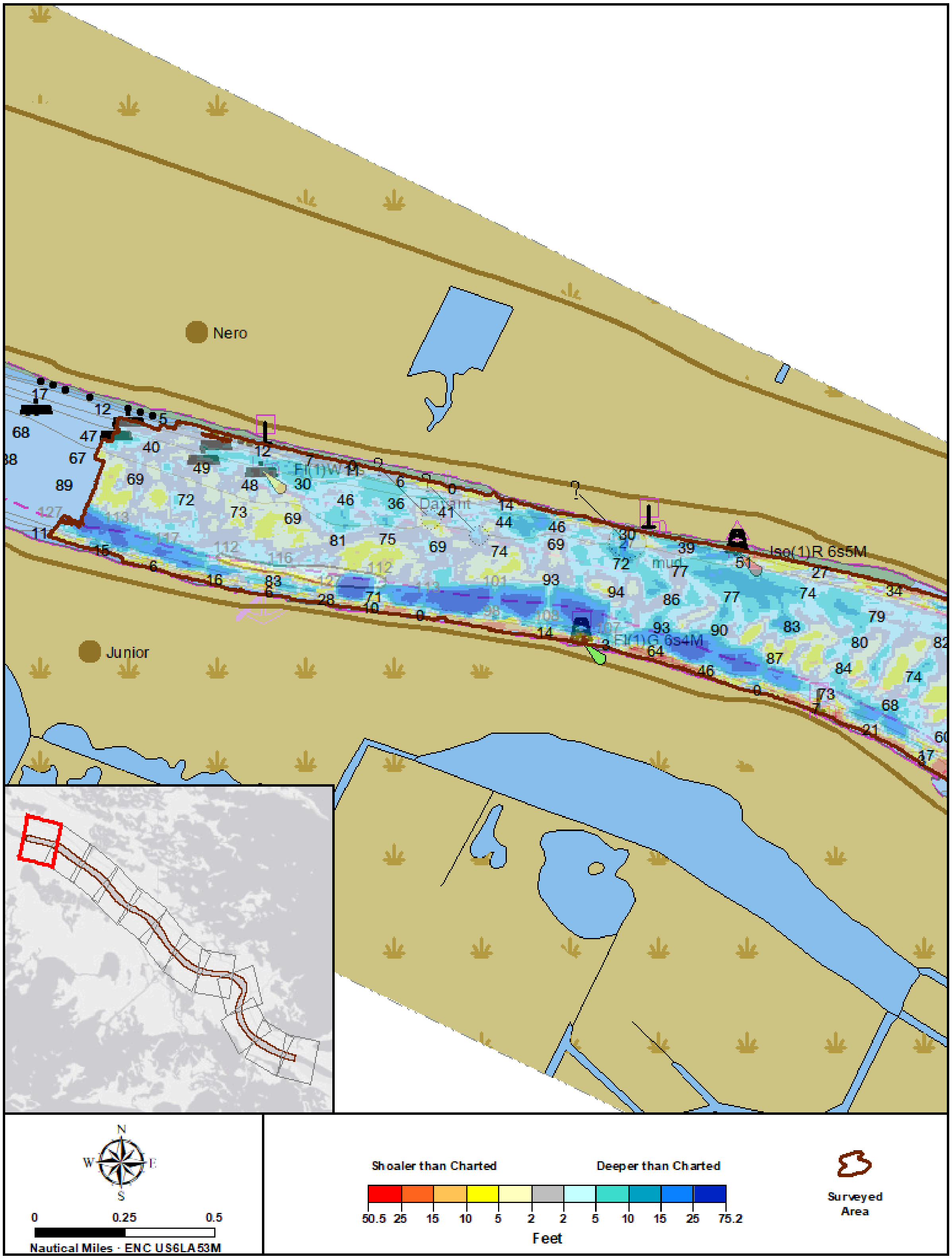


Figure 19: Depth difference between H13195 and chart US6LA53M, area 1 of 12

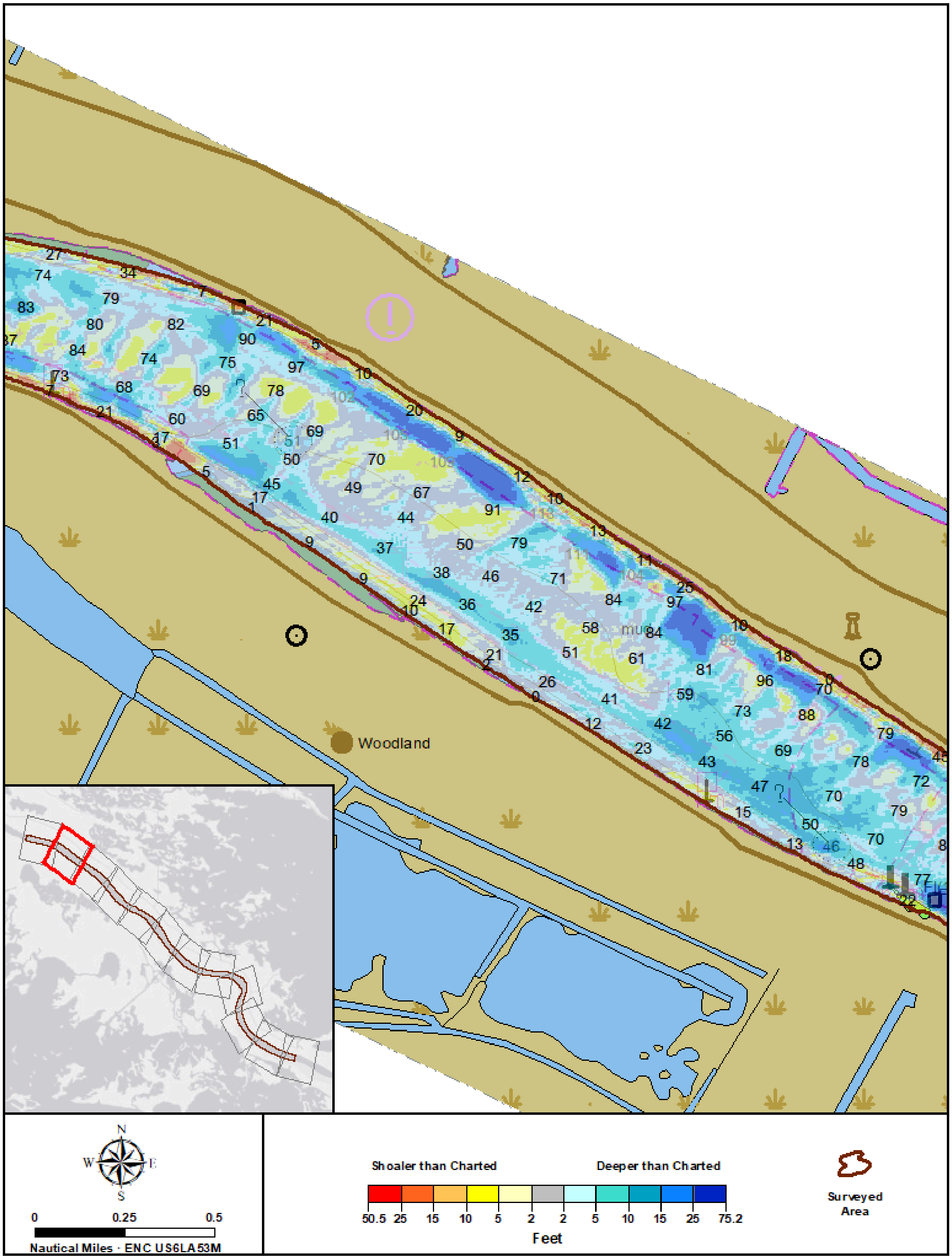


Figure 20: Depth difference between H13195 and chart US6LA53M, area 2 of 12

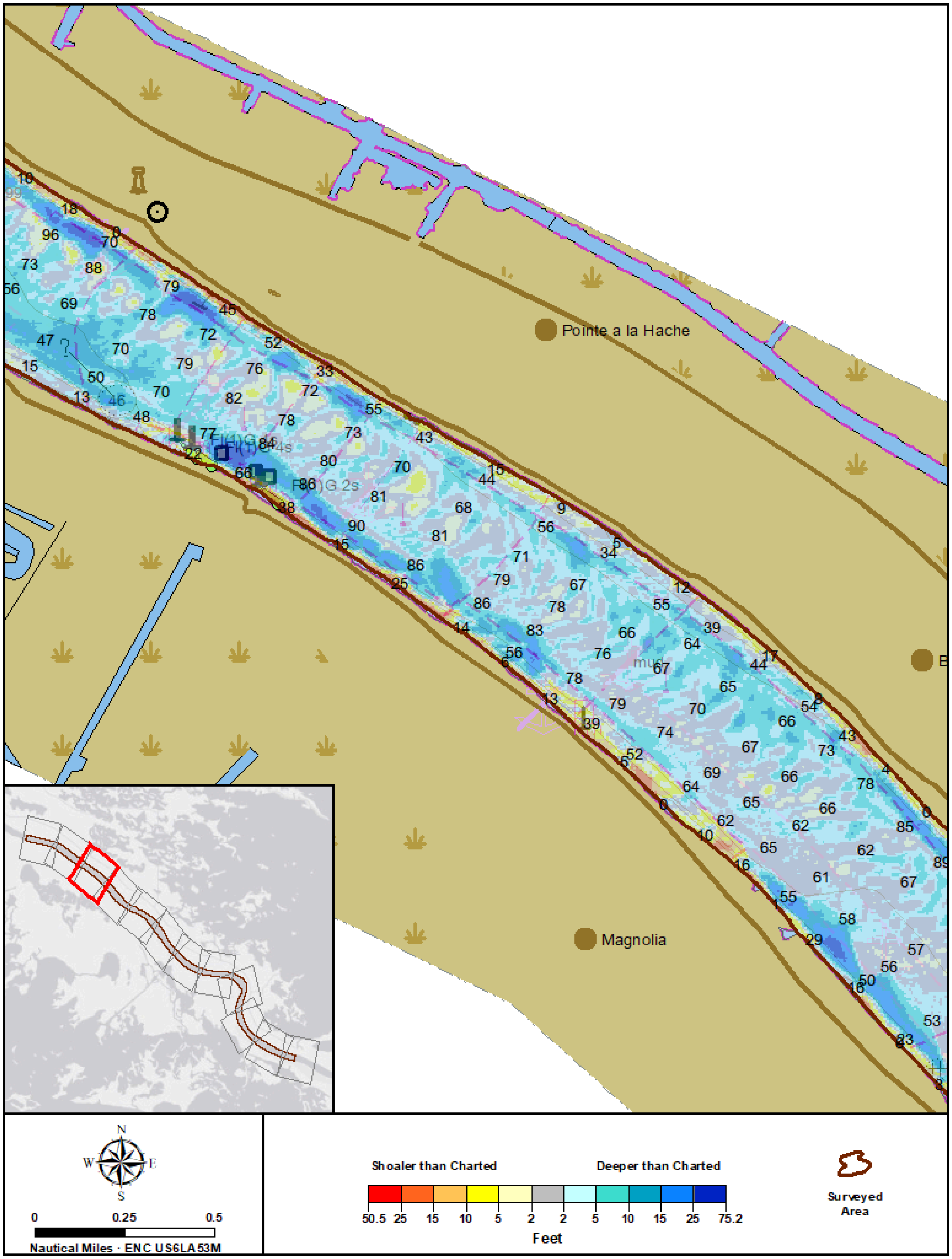


Figure 21: Depth difference between H13195 and chart US6LA53M, area 3 of 12

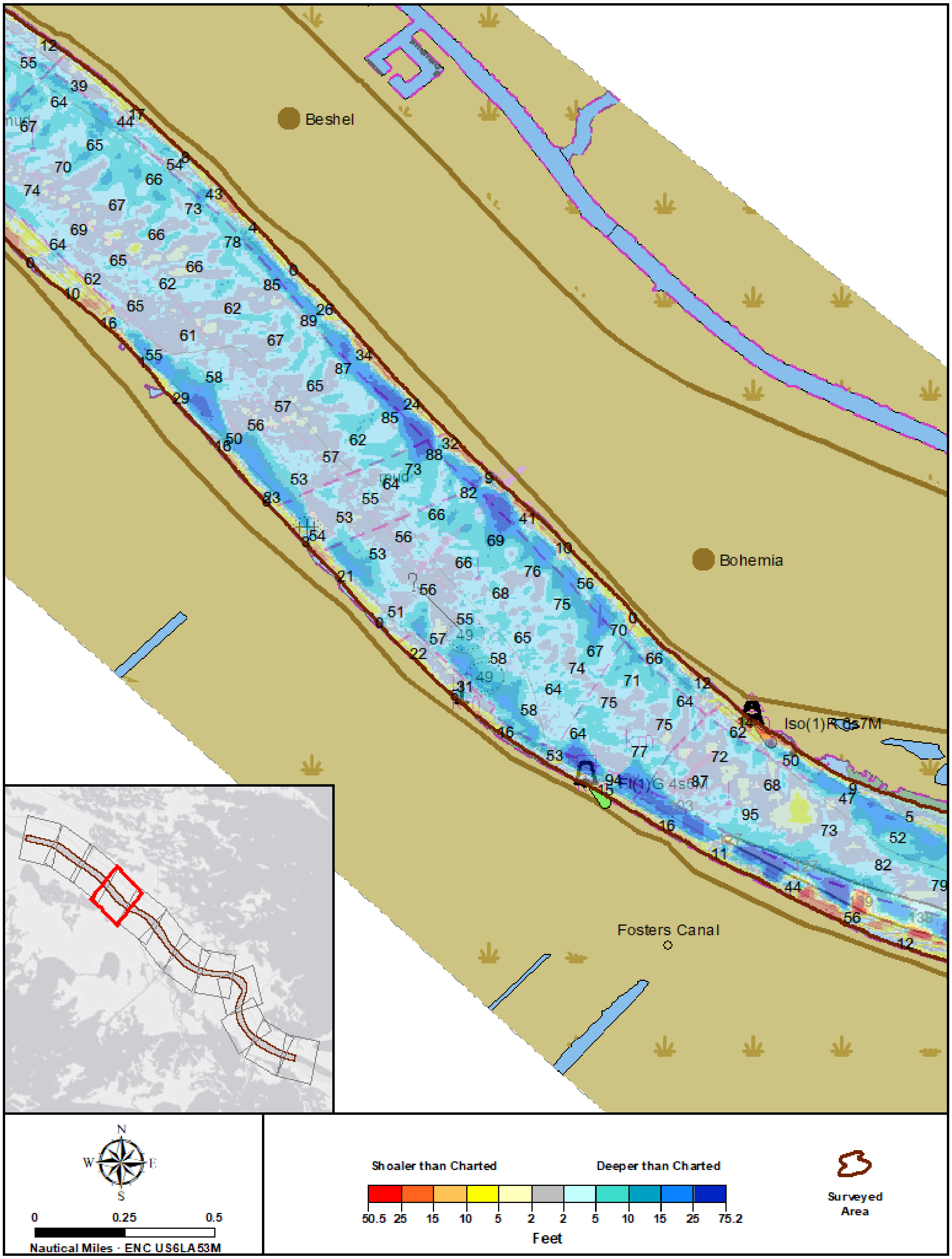


Figure 22: Depth difference between H13195 and chart US6LA53M, area 4 of 12

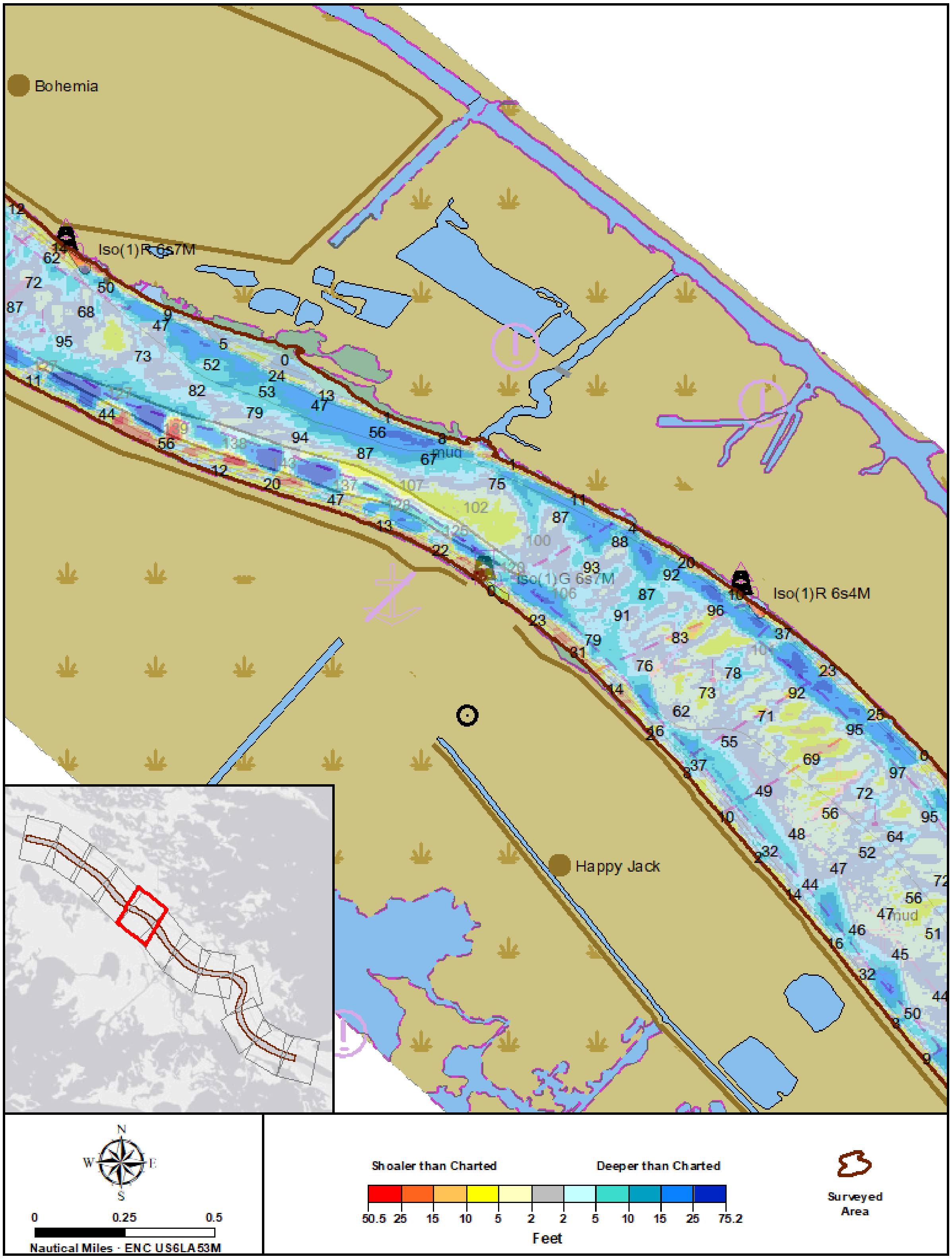


Figure 23: Depth difference between H13195 and chart US6LA53M, area 5 of 12

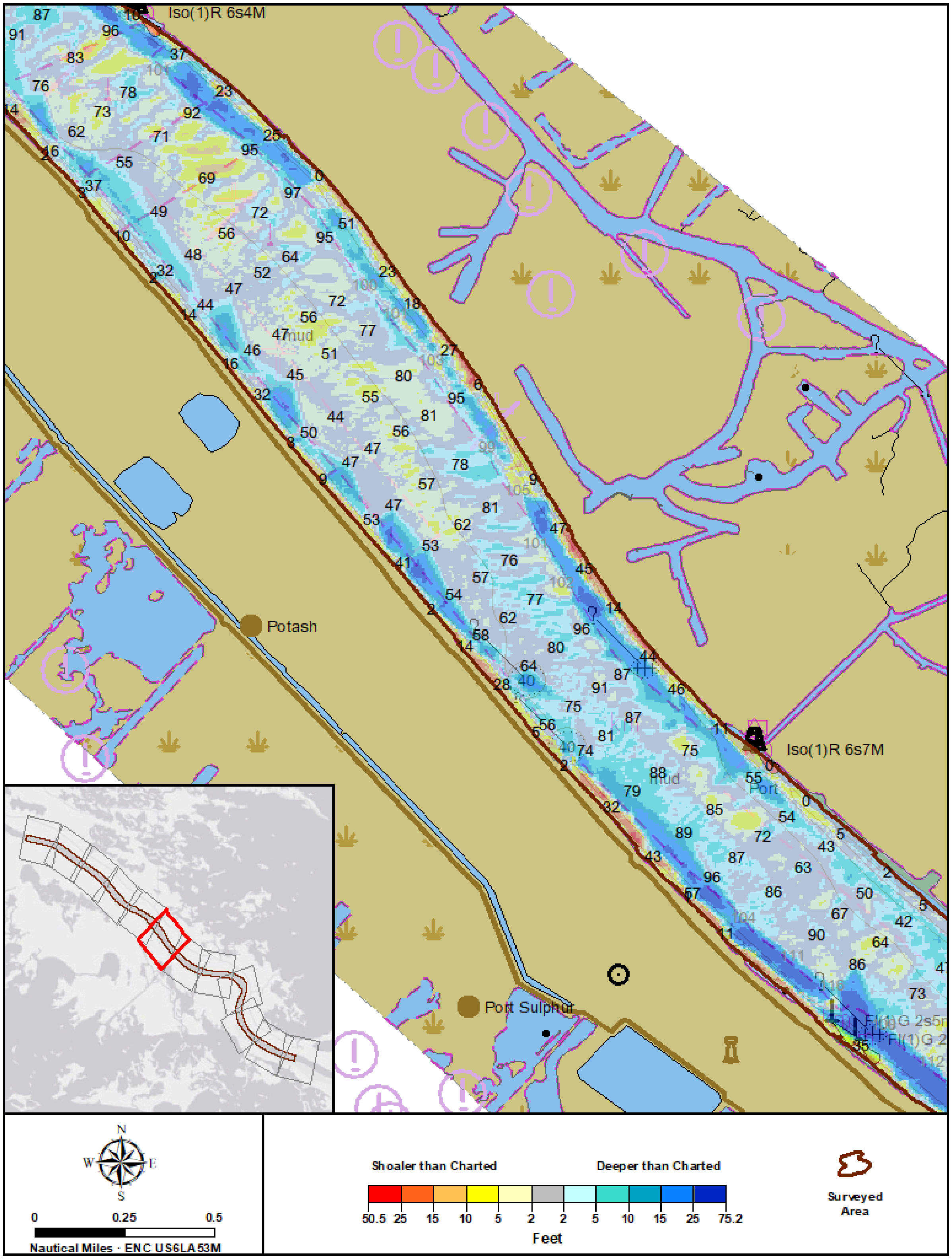


Figure 24: Depth difference between H13195 and chart US6LA53M, area 6 of 12

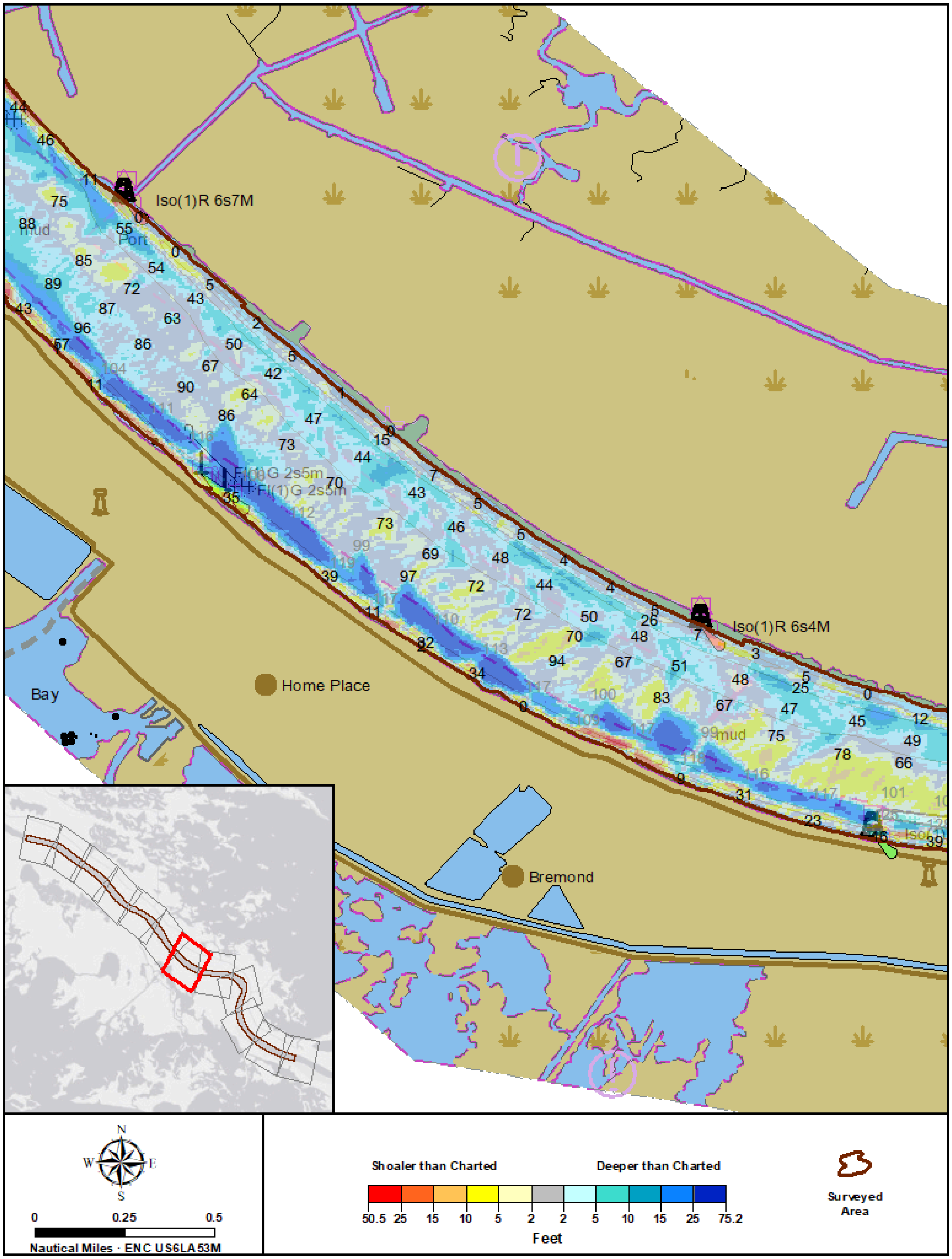


Figure 25: Depth difference between H13195 and chart US6LA53M, area 7 of 12

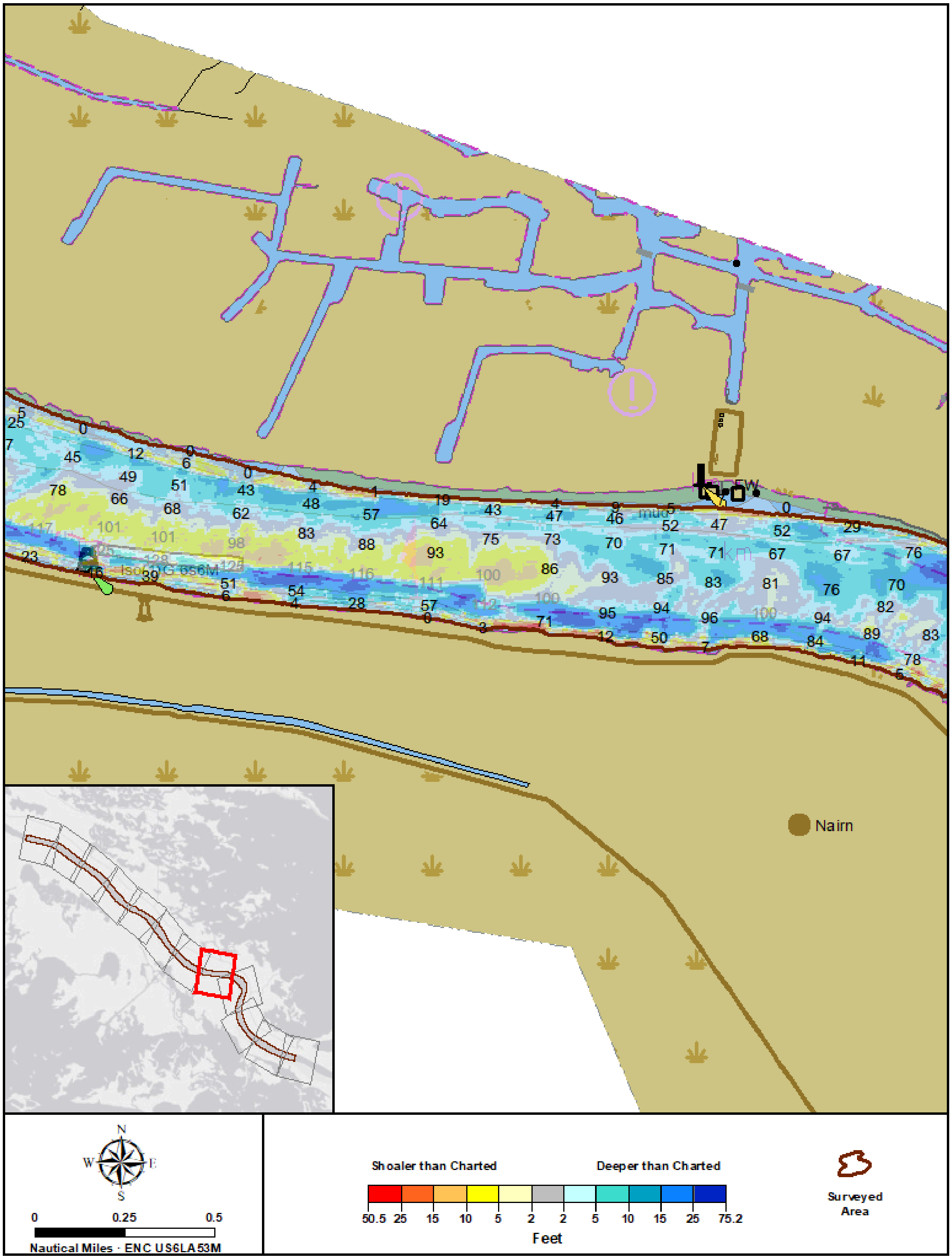


Figure 26: Depth difference between H13195 and chart US6LA53M, area 8 of 12

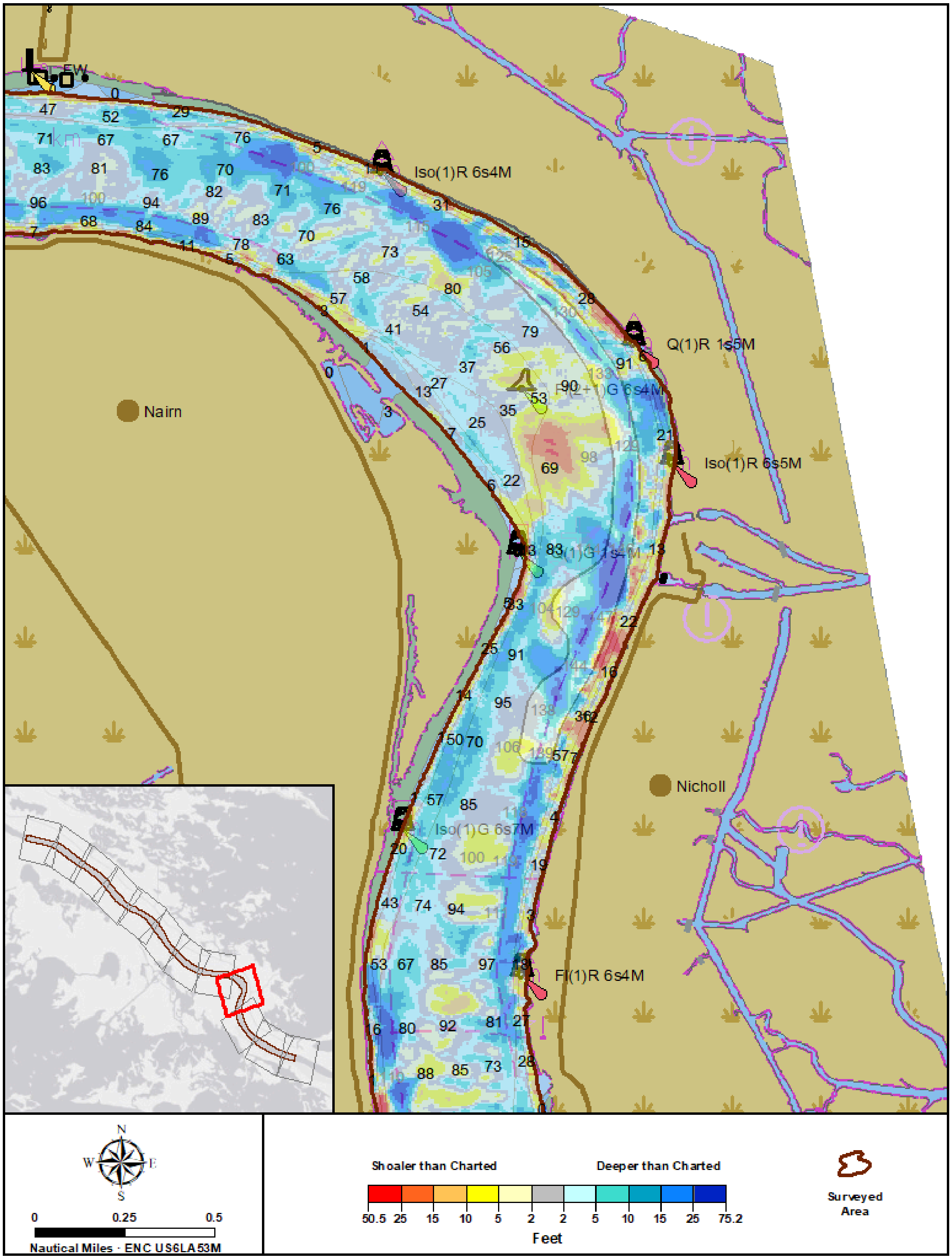


Figure 27: Depth difference between H13195 and chart US6LA53M, area 9 of 12

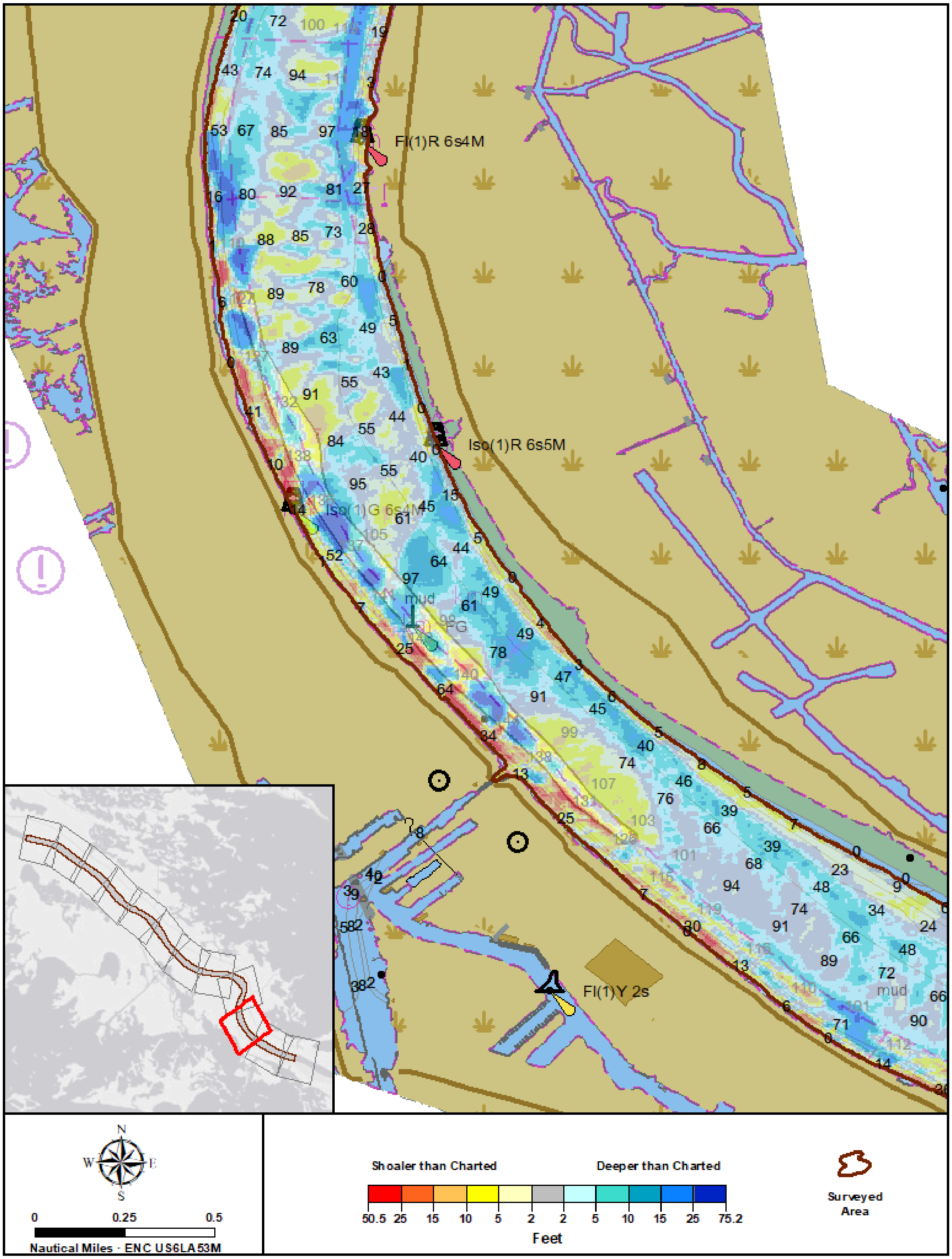


Figure 28: Depth difference between H13195 and chart US6LA53M, area 10 of 12

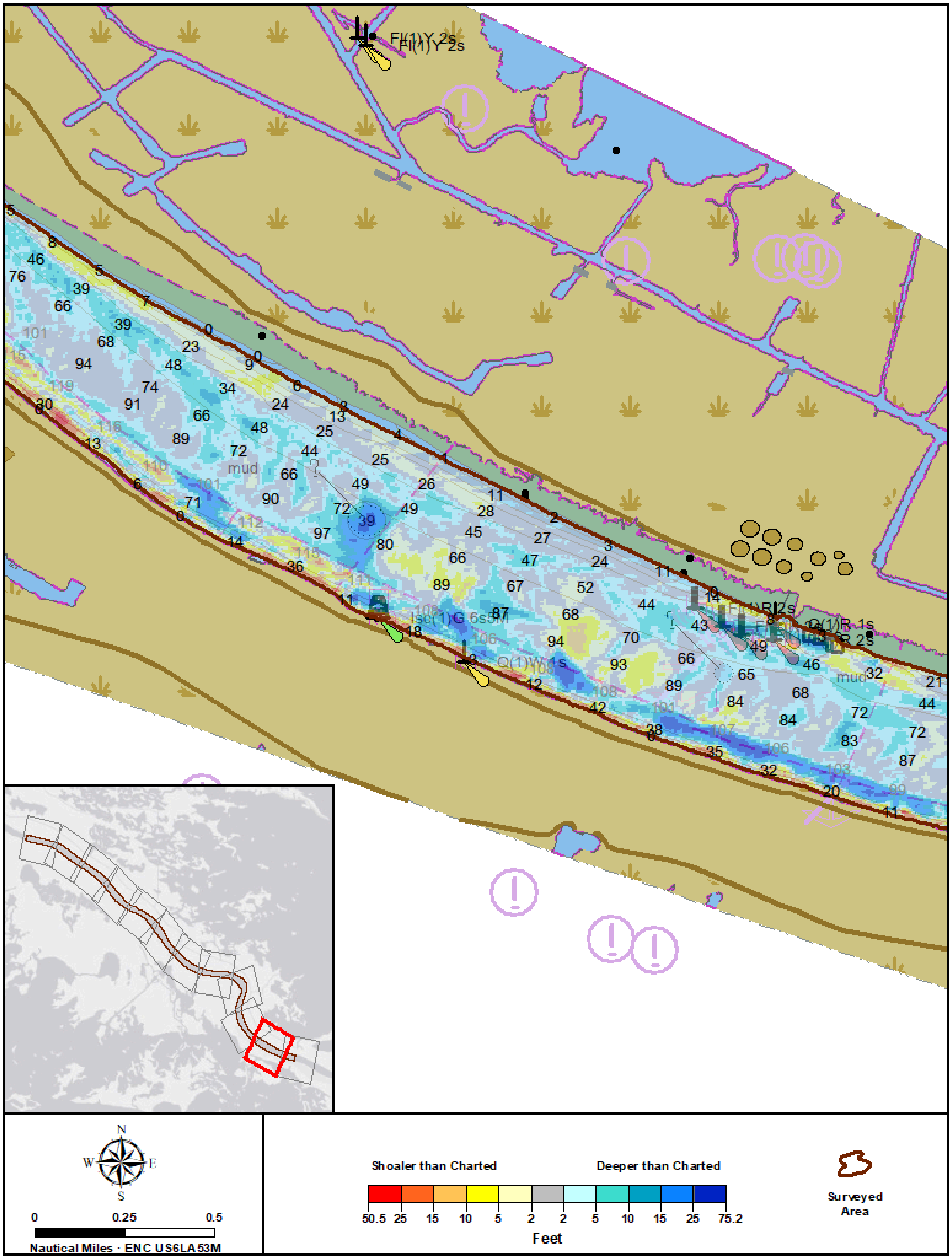


Figure 29: Depth difference between H13195 and chart US6LA53M, area 11 of 12

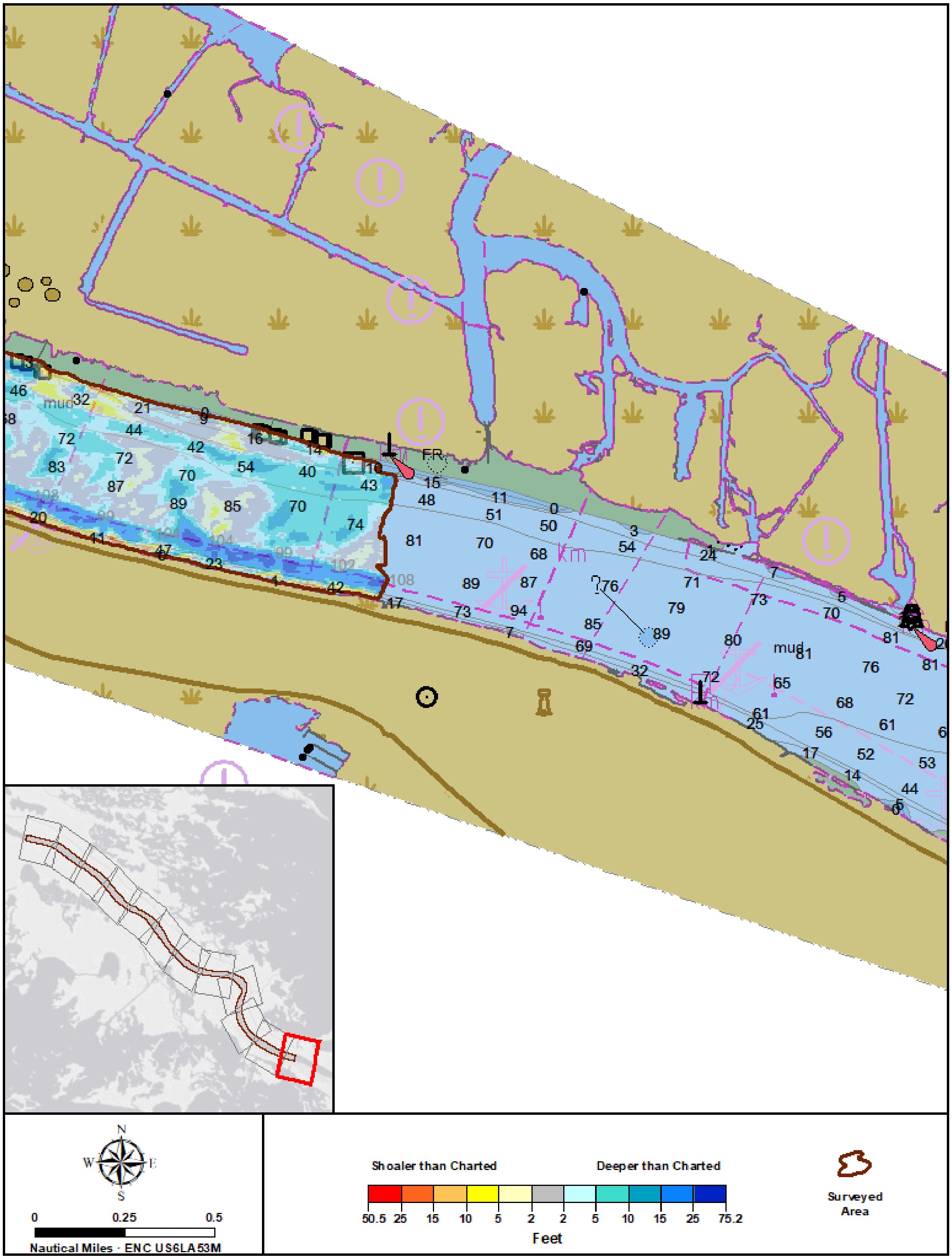


Figure 30: Depth difference between H13195 and chart US6LA53M, area 12 of 12

D.1.2 Maritime Boundary Points

No Maritime Boundary Points were assigned for this survey.

D.1.3 Charted Features

Numerous charted features exist within the limits of sheet H13195. The FFF submitted with these data contains all information and recommendations acquired during acquisition. Refer to the FFF for additional information.

D.1.4 Uncharted Features

All uncharted features discovered during survey acquisition are addressed in the FFF. Refer to the FFF for additional information.

D.1.5 Shoal and Hazardous Features

No DtoNs were submitted for this survey. Potential DtoNs are included as new features in the FFF. Because of the significant change that occurred within the project area since the last survey of the Mississippi River, HSD staff advised DEA to limit reporting of Dangers to Navigation to immediate hazards that could cause loss of life or impact waterborne commerce.

D.1.6 Channels

No charted channels exist within the limits of H13195.

The following anchorages are charted within the H13195 survey limits: Magnolia Anchorage, Port Sulphur Anchorage, Point Celeste Anchorage, Davant Anchorage, and Point Michel Anchorage. MBES data acquired within these anchorages were carefully reviewed for features that could pose a risk to anchoring or navigation. New uncharted features were discovered the Port Sulphur, Port Michel and Magnolia anchorages. All surveyed features within designated anchorages are included in the FFF.

D.1.7 Bottom Samples

No bottom samples were required for this survey.

D.2 Additional Results

D.2.1 Shoreline

Shoreline investigations were completed using lidar survey techniques. Refer to the DAPR for additional information regarding the acquisition and processing of these data. All new and assigned features have been included in the sheet's FFF with appropriate comments and recommendations.

D.2.2 Aids to Navigation

Aids to Navigation (AtoNs) were investigated using mobile lidar and visual observations. AtoNs that were missing, damaged, or not serving their intended purpose were reported to the USCG via email on June 26, 2019. Due to the large number of AtoNs requiring reporting, email was used for reporting instead of using the USCG Navigation Center's Online ATON Discrepancy Report as specified in the HSSD. This method was approved by the HSD Project Manager for this hydrographic survey. A copy of the email submittal is included in Appendix II. AtoNs have been included in the sheet's FFF with appropriate comments and recommendations.

D.2.3 Overhead Features

No overhead features exist for this survey.

D.2.4 Submarine Features

All submarine features were investigated entirely using object detection MBES coverage.

The OPR-J347-HR-18 Project Instructions required that all revetments within the survey area be investigated and delineated in the FFF if detected in the MBES data. The geometry of charted revetment polygons within the survey area, which were included in the project reference file (PRF) as CRANES area features, have been copied to the FFF as RESARE area features which is the feature type used to depict revetment areas on the ENCs. In most areas, revetments or sections of revetments are visible in the MBES data and surfaces. In areas where the charted revetments are not visible, the hydrographer is unable to determine if the revetment mats are not visible because they are no longer present, or if they have been buried by sediment. In all cases, the revetments provided in the PRF have been included in the FFF with a description of 'Retain'.

Revetment mats visible in the MBES data and extending beyond the limits of the PRF revetment polygons have been included in the FFF as obstruction areas features. The VALSOU of each area obstruction has been populated with the minimum gridded depth within the obstruction area polygon. The HSD Project Manager and AHB personnel provided input on portrayal of revetments in the FFF. Correspondence related to this guidance is included in Appendix II.

Two pipeline reports were submitted to the Bureau of Safety and Environmental Enforcement (BSEE) reporting sections of exposed or unburied pipeline visible in the MBES data. These reports, which were submitted on April 8, 2019 and August 21, 2019, are included in Appendix II. The reports included the positions of the start and end points of sections of what appear to be exposed pipelines based on interpretation of multibeam data. It is possible that some of the reported items include submerged outfalls and other linear features with a signature of a pipeline that are not associated with oil and gas infrastructure. Due to the inability to accurately depict the location and orientation of all exposed pipelines with a single line segment, these features have been included in the FFF should further action be required after survey submittal. It is not the hydrographer's intention that these pipeline features be used as source information for charting without further validation of origin.

D.2.5 Platforms

No platforms exist for this survey.

D.2.6 Ferry Routes and Terminals

One ferry route exists within the limits of H13195. The ferry and terminals were visually verified during survey operations. The terminal on the east bank is approximately 50 meters north of a charted FERYRT feature. This feature has not been included in the FFF as specified in the feature's Composite Source File (CSF) investigation requirements.

D.2.7 Abnormal Seafloor and/or Environmental Conditions

Evidence of large and quickly moving sediment waves were visible in the MBES data during acquisition. Refer to section B.2.6 of this report for additional information.

D.2.8 Construction and Dredging

No construction or dredging were observed within the survey limits during survey operations.

D.2.9 New Survey Recommendation

The hydrographer recommends that this area be resurveyed regularly due to the significant change in depths from sediment migration observed over the project timeline.

D.2.10 Inset Recommendation

No new insets are recommended for this area.

E. Approval Sheet

As Chief of Party, field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Descriptive Report, and all accompanying records and data are approved, with the exception of the deficiencies outlined in this report. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys Specifications and Deliverables, Field Procedures Manual, and Letter Instructions. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required.

Report Name	Report Date Sent
Data Acquisition and Processing Report	2019-09-19
Coast Pilot Report	2019-07-11

Approver Name	Approver Title	Approval Date	Signature
Jonathan L. Dasler, PE, PLS, CH	NSPS/THSOA Certified Hydrographer, Chief of Party	10/10/2019	Digitally signed by Jon L. Dasler DN: cn=Jon L. Dasler, o=David Evans and Associates, Inc., ou, email=jld@deainc.com, c=US Date: 2019.10.10 13:55:42 -07'00'
Jason Creech, CH	NSPS/THSOA Certified Hydrographer, Charting Manager / Project Manager	10/10/2019	Digitally signed by Jason Creech DN: cn=Jason Creech, o=David Evans and Associates, Inc., ou, email=jasc@deainc.com, c=US Date: 2019.10.10 13:57:52 -07'00'
Callan McGriff, EIT	IHO Cat-A Hydrographer, Lead Hydrographer	10/10/2019	Digitally signed by Callan McGriff DN: cn=Callan McGriff, o=David Evans and Associates, Inc., ou, email=cemc@deainc.com, c=US Date: 2019.10.10 13:58:49 -07'00'
David T. Moehl, PLS, CH	NSPS/THSOA Certified Hydrographer, Lead Hydrographer	10/10/2019	Digitally signed by Dave Moehl DN: cn=Dave Moehl, o=David Evans and Associates, Inc., ou=Marine Services Division, email=dtm@deainc.com, c=US Date: 2019.10.10 14:00:27 -07'00'

F. Table of Acronyms

Acronym	Definition
AHB	Atlantic Hydrographic Branch
AST	Assistant Survey Technician
ATON	Aid to Navigation
AWOIS	Automated Wreck and Obstruction Information System
BAG	Bathymetric Attributed Grid
BASE	Bathymetry Associated with Statistical Error
CO	Commanding Officer
CO-OPS	Center for Operational Products and Services
CORS	Continuously Operating Reference Station
CTD	Conductivity Temperature Depth
CEF	Chart Evaluation File
CSF	Composite Source File
CST	Chief Survey Technician
CUBE	Combined Uncertainty and Bathymetry Estimator
DAPR	Data Acquisition and Processing Report
DGPS	Differential Global Positioning System
DP	Detached Position
DR	Descriptive Report
DTON	Danger to Navigation
ENC	Electronic Navigational Chart
ERS	Ellipsoidal Referenced Survey
ERTDM	Ellipsoidally Referenced Tidal Datum Model
ERZT	Ellipsoidally Referenced Zoned Tides
FFF	Final Feature File
FOO	Field Operations Officer
FPM	Field Procedures Manual
GAMS	GPS Azimuth Measurement Subsystem
GC	Geographic Cell
GPS	Global Positioning System
HIPS	Hydrographic Information Processing System
HSD	Hydrographic Surveys Division

Acronym	Definition
HSSD	Hydrographic Survey Specifications and Deliverables
HSTB	Hydrographic Systems Technology Branch
HSX	Hypack Hysweep File Format
HTD	Hydrographic Surveys Technical Directive
HVCR	Horizontal and Vertical Control Report
HVF	HIPS Vessel File
IHO	International Hydrographic Organization
IMU	Inertial Motion Unit
ITRF	International Terrestrial Reference Frame
LNM	Linear Nautical Miles
MBAB	Multibeam Echosounder Acoustic Backscatter
MCD	Marine Chart Division
MHW	Mean High Water
MLLW	Mean Lower Low Water
NAD 83	North American Datum of 1983
NALL	Navigable Area Limit Line
NTM	Notice to Mariners
NMEA	National Marine Electronics Association
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NRT	Navigation Response Team
NSD	Navigation Services Division
OCS	Office of Coast Survey
OMAO	Office of Marine and Aviation Operations (NOAA)
OPS	Operations Branch
MBES	Multibeam Echosounder
NWLON	National Water Level Observation Network
PDBS	Phase Differencing Bathymetric Sonar
PHB	Pacific Hydrographic Branch
POS/MV	Position and Orientation System for Marine Vessels
PPK	Post Processed Kinematic
PPP	Precise Point Positioning
PPS	Pulse per second

Acronym	Definition
PRF	Project Reference File
PS	Physical Scientist
RNC	Raster Navigational Chart
RTK	Real Time Kinematic
RTX	Real Time Extended
SBES	Singlebeam Echosounder
SBET	Smooth Best Estimate and Trajectory
SNM	Square Nautical Miles
SSS	Side Scan Sonar
SSSAB	Side Scan Sonar Acoustic Backscatter
ST	Survey Technician
SVP	Sound Velocity Profiler
TCARI	Tidal Constituent And Residual Interpolation
TPU	Total Propagated Uncertainty
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
UTM	Universal Transverse Mercator
XO	Executive Officer
ZDF	Zone Definition File

Jason Creech

From:	Jason Creech
Sent:	Wednesday, June 26, 2019 1:44 PM
To:	Ussery, James C CIV; Boriskie, Timothy B CIV; Duane, Jesse L BMCS; Shaffer, Jeremy BMC; D08-DG-District-MarineInfo
Cc:	Authement, Adam F BOSN3; Martha Herzog (martha.herzog@noaa.gov)
Subject:	RE: Aton discrepancy reporting questions from contracted hydro surveyor for NOAA.
Attachments:	H13195_USCG_AtoNs_RM_54_to_26.xlsx

Hello Jim

I have attached an excel spreadsheet listing the ATON discrepancies observed during our hydrographic survey of the Mississippi River. This report is for Mile 54 AHOP to Mile 26 AHOP. I've copied Martha Herzog, the NOAA Office of Coast Survey Project Manager for these surveys.

We've included new and missing ATONs as well any ATON found to be more than 2 meters out of position. All positions (Lat/Long in the spreadsheet) are NAD83(2011) and were extracted from our vessel mounted mobile mapping system (MMS) which relied on real-time kinematic GPS. These surveys are part of NOAA's Precision Navigation initiative for the Mississippi River and will be used to generate new high resolution charts of the river.

Let me know if you have any questions or feedback on this report.

Thanks,
Jason

Jason Creech, CH | Vice President, Nautical Charting Program Manager David Evans and Associates, Inc.
2801 SE Columbia Way, Suite 130 | Vancouver, WA, 98661 | www.deainc.com
804.516.7829 | jasc@deainc.com
ENERGY | LAND DEVELOPMENT | MARINE SERVICES | SURVEYING AND GEOMATICS | TRANSPORTATION | WATER AND ENVIRONMENT

-----Original Message-----
From: Ussery, James C CIV <James.C.Ussery@uscg.mil>
Sent: Friday, June 21, 2019 2:57 PM
To: Jason Creech <Jasc@deainc.com>; Boriskie, Timothy B CIV <Timothy.B.Boriskie@uscg.mil>; Duane, Jesse L BMCS <Jesse.L.Duane@uscg.mil>; Shaffer, Jeremy BMC <Jeremy.S.Shaffer@uscg.mil>; D08-DG-District-MarineInfo <D08-DG-District-MarineInfo@uscg.mil>
Cc: Authement, Adam F BOSN3 <Adam.F.Authement@uscg.mil>; Martha Herzog (martha.herzog@noaa.gov) <martha.herzog@noaa.gov>
Subject: RE: Aton discrepancy reporting questions from contracted hydro surveyor for NOAA.

Good Afternoon Jason,

Not sure that we have the capability of reviewing a GIS file here in the office. I do have Google Earth installed on my workstation and not sure if I can import a GIS file or not. We have the typical Microsoft Office Suite (Word, Excel, etc...), we also have Adobe PDF. I am ok with an Excel Spreadsheet with LLNR, Name, Discrepancy with the date of discovery. I will also look at the GIS file and attempt to import and see if that is a viable option as well.

Jim

-----Original Message-----
From: Jason Creech <Jasc@deainc.com>
Sent: Friday, June 21, 2019 11:41 AM
To: Boriskie, Timothy B CIV <Timothy.B.Boriskie@uscg.mil>; Duane, Jesse L BMCS <Jesse.L.Duane@uscg.mil>; Ussery, James C CIV <James.C.Ussery@uscg.mil>
Cc: Bear, David M CIV <David.M.Bear@uscg.mil>; Authement, Adam F BOSN3 <Adam.F.Authement@uscg.mil>; Martha Herzog (martha.herzog@noaa.gov) <martha.herzog@noaa.gov>
Subject: [Non-DoD Source] RE: Aton discrepancy reporting questions from contracted hydro surveyor for NOAA.

Hi All

I'm following up on the best way to report ATON discrepancies for our NOAA Mississippi River surveys. We have compiled a list of new, out of position, and missing ATONs from Mile 54 AHOP to Mile 26 AHOP. This data currently resides in a GIS file with a linked photo for most features.

What is your preferred format for delivery of this information, which includes the position of the ATONs as surveyed. This will be the first of ten ATON discrepancy reports we plan to submit within the next month.

The other reports will be for the following areas.

Mile 26 AHOP to Mile 0 AHOP
Mile 0 AHOP to Mile 22 BHOP
Mile 233 AHOP to Mile 205 AHOP
Mile 205 AHOP to Mile 180 AHOP
Mile 180 AHOP to Mile 157 AHOP
Mile 157 AHOP to Mile 130 AHOP
Mile 130 AHOP to Mile 104 AHOP
Mile 104 AHOP to Mile 78 AHOP
Mile 78 AHOP to Mile 54 AHOP
Mile 54 AHOP to Mile 26 AHOP

Let me know on the preferred format for this information and we will send the first report for your review.

Thank you,
Jason

Jason Creech, CH | Vice President, Nautical Charting Program Manager David Evans and Associates, Inc.
2801 SE Columbia Way, Suite 130 | Vancouver, WA,
98661 | https://nam05.safelinks.protection.outlook.com/?url=www.deainc.com&data=02%7C01%7CJasc%40deainc.com%7C41fdd1bc4a14465b0de408d6f67a4543%7C75fc6250a5034863ab0060c7035d49b2%7C0%7C0%7C636967402357525419&sdata=6QVbxNDnIZgFD26FKaYsOouX6wv5iwgc4%2FoQNxnLb8Q%3D&reserved=0
804.516.7829 | jasc@deainc.com
ENERGY | LAND DEVELOPMENT | MARINE SERVICES | SURVEYING AND GEOMATICS | TRANSPORTATION | WATER AND ENVIRONMENT

-----Original Message-----
From: Boriskie, Timothy B CIV <Timothy.B.Boriskie@uscg.mil>
Sent: Wednesday, December 19, 2018 2:57 PM
To: Duane, Jesse L BMC <Jesse.L.Duane@uscg.mil>; Ussery, James C CIV <James.C.Ussery@uscg.mil>
Cc: Bear, David M CIV <David.M.Bear@uscg.mil>; Authement, Adam F BOSN3 <Adam.F.Authement@uscg.mil>; Jason Creech <Jasc@deainc.com>
Subject: RE: Aton discrepancy reporting questions from contracted hydro surveyor for NOAA.

Hey Duane,

As far as PATON are concerned, whatever PATON discrepancies NOAA discovered while on their survey they should report directly to our office so that we may resolve with the owner.

They may send all PATON info directly to: D8oanPATON@uscg.mil

We'll work to resolve the PATON discrepancies.

Thank you.

Tim

v/r
Tim Boriskie
D8 Program Manager
for Private Aids to Navigation
=====================================
Eighth District Artificial Reef and
Offshore Wind Energy Structure Coordinator

=====================================
Mailing address:
Eighth Coast Guard District (dpw)
Private Aids to Navigation Section
500 Poydras St., Suite 1230
New Orleans, LA 70130
=====================================
Direct: (504) 671-2124
Office: (504) 671-2328 or 2330
Fax: (504) 671-2137
Private Aids Inquiries Email to: D8oanPATON@uscg.mil
CGD8 District Website:
https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.atlanticarea.uscg.mil%2Fdistrict-8%2Fdistrict-divisions%2Fwaterways%2FPATON&data=02%7C01%7CJasc%40deainc.com%7C41fdd1bc4a14465b0de408d6f67a4543%7C75fc6250a5034863ab0060c7035d49b2%7C0%7C0%7C636967402357525419&sdata=K5RA%2Bx4puFzg4nc39%2Fkj4tbVONvsrBhvgTLpgoFRVps%3D&reserved=0=

"Good judgment comes from experience, and a lot of that comes from bad judgment. " - Will Rogers

-----Original Message-----
From: Duane, Jesse L BMC
Sent: Wednesday, December 19, 2018 1:51 PM
To: Ussery, James C CIV <James.C.Ussery@uscg.mil>
Cc: Bear, David M CIV <David.M.Bear@uscg.mil>; Authement, Adam F BOSN3 <Adam.F.Authement@uscg.mil>; jasc@deainc.com; Boriskie, Timothy B CIV <Timothy.B.Boriskie@uscg.mil>
Subject: Aton discrepancy reporting questions from contracted hydro surveyor for NOAA.

Jim,

I'm thinking you will best be able to at least help find answers to some questions here...

I took a call from Mr. Jason Creech of David Evans and Associates (804) 516-7829 CC'ed in this email. Jason is surveying the Mississippi River from Baton Rouge through head of passes. He was contracted through NOAA for hydrographic surveys to update/check accuracy of the next edition of charts. The survey vessel is equipped with real time kinetic GPS with 7 centimeter accuracy. Additionally the vessel has capability to scan the river banks and survey via laser. In doing so, Jason found both private and federal ATON positions that do not match what is listed in the light list. NOAA told him to report all discrepant ATON via the link on the NAVCEN website. Jason is inquiring if this is the best practice for reporting such findings.

In discussion with Jason, I thought that we should review this data before designating structures as discrepant with positions that do not match what is advertised in the light list. Aids that are extinguished, damaged, destroyed, etc. would still be reported via the NAVCEN link as discrepant. Most of these aids were built far before any of our time and likely the positioning system at that time was far less accurate than today's technology. The aids are likely still serving the mariner as they should, but the accuracy of the advertised position in the light list may be off a little. The question for NAV-1 becomes...are we able to use this survey data to update the Light List? This would also apply to the PATON on many facilities along the river.

And finally, how would we like to receive all this data? I'd assume Jason would be able to email over files from the surveys that include positions of all federal and private ATON.

VR,

BMC Jesse Duane
Officer in Charge
USCG Aids to Navigation Team New Orleans
1790 Saturn Blvd
New Orleans, LA 70129
Office (504) 253-4831
Cell (504) 756-8007

H13195_USCG_AtoNs_RM_54_to_26.xlsx

Remarks1	Remarks2	Object name	Latitude	Longitude	Survey Date
LLNR 13200. New surveyed position using MMS data.	Beacon has been located approximately 15m west of charted location.	CAL-KY Empire Tanker Dock Light	29-22-16.365N	089-33-12.255W	8/10/2018
LLNR 13200. New surveyed position using MMS data.	Beacon has been located approximately 35m east of charted location.	CAL-KY Empire Tanker Dock Lights	29-22-21.505N	089-33-23.565W	8/10/2018
LLNR 13200. New surveyed position using MMS data.	Beacon has been located approximately 4m south southwest of charted location.	CAL-KY Empire Tanker Dock Light	29-22-18.582N	089-33-20.300W	8/10/2018
LLNR 13215. Charted beacon not observed visually or in MMS data.		Empire Water Intake Lights	29-23-46.059N	089-36-00.500W	8/10/2018
LLNR 13220. New surveyed position using MMS data.	Beacon has been located approximately 11m northeast of charted location.	Tropical Bend Lower Light 29	29-24-05.928N	089-36-20.328W	8/10/2018
LLNR 13225. New surveyed position using MMS data.	Beacon has been located approximately 8m northwest of charted location.	Point Pleasant Lower Light 30	29-24-16.726N	089-35-56.675W	8/10/2018
LLNR 13230. New surveyed position using MMS data.	Beacon has been located approximately 11m southeast of charted location.	Point Pleasant Upper Light 30A	29-25-07.030N	089-36-08.581W	8/10/2018
LLNR 13250. New surveyed position using MMS data.	Buoy has been located approximately 56m south southeast of charted location.	Sixty Mile Point Lighted Buoy A	29-26-43.480N	089-36-08.384W	8/10/2018
LLNR 13255. New surveyed position using MMS data.	Beacon has been located approximately 7m northeast of charted location.	Bayou Lamoque Light 32A	29-26-53.002N	089-35-50.004W	8/10/2018
LLNR 13260. New surveyed position using MMS data.	Beacon has been located approximately 8m northeast of charted location.	Harris Bayou Light 34	29-27-21.804N	089-36-32.177W	8/10/2018
LLNR 13265. Charted beacon not observed visually or in MMS data.		Bass Loading Dock Lights	29-27-38.701N	089-37-31.141W	8/10/2018
LLNR 13270. New surveyed position using MMS data.	Beacon has been located approximately 12m southeast of charted location.	Home Place Light 37	29-27-24.063N	089-39-13.549W	8/10/2018
LLNR 13275. New surveyed position using MMS data. Co-located with LLNR 13280.	Beacon has been located approximately 7m southeast of charted location.	Home Place East Light 38	29-27-59.032N	089-39-42.256W	8/10/2018
LLNR 13280. New surveyed position using MMS data. Co-located with LLNR 13275.	Beacon has been located approximately 7m southeast of charted location.	Port Sulphur Anchorage Lower Daybeacon 37.5	29-27-59.033N	089-39-42.256W	8/10/2018
LLNR 13285. New surveyed position using MMS data.	Beacon has been located approximately 11m southwest of charted location.	Freeport Mc Moran Energy Dock Lower Light	29-28-21.725N	089-41-02.226W	8/10/2018
LLNR 13290. New surveyed position using MMS data.	Beacon has been located approximately 15m southeast of charted location.	Freeport Mc Moran Energy Dock Upper Light	29-28-24.534N	089-41-05.817W	8/10/2018
LLNR 13295. New surveyed position using MMS data. Co-located with LLNR 13300.	Beacon has been located approximately 14m southeast of charted location.	Nester Canal Light 40	29-29-10.312N	089-41-18.454W	8/10/2018
LLNR 13300. New surveyed position using MMS data. Co-located with LLNR 13295.	Beacon has been located approximately 7m south of charted location.	Port Sulphur Anchorage Upper Daybeacon 39.7	29-29-10.312N	089-41-18.454W	8/10/2018
LLNR 13305. New surveyed position using MMS data.	Beacon has been located approximately 13m southwest of charted location.	Huling Light 42	29-31-13.522N	089-43-02.653W	8/10/2018
LLNR 13310. New surveyed position using MMS data.	Beacon has been located approximately 4m northwest of charted location.	Point Michele Light 43	29-31-16.200N	089-43-45.335W	8/10/2018
LLNR 13312. New surveyed position using MMS data.	Beacon has been located approximately 550m southeast of charted location.	Socola Light 45	29-31-51.454N	089-45-05.396W	8/10/2018
LLNR 13320. New surveyed position using MMS data. Radar conspicuous (has radar reflector) is missing.	Beacon has been located approximately 15m southeast of charted location.	Magnolia Anchorage Lower Daybeacon 45.5	29-32-14.377N	089-45-43.030W	8/10/2018
LLNR 13325. New surveyed position using MMS data.	Beacon has been located approximately 5m northwest of charted location.	Magnolia Anchorage Upper Daybeacon 47.6	29-33-41.063N	089-47-09.121W	8/10/2018
LLNR 13330. Charted beacon not observed visually or in MMS data.		Sulphur Loading Dock Lights	29-34-21.780N	089-48-03.289W	8/10/2018
LLNR 13335. Charted beacon not observed visually or in MMS data.		Rock Island Dock Light	29-34-28.121N	089-48-14.560W	8/10/2018
LLNR 13335. Charted beacon not observed visually or in MMS data.		Rock Island Dock Lights	29-34-29.258N	089-48-16.993W	8/10/2018
LLNR 13345. New surveyed position using MMS data.	Beacon has been located approximately 3m west of charted location.	Celeste Anchorage Upper Daybeacon 52.0	29-35-51.906N	089-50-37.381W	8/10/2018
LLNR 13355. New surveyed position using MMS data.	Beacon has been located approximately 14m southeast of charted location.	Point Celeste Light 53	29-36-03.692N	089-51-16.534W	8/10/2018
LLNR 13365. New surveyed position using MMS data. Diamond-shaped yellow dayboard (DAYMAR) with yellow reflective border missing.	Beacon has been located approximately 14m east of charted location.	Davant Anchorage Upper Daybeacon 53.9	29-36-36.709N	089-52-09.243W	8/10/2018
Uncharted, lighted beacon surveyed using MMS data. Unable to determined light attribution during day ops.			29-34-12.612N	089-47-50.443W	8/10/2018
Uncharted, lighted beacon surveyed using MMS data. Unable to determined light attribution during day ops.			29-34-10.242N	089-47-48.102W	8/10/2018
Uncharted, lighted beacon surveyed using MMS data. Unable to determined light attribution during day ops.			29-34-32.241N	089-47-37.431W	8/10/2018
Uncharted, lighted beacon surveyed using MMS data. Unable to determined light attribution during day ops.			29-34-48.994N	089-48-05.173W	8/10/2018
Uncharted, lighted beacon surveyed using MMS data. Unable to determined light attribution during day ops.			29-34-48.292N	089-48-03.898W	8/10/2018
Uncharted, lighted beacon surveyed using MMS data. Unable to determined light attribution during day ops.			29-34-47.422N	089-48-02.546W	8/10/2018
Uncharted, lighted beacon surveyed using MMS data. Unable to determined light attribution during day ops.			29-27-37.120N	089-37-24.953W	8/10/2018
Uncharted, lighted beacon surveyed using MMS data. Unable to determined light attribution during day ops.			29-27-37.405N	089-37-27.531W	8/10/2018
Uncharted, lighted beacon surveyed using MMS data. Unable to determined light attribution during day ops.			29-27-37.377N	089-37-27.939W	8/10/2018
Uncharted, lighted beacon surveyed using MMS data. Unable to determined light attribution during day ops.			29-22-15.465N	089-33-00.818W	8/10/2018
Uncharted, lighted beacon surveyed using MMS data. Unable to determined light attribution during day ops.			29-22-17.449N	089-33-05.426W	8/10/2018

Jason Creech

From:	Jason Creech
Sent:	Monday, April 8, 2019 2:29 PM
To:	'pipelines@bsee.gov'
Cc:	Martha Herzog (martha.herzog@noaa.gov); Tim Osborn (Tim.Osborn@noaa.gov); Jon Dasler (Jld@deainc.com)
Subject:	Mississippi River Unburied Pipelines H13195 01
Attachments:	H13195_Pipelines_01_2D_A_elevations.png; H13195_Pipelines_01_2D_B_elevations.png; H13195_Pipelines_01_2D_C_elevations.png; H13195_Pipelines_01_3D.PNG; H13195 _Pipelines_01_3D_dimensions.png; H13195_Pipelines_01_Aerial.PNG; H13195_Pipelines_ 01_Chart_11364_1.PNG; H13195_Pipelines_01_ENC_US6LA53M.PNG; H13195_Pipelines_ 01_NAD83_Z16N_PIPSOL_Arc.dbf; H13195_Pipelines_01_NAD83_Z16N_PIPSOL_Arc.prj; H13195_Pipelines_01_NAD83_Z16N_PIPSOL_Arc.shp; H13195_Pipelines_01_NAD83 _Z16N_PIPSOL_Arc.shp_rxl; H13195_Pipelines_01_NAD83_Z16N_PIPSOL_Arc.shx; H13195 _Pipelines_01_NAD83_Z16N_PIPSOL_Arc.xml

Good Afternoon

David Evans and Associates, Inc. is currently performing hydrographic surveys of the Mississippi River between Baton Rouge and Southwest Pass under contract to NOAA Office of Coast Survey. We have recently come across three unburied pipelines on the Mississippi River near Pointe a la Hache (AHOP 49.3). A requirement of these surveys is to report unburied pipelines to you at this email address.

The unburied pipelines are located within a charted Pipeline Area and in the vicinity of a charted Obstruction reported in 2006 with a depth of 47 feet. The National Pipeline Mapping System (NPMS) Public Viewer displays pipelines 293-4 and 293-8 in this area. I have attached several images showing the location of the pipelines as well as images from our sonar data showing 2D and 3D views of the unburied pipelines spanning the river bottom. I have also attached a shapefile (NAD_1983_UTM_Zone_16N) depicting the unburied sections of pipeline. The pipelines and objects proud of the riverbed are all deeper than the reported 47-foot obstruction.

Please let me know if you have any questions or require additional information. Martha Herzog, the NOAA Project Manager for these surveys, and Tim Osborn, the NOAA Central Gulf Coast Regional Navigation Manager have been copied on this email.

Thank you,

Jason

Jason Creech, CH | Vice President, Nautical Charting Program Manager
David Evans and Associates, Inc.
2801 SE Columbia Way, Suite 130 | Vancouver, WA, 98661 | www.deainc.com
804.516.7829 | jasc@deainc.com

Jason Creech

From: Tim Osborn - NOAA Federal <tim.osborn@noaa.gov>
Sent: Monday, April 8, 2019 2:51 PM
To: Jason Creech
Cc: pipelines@bsee.gov; Martha Herzog (martha.herzog@noaa.gov); Jon Dasler
Subject: Re: Mississippi River Unburied Pipelines H13195 01

Thank you for this reporting- of a very dangerous set of features spanning such a heavily transited area/channel-accessing the largest port complex in the world.

On Mon, Apr 8, 2019 at 1:31 PM Jason Creech <Jasc@deainc.com> wrote:

> Good Afternoon
>
> David Evans and Associates, Inc. is currently performing hydrographic surveys of the Mississippi River between Baton Rouge and Southwest Pass under contract to NOAA Office of Coast Survey. We have recently come across three unburied pipelines on the Mississippi River near Pointe a la Hache (AHOP 49.3). A requirement of these surveys is to report unburied pipelines to you at this email address.
>
> The unburied pipelines are located within a charted Pipeline Area and in the vicinity of a charted Obstruction reported in 2006 with a depth of 47 feet. The National Pipeline Mapping System (NPMS) Public Viewer displays pipelines 293-4 and 293-8 in this area. I have attached several images showing the location of the pipelines as well as images from our sonar data showing 2D and 3D views of the unburied pipelines spanning the river bottom. I have also attached a shapefile (NAD_1983_UTM_Zone_16N) depicting the unburied sections of pipeline. The pipelines and objects proud of the riverbed are all deeper than the reported 47-foot obstruction.
>
> Please let me know if you have any questions or require additional information. Martha Herzog, the NOAA Project Manager for these surveys, and Tim Osborn, the NOAA Central Gulf Coast Regional Navigation Manager have been copied on this email.
>
> Thank you,
>
> Jason

Jason Creech, CH | Vice President, Nautical Charting Program Manager

David Evans and Associates, Inc.

2801 SE Columbia Way, Suite 130 | Vancouver, WA, 98661 | www.deainc.com

804.516.7829 | jasc@deainc.com

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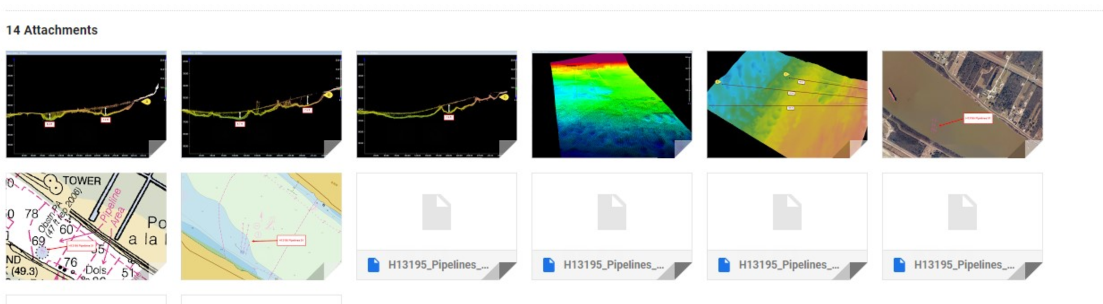


Jason Creech

From: Tim Osborn - NOAA Federal <tim.osborn@noaa.gov>
Sent: Wednesday, April 10, 2019 12:18 PM
To: Ed Langraf
Cc: Castle Parker; Rick Brennan; Sean Duffy 1; martha.herzog@noaa.gov; Lance Roddy - NOAA Federal; Tara Wallace - NOAA Federal; Lucy Hick - NOAA Federal; E Michael Bopp; Adam Davis - NOAA Federal; Captain Mike Miller SW Pass Bar Pilots; Michelle MVN Kornick; Michael.D.Sullivan@usace.army.mil; Andrew Oakman USACE NOD
Subject: Re: Marine Pipeline reg.- relating to three exposed pipelines, Lower Mississippi River

Ed

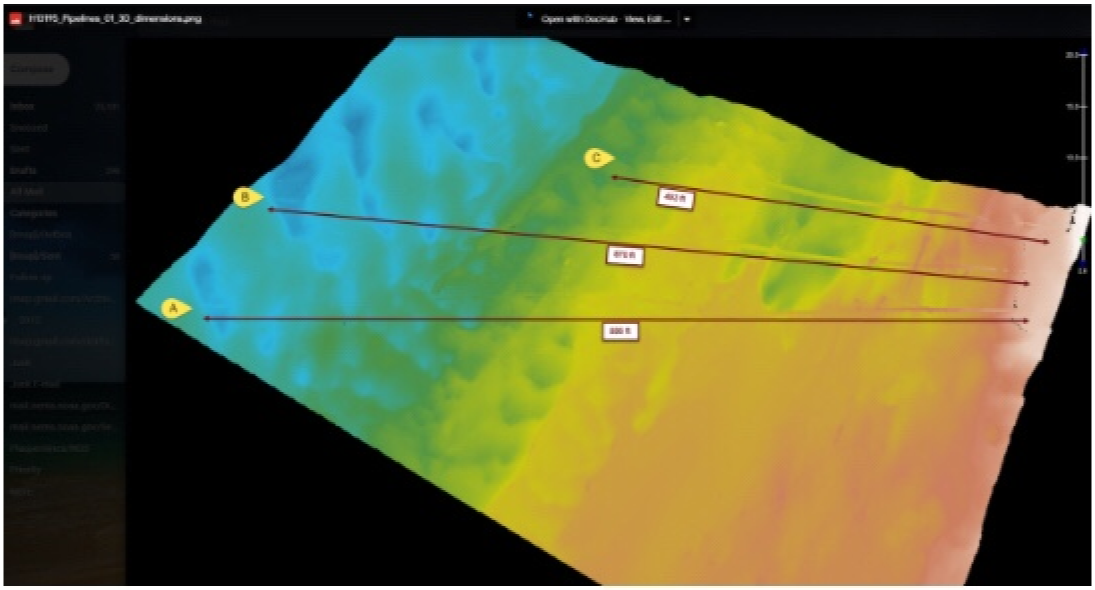
Thank you.

v/r

On Apr 10, 2019, at 11:03 AM, Ed Langraf <elgrafllc@gmail.com> wrote:

Tim – reg below. C.   lets chat soon for recap.

prev | next
49 CFR § 195.413 Underwater inspection and reburial of pipelines in the Gulf of Mexico and its inlets.
(a) Except for gathering lines of 4 1/2 inches (114mm) nominal outside diameter or smaller, each operator shall prepare and follow a procedure to identify its pipelines in the Gulf of Mexico and its inlets in waters less than 15 feet (4.6 meters) deep as measured from mean low water that are at risk of being an exposed underwater pipeline or a hazard to navigation. The procedures must be in effect August 10, 2005.
(b) Each operator shall conduct appropriate periodic underwater inspections of its pipelines in the Gulf of Mexico and its inlets in waters less than 15 feet (4.6 meters) deep as measured from mean low water based on the identified risk.
(c) If an operator discovers that its pipeline is an exposed underwater pipeline or poses a hazard to navigation, the operator shall -
(1) Promptly, but not later than 24 hours after discovery, notify the National Response Center, telephone: 1-800-424-8802, of the location and, if available, the geographic coordinates of that pipeline.
(2) Promptly, but not later than 7 days after discovery, mark the location of the pipeline in accordance with 33 CFR Part 64 at the ends of the pipeline segment and at intervals of not over 500 yards (457 meters) long, except that a pipeline segment less than 200 yards (183 meters) long need only be marked at the center; and
(3) Within 6 months after discovery, or not later than November 1 of the following year if the 6 month period is later than November 1 of the year of discovery, bury the pipeline so that the top of the pipe is 36 inches (914 millimeters) below the underwater natural bottom (as determined by recognized and generally accepted practices) for normal excavation or 18 inches (457 millimeters) for rock excavation.
(i) An operator may employ engineered alternatives to burial that meet or exceed the level of protection provided by burial.
(ii) If an operator cannot obtain required state or Federal permits in time to comply with this section, it must notify OPS; specify whether the required permit is State or Federal; and, justify the delay.
[Amdt. 195-82, 69 FR 48407, Aug. 10, 2004]


C
B
A

Jason Creech

From:	Jon Dasler
Sent:	Friday, April 19, 2019 3:17 PM
To:	Martha Herzog - NOAA Federal
Cc:	Jason Creech
Subject:	Mississippi River Exposed Pipeline

Martha,

I posted a zip file of the pipeline depths that includes the following files:

H13195_Pipeline_01_3D_rainbow_DS_1.png	4/19/2019 11:26 AM	PNG image	231 KB
H13195_Pipeline_01_3D_rainbow_DS_2.png	4/19/2019 11:27 AM	PNG image	148 KB
H13195_Pipeline_01_10m_Sdg_Set.hob	4/19/2019 9:09 AM	HOB File	309 KB
H13195_Pipeline_01_Overview_wDifferentiated_DS.png	4/19/2019 11:29 AM	PNG image	1,258 KB
Pipelines_25cm_Final_DS.csar	4/19/2019 8:44 AM	CSAR File	422 KB
Pipelines_25cm_Final_DS.csar0	4/19/2019 8:44 AM	CSAR0 File	66,936 KB

The file is posted to an FTP site at the following address. The password is "NOAA"
https://bizdrive.cloud/index.php/s/pXA3ZyjpDYiPBPj

Orange soundings are on the top of the pipeline and purple soundings are on debris hung on the pipeline. Let us know if you need anything further or if you have trouble downloading the files.

Have a great weekend.

Jon

Jon L. Dasler, PE, PLS, CH | Senior Vice President, Director of Marine Services
David Evans and Associates, Inc. | Marine Services Division | www.deamarine.com
t: 360.314.3200 | c: 503.799.0168 | jld@deainc.com

DAVID EVANS AND ASSOCIATES INC. MARINE SERVICES

Jason Creech

From: Jason Creech
Sent: Wednesday, August 21, 2019 1:22 PM
To: pipelines@bsee.gov
Cc: Martha Herzog (martha.herzog@noaa.gov); Tim Osborn (Tim.Osborn@noaa.gov); Jon Dasler (Jld@deainc.com); Angie Gobert (angie.gobert@bsee.gov)
Subject: Mississippi River Unburied Pipelines H13195 - Pipelines 02 through 06 - Mile 54 AHOP to Mile 26 AHOP
Attachments: H13195_Exposed_Pipelines_02 to 06.zip; H13195_Exposed_Pipelines_02 to 06 _for_BSEE.xlsx

Good Afternoon

While performing hydrographic surveys of the Mississippi River for NOAA Office of Coast Survey, David Evans and Associates, Inc. has discovered what appear to be multiple segments of unburied pipelines within survey area H13195 which extends from Mile 54 AHOP to Mile 26 AHOP. I have included a text description if each exposure below and attached two files supporting this report. Attached is a spreadsheet containing the locations of the start and end points of the segments and a zip file containing screen shots from our multibeam sonar data and overview maps of each exposure. This report is based on interpretation of multibeam sonar data. All reported exposures have the signature of a pipeline. All coordinates are relative to NAD83(2011) and listed in degrees minutes seconds (DMS). Angie Gobert, BSEE Chief, Supervisory Petroleum Engineer, Pipeline Section has provided input on the format of the spreadsheet and report. This is the second pipeline submittal issued for survey area H13195. The first was emailed to pipelines@bsee.gov on April 8, 2019.

Please let me know if you have any questions or require additional information. Martha Herzog, the NOAA Project Manager for these surveys, and Tim Osborn, the NOAA Central Gulf Coast Regional Navigation Manager have been copied on this email. Additional reports for other portions of the Mississippi River to follow.

Thank you,
Jason Creech

H13195_Pipelines_02_A is a segment of exposed pipeline approximately 420 feet in length with starting coordinates 29 33 59.264N, 89 47 27.717W and ending at 29 34 03.165N, 89 47 29.275W. The exposed segment has a bearing of 162 degrees and was identified in multibeam echosounder data acquired on January 17, 2019 (DN 017). The pipeline is located within a charted pipeline area and rises approximately 2 feet above the surrounding river bottom.

H13195_Pipelines_02_B is a segment of exposed pipeline approximately 458 feet in length with starting coordinates 29 33 56.805N, 89 47 25.043W and ending at 29 34 01.189N, 89 47 26.122W. The exposed segment has a bearing of 169 degrees and was identified in multibeam echosounder data acquired on January 17, 2019 (DN 017). The pipeline is located within a charted pipeline area and rises approximately 2 feet above the surrounding river bottom.

H13195_Pipelines_02_C is a segment of exposed pipeline approximately 344 feet in length with starting coordinates 29 33 56.665N, 89 47 24.547W and ending at 29 33 59.959N, 89 47 24.293W. The exposed segment has a bearing of 185 degrees and was identified in multibeam echosounder data acquired on January 17, 2019 (DN 017). The pipeline is located within a charted pipeline area and rises approximately 7 feet above the surrounding river bottom.

H13195_Pipelines_02_D is a segment of exposed pipeline approximately 317 feet in length with starting coordinates 29 33 54.947N, 89 47 21.377W and ending at 29 33 55.805N, 89 47 18.400W. The exposed segment has a bearing of 196 degrees and was identified in multibeam echosounder data acquired on January 17, 2019 (DN 017). The pipeline is located within a charted pipeline area and rises approximately 6 feet above the surrounding river bottom.

H13195_Pipelines_02_E is a segment of exposed pipeline approximately 281 feet in length with starting coordinates 29 33 56.170N, 89 47 23.550W and ending at 29 33 59.155N, 89 47 22.673W. The exposed segment has a bearing of 253 degrees and was identified in multibeam echosounder data acquired on January 17, 2019 (DN 017). The pipeline is located within a charted pipeline area and rises approximately 4 feet above the surrounding river bottom.

H13195_Pipelines_02_F is a segment of exposed pipeline approximately 186 feet in length with starting coordinates 29 33 47.865N, 89 47 13.473W and ending at 29 33 49.196N, 89 47 12.022W. The exposed segment has a bearing of 45 degrees and was identified in multibeam echosounder data acquired on January 17, 2019 (DN 017). The pipeline is located within a charted pipeline area and rises approximately 7 feet above the surrounding river bottom.

H13195_Pipelines_02_G is a segment of exposed pipeline approximately 199 feet in length with starting coordinates 29 34 15.055N, 89 47 14.164W and ending at 29 34 15.228N, 89 47 16.403W. The exposed segment has a bearing of 96 degrees and was identified in multibeam echosounder data acquired on January 17, 2019 (DN 017). The pipeline is located within a charted pipeline area and rises approximately 5 feet above the surrounding river bottom.

H13195_Pipelines_02_H is a segment of exposed pipeline approximately 235 feet in length with starting coordinates 29 34 12.978N, 89 47 10.286W and ending at 29 34 13.433N, 89 47 12.897W. The exposed segment has a bearing of 283 degrees and was identified in multibeam echosounder data acquired on January 17, 2019 (DN 017). The pipeline is located within a charted pipeline area and rises approximately 2 feet above the surrounding river bottom.

H13195_Pipelines_02_I is a segment of exposed pipeline approximately 60 feet in length with starting coordinates 29 34 11.294N, 89 47 08.119W and ending at 29 34 11.162N, 89 47 08.779W. The exposed segment has a bearing of 259 degrees and was identified in multibeam echosounder data acquired on January 17, 2019 (DN 017). The pipeline is located within a charted pipeline area and rises approximately 4 feet above the surrounding river bottom.

H13195_Pipelines_02_J is a segment of exposed pipeline approximately 288 feet in length with starting coordinates 29 34 10.127N, 89 47 06.442W and ending at 29 34 09.931N, 89 47 09.654W. The exposed segment has a bearing of 87 degrees and was identified in multibeam echosounder data acquired on January 17, 2019 (DN 017). The pipeline is located within a charted pipeline area and rises approximately 6 feet above the surrounding river bottom.

H13195_Pipelines_02_K is a segment of exposed pipeline approximately 190 feet in length with starting coordinates 29 34 09.235N, 89 47 02.892W and ending at 29 34 07.578N, 89 47 03.893W. The exposed segment has a bearing of 209 degrees and was identified in multibeam echosounder data acquired on January 17, 2019 (DN 017). The pipeline is located within a charted pipeline area and rises approximately 3 feet above the surrounding river bottom.

H13195_Pipelines_03_A is a segment of exposed pipeline approximately 208 feet in length with starting coordinates 29 31 19.549N, 89 43 16.803W and ending at 29 31 18.304N, 89 43 18.670W. The exposed segment has a bearing of 234 degrees and was identified in multibeam echosounder data acquired on January 18, 2019 (DN 018). The pipeline is located within a charted pipeline area and rises approximately 7 feet above the surrounding river bottom.

H13195_Pipelines_03_B is a segment of exposed pipeline approximately 219 feet in length with starting coordinates 29 31 16.537N, 89 43 10.133W and ending at 29 31 14.889N, 89 43 11.748W. The exposed segment has a bearing of 222 degrees and was identified in multibeam echosounder data acquired on January 18, 2019 (DN 018). The pipeline is located within a charted pipeline area and rises approximately 9 feet above the surrounding river bottom.

H13195_Pipelines_03_C is a segment of exposed pipeline approximately 140 feet in length with starting coordinates 29 31 14.999N, 89 43 08.772W and ending at 29 31 13.940N, 89 43 09.800W. The exposed segment has a bearing of 222 degrees and was identified in multibeam echosounder data acquired on January 18, 2019 (DN 018). The pipeline is located within a charted pipeline area and rises approximately 8 feet above the surrounding river bottom.

H13195_Pipelines_04_A is a segment of exposed pipeline approximately 273 feet in length with starting coordinates 29 25 15.288N, 89 36 19.448W and ending at 29 25 15.651N, 89 36 22.510W. The exposed segment has a bearing of 279 degrees and was identified in multibeam echosounder data acquired on January 22, 2019 (DN 022). The pipeline is located within a charted pipeline area and rises approximately 3 feet above the surrounding river bottom.

H13195_Pipelines_04_B is a segment of exposed pipeline approximately 359 feet in length with starting coordinates 29 25 15.456N, 89 36 13.588W and ending at 29 25 15.271N, 89 36 17.640W. The exposed segment has a bearing of 268 degrees and was identified in multibeam echosounder data acquired on January 22, 2019 (DN 022). The pipeline is located within a charted pipeline area and rises approximately 6 feet above the surrounding river bottom.

H13195_Pipelines_04_C is a segment of exposed pipeline approximately 243 feet in length with starting coordinates 29 25 15.957N, 89 36 09.565W and ending at 29 25 15.622N, 89 36 12.287W. The exposed segment has a bearing of 263 degrees and was identified in multibeam echosounder data acquired on January 22, 2019 (DN 022). The pipeline is located within a charted pipeline area and rises approximately 9 feet above the surrounding river bottom.

H13195_Pipelines_04_D is a segment of exposed pipeline approximately 222 feet in length with starting coordinates 29 25 11.063N, 89 36 17.955W and ending at 29 25 11.384N, 89 36 20.433W. The exposed segment has a bearing of 100 degrees and was identified in multibeam echosounder data acquired on January 22, 2019 (DN 022). The pipeline is located within a charted pipeline area and rises approximately 3 feet above the surrounding river bottom.

H13195_Pipelines_04_E is a segment of exposed pipeline approximately 182 feet in length with starting coordinates 29 25 09.866N, 89 36 10.855W and ending at 29 25 10.301N, 89 36 12.854W. The exposed segment has a bearing of 105 degrees and was identified in multibeam echosounder data acquired on January 22, 2019 (DN 022). The pipeline is located within a charted pipeline area and rises approximately 2 feet above the surrounding river bottom.

H13195_Pipelines_05_A is a segment of exposed pipeline approximately 153 feet in length with starting coordinates 29 22 21.202N, 89 34 06.866W and ending at 29 22 22.528N, 89 34 06.036W. The exposed segment has a bearing of 210 degrees and was identified in multibeam echosounder data acquired on January 23, 2019 (DN 023). The pipeline is located within a charted pipeline area and rises approximately 2 feet above the surrounding river bottom.

H13195_Pipelines_05_B is a segment of exposed pipeline approximately 87 feet in length with starting coordinates 29 22 31.955N, 89 33 59.933W and ending at 29 22 32.601N, 89 33 59.287W. The exposed segment has a bearing of 43 degrees and was identified in multibeam echosounder data acquired on January 23, 2019 (DN 023). The pipeline is located within a charted pipeline area and rises approximately 3 feet above the surrounding river bottom.

H13195_Pipelines_05_C is a segment of exposed pipeline approximately 133 feet in length with starting coordinates 29 22 31.614N, 89 33 59.069W and ending at 29 22 32.743N, 89 33 58.293W. The exposed segment has a bearing of 212 degrees and was identified in multibeam echosounder data acquired on January 23, 2019 (DN 023). The pipeline is located within a charted pipeline area and rises approximately 7 feet above the surrounding river bottom.

H13195_Pipelines_06_A is a segment of exposed pipeline approximately 183 feet in length with starting coordinates 29 22 11.008N, 89 33 01.848W and ending at 29 22 09.358N, 89 33 02.702W. The exposed segment has a bearing of 206 degrees and was identified in multibeam echosounder data acquired on January 23, 2019 (DN 023). The pipeline is located within a charted pipeline area and rises approximately 4 feet above the surrounding river bottom.

H13195_Pipelines_06_B is a segment of exposed pipeline approximately 182 feet in length with starting coordinates 29 22 10.701N, 89 33 01.645W and ending at 29 22 09.003N, 89 33 02.050W. The exposed segment has a bearing of 193 degrees and was identified in multibeam echosounder data acquired on January 23, 2019 (DN 023). The pipeline is located within a charted pipeline area and rises approximately 3 feet above the surrounding river bottom.

H13195_Pipelines_06_C is a segment of exposed pipeline approximately 135 feet in length with starting coordinates 29 22 10.249N, 89 33 00.963W and ending at 29 22 09.130N, 89 33 01.802W. The exposed segment has a bearing of 215 degrees and was identified in multibeam echosounder data acquired on January 23, 2019 (DN 023). The pipeline is located within a charted pipeline area and rises approximately 7 feet above the surrounding river bottom.

H13195_Pipelines_06_D is a segment of exposed pipeline approximately 135 feet in length with starting coordinates 29 22 10.050N, 89 33 00.687W and ending at 29 22 08.987N, 89 33 01.612W. The exposed segment has a bearing of 219 degrees and was identified in multibeam echosounder data acquired on January 23, 2019 (DN 023). The pipeline is located within a charted pipeline area and rises approximately 5 feet above the surrounding river bottom.

Jason Creech, CH | Vice President, Nautical Charting Program Manager
David Evans and Associates, Inc.
2801 SE Columbia Way, Suite 130 | Vancouver, WA, 98661 | www.deainc.com
804.516.7829 | jasc@deainc.com

Jason Creech

From: Jason Creech
Sent: Tuesday, June 11, 2019 10:47 AM
To: 'survey.outlines@noaa.gov'
Cc: Martha Herzog (martha.herzog@noaa.gov)
Subject: OPR-J347-KR-18 Survey Outlines
Attachments: H13194_survey_outline.000; H13195_survey_outline.000; H13196_survey_outline.000; H13212_survey_outline.000

Good Morning

I have attached some outlines for completed OPR-J347-KR-18 surveys. Outlines are included for the following surveys:

H13194
H13195
H13196
H13212

Please let me know if you have any questions or feedback on these products.

Thanks,
Jason

Jason Creech, CH | Vice President, Nautical Charting Program Manager
David Evans and Associates, Inc.
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804.516.7829 | jasc@deainc.com

PROJECT ACQUISITION NOT COMPLETE AT TIME OF SURVEY SUBMISSION. PROJECT WIDE NCEI SUBMISSION EMAIL TO BE INCLUDED IN FUTURE DESCRIPTIVE REPORTS.

David Evans and Associates, Inc.
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OPR-J347-KR-18
Marine Mammal Trained Observers

Inclusive Dates: 8/9/2018 - 4/30/2019
General Locality: Mississippi River

H Number	Sub Locality	Priority
H13188	Mississippi River, Vicinity of Mile 232.5 to 205	1
H13189	Mississippi River, Vicinity of Mile 205 to 180	2
H13190	Mississippi River, Vicinity of Mile 180 to 156.5	3
H13191	Mississippi River, Vicinity of Mile 156.5 to 130	4
H13192	Mississippi River, Vicinity of Mile 130 to 104.3	5
H13193	Mississippi River, Vicinity of Mile 104.3 to 78	6
H13194	Mississippi River, Vicinity of Mile 78 to 54	7
H13195	Mississippi River, Vicinity of Mile 54 to 26	8
H13196	Mississippi River, Vicinity of Mile 26 to 0	9
H13212	Mississippi River, Southwest Pass	10

Observer	Position	Training Video[1] Date
Brandon Harr	Survey Crew	8/3/2018
Callan McGriff	Survey Crew	7/31/2018
Daniel Prince	Survey Crew	8/20/2018
David Moehl	Survey Crew	8/7/2018
James Guilford	Survey Crew	10/25/2018
Jason Creech	Survey Crew	8/8/2018
Jason Dorfman	Survey Crew	8/22/2018
John Staly	Survey Crew	8/28/2018
Kathleen Slacht	Survey Crew	8/1/2018
Kori Ktona	Survey Crew	8/6/2018
Laura Rajnak	Survey Crew	7/31/2018
Sam Werner	Survey Crew	7/31/2018
Steven Loy	Survey Crew	3/13/2019
Tim McClinton	Survey Crew	8/6/2018
Chris Aaron	Vessel Crew	8/7/2018
George Hopkins	Vessel Crew	8/3/2018
Harry Stutzke	Vessel Crew	8/29/2018
Jarrod Leckich	Vessel Crew	8/3/2018
Jerry David Keith	Vessel Crew	8/3/2018
Ryan Willis	Vessel Crew	8/7/2018
Timothy Kennedy	Vessel Crew	8/3/2018

[1] Marine Species Awareness Training Video: https://www.youtube.com/watch?v=KKo3r1yVBBA

Jason Creech

From:	OCS NDB - NOAA Service Account <ocs.ndb@noaa.gov>
Sent:	Friday, July 12, 2019 11:30 AM
To:	Laura Jeffery - NOAA Federal
Cc:	Jason Creech; coast.pilot@noaa.gov; Martha Herzog (martha.herzog@noaa.gov); Richard.Powell@noaa.gov
Subject:	Re: OPR-J347-KR-18 Coast Pilot Review Report

The report has been registered by NDB as L-331-2019.

Thanks,
Diane

Nautical Data Branch/Marine Chart Division/
Office of Coast Survey/National Ocean Service/
National Oceanic and Atmospheric Administration
United States Department of Commerce
Contact: ocs.ndb@noaa.gov

On Fri, Jul 12, 2019 at 10:21 AM Laura Jeffery - NOAA Federal <laura.jeffery@noaa.gov> wrote:

> Good morning Jason,
>
> Thank you for your updates - Coast Pilot 5 - Mississippi report. It will be registered and processed soon.
>
> Much appreciated! Have a great day.
>
> On Thu, Jul 11, 2019 at 1:26 PM Jason Creech <Jasc@deainc.com> wrote:
>
>> Good afternoon
>>
>> I have attached the Coast Pilot Review Report for hydrographic survey project OPR-J347-KR-18.
>>
>> Please let me know if you have any questions.
>>
>> Thanks,
>>
>> Jason

Jason Creech, CH | Vice President, Nautical Charting Program Manager

David Evans and Associates, Inc.

2801 SE Columbia Way, Suite 130 | Vancouver, WA, 98661 | www.deainc.com

804.516.7829 | jasc@deainc.com

ENERGY | LAND DEVELOPMENT | MARINE SERVICES | SURVEYING AND GEOMATICS | TRANSPORTATION | WATER AND ENVIRONMENT

--

Laura B. Jeffery
Nautical Publications Branch/NOS
Cartographer/Reviewer
240-533-0073

NOAA-NOS-OCS-NSD-NPB
1315 E. West Hwy
SSMC3, Station 6315
Silver Spring, MD 20910

Jason Creech

From: Martha Herzog - NOAA Federal <martha.herzog@noaa.gov>
Sent: Friday, November 9, 2018 9:47 AM
To: Jason Creech
Cc: Jon Dasler
Subject: Re: MS River sediment migration examples

I spoke with Gene and our consensus was to let CUBE grid as it may and document the sediment migration in the DR. Of course you can always edit or remove soundings if you feel one line or another better represents the seafloor than the gridding algorithm does. For instance in the example of the sediment slump on Across_track_1, based on your observations and knowledge of the environmental conditions, if you feel the sediment fill in will remain, then you can edit the soundings for the grid to represent the shoal.

You can also denote the areas of major changes in the feature file with SNDWAV areas. This would give parity with changed areas in the grid and a heads up to the branch (and mariner) that the depth may be variable.

Martha

On Thu, Nov 8, 2018 at 8:58 AM, Jason Creech <Jasc@deainc.com> wrote:

> Hi Martha
>
> I've attached a few screengrabs from HIPS showing the sediment migration issues we discussed last week during your site visit.
>
> As you can expect this issue is impacting our deliverable surfaces and will show up when AHB runs flier finder or uses other methods to locate line to line disagreement in the survey data. We plan to discuss in the DRs and add some images to make this issue apparent to the reviewer. Let me know if you or Gene have any other suggestions.
>
> Thanks,
>
> Jason
>
> **Jason Creech, CH** | Vice President, Nautical Charting Program Manager
>
> **David Evans and Associates, Inc.**

Jason Creech

From: Martha Herzog - NOAA Federal <martha.herzog@noaa.gov>
Sent: Tuesday, December 18, 2018 5:48 PM
To: Jason Creech
Subject: Mississippi feature questions

Hi Jason,

Thanks for your calls and setting up the meeting. There were a lot of good questions. I just want to ensure I answered all of your questions (aside from bridges.). I've copied your original questions in gray with my answers below in black. Please let me know if I can provide any other clarification.

Happy Holidays,
Martha

1. For SLCONS terminating at the river bank, should we digitize large features (>5m width) as a line or area features? We are not sure where and how to close areas terminating at the shoreline.

For SLCONS > 5m, digitizing them as line or area features is fine as there is no specific distinction in the HSSD about this. Looking at the ENC and speaking with MCD, generally intact piers are digitized as lines. Ruined, submerged, or covers/uncovers are digitized as areas. It is up to your discretion if you follow this logic.

Closing the pier (line or area feature) anywhere inland of the shoreline or at the COALNE is fine. We aren't very picky about this as long there isn't a gap of water between the pier and the shoreline.

2. MORFAC point features exist in the CSF in front of the SLCONS. They are large enough (>5m width) to be created as MORFAC area features. Where a SLCONS (pier) also exists, should we digitize

- a separate, adjacent MORFAC area (that shares an edge with the SLCONS area)
- a single SLCONS area that encompasses the MORFAC area
- a SLCONS area that encompasses the MORFAC area and then also create a MORFAC area on top of the SLCONS area
- Other?

I've gotten a second opinion on what to do with the MORFACs abut piers. It is fine to have the larger pier area include abutting MORFAC into the pier area as in the example.

3. In cases like this, should the SLCONS line features be deleted and redrawn as new or modify?
Should the SLCONS be redrawn as multiple segments that extend only between the MORFAC/SCLONS areas?

The original SLCONS feature should be flagged as "delete" with your surveyed SLCONS as "new."
For a single line SLCONS, it is fine to digitize it through the MORFAC area (especially if the catwalk like structure extends through it) or create separate lines extending through the MORFACs as we don't have a spec for this distinction.

4. Should this set of fenders be digitized split into several sections (A) based on the SLCONS or connected into a single straight line (B)?

For fenders that are co-located with the MORFAC, there is no need for the added fenders. If they differ, then there may be a need depending on the difference in distance.

5. How should we digitize and attribute terminals with conveyors and covered areas?

It is fine to digitize the boathouses and conveyors. I checked the IHO ENC product specification which helps to answer the boathouse question:
https://www.iho.int/iho_pubs/standard/S-57Ed3.1/S-57_AppB.1_AnnA_UOC_e4.0.0_Jun14_EN.pdf
"For covered boathouses, any associated objects should be encoded as they exist in the "real world"; e.g. jetties as SLCONS, pontoons as PONTON, mooring posts as MORFAC. The roofed area may be covered by a BUISGL object of type area, with attribute INFORM = Boathouse or Boatshed. If the service being provided by the structure is known, object classes SMCFAC (see clause 4.6.5) or HRBFAC (see clause 4.6.1) may also be encoded."

AtoNs out of position

6. How far out of position be before we reposition in the FFF?

For non fixed aids such as those on buoys, anything > 5m or greater if that is what the swing radius or how far it may get pushed by current. This can be modified to much less if the hydrographer thinks it is imperative to navigation.

Technically we should be submitting any aid that is incorrectly positioned but we agreed at the start of the project that it would not be necessary to report every that is off by a little and not causing any impact to navigation in order for you not to have to report 1000 lights for each survey. We didn't define a little at the time.

I would definitely report the example in the ppt to the USGC as it is nowhere near the charted or light list location.

7. Should repositioned AtoNs be modify or delete/new?

Delete/New.

8. Should secondary features (fog signals, lights etc.) also be repositioned? In some cases lights on piers appear to be associated with a charted beacons that do not exist. The secondary features are incorrectly charted and the primary features do not exist (*see image for example*).

If you find that it does not exist, flag it as "delete" with an explanation in the remarks.

Subsequent features (fog signal, beacon, etc.) associated with the ATON should follow the position of the ATON. If you can't confirm the secondary feature, the remarks can be something like, "new position of ATON, fog signal not audibly observed at time of survey.

9. Should all repositioned AtoNs be reported to the USCG via the USCG Navigation Center's Online ATON Discrepancy Report?

Yes, for fixed ATONs especially for federal aids or for ATONs positions differing >5m. I'm not sure anyone quite expected this level of mis-positioning. Jason mentioned he would reach out to the USCG to see if reporting can be done in group format instead of by individual ATON. I'll keep asking around here if something else can be done.

I learned a little about the accuracy of light positioning some of which you may already know. While lights should be positioned to 3 decimal places, they often aren't depending on the original source (a zero or two or even three may represent the final decimal positions). For private lights, USCG just take sthe position of what is on the permit which could variable. If the private light position changes and the USCG isn't notified or the light isn't re-permitted, the old position remains in the light list. What is populated in the ENC inform field is often just the comments from the light list. Most USGC districts simply just don't have the funding to validate all of the lights.   If you are finding that the federal nav aids are off, this is problematic as those should be verified more often.

Bridges

10. We are digitizing the footings as surveyed using SLCONS and assume we are required to digitize the bridges depicting the surveyed extents using BRIDGE areas. Bridges charted on the ENCs are broken into multiple segments, each attributed with a clearance height or a value of Unknown.   How should the BRIDGE segments be broken up (one per span, smaller increments for finer resolution clearance identification, other?

11. We plan to report the lowest clearance per BRIDGE area. Typically, the lowest clearance height on a bridge is right at the junction with a bridge pier. Should we use this height for BRIDGE areas junctioning with a pier when it is the lowest clearance value or offset the clearance height search towards the navigable channel?

FYI - the footing areas should be encoded as PYLONS as they are on the chart.
TBD on more guidance on bridges. I've passed on your bridge ppt adding the differing clearance height graphic to Corey who discuss with Rick Brennan and others on how we should proceed on this.

Jason Creech

From: Jack Riley - NOAA Federal <jack.riley@noaa.gov>
Sent: Friday, May 3, 2019 10:06 PM
To: Jon Dasler
Cc: Jason Creech; Rick Brennan; Martha Herzog - NOAA Federal; Corey Allen; Glen Rice
Subject: Re: FW: Mississippi LWRP Survey Findings PowerPoint
Attachments: NAD83-LWRP2007_MLLW_Geoid12B.zip

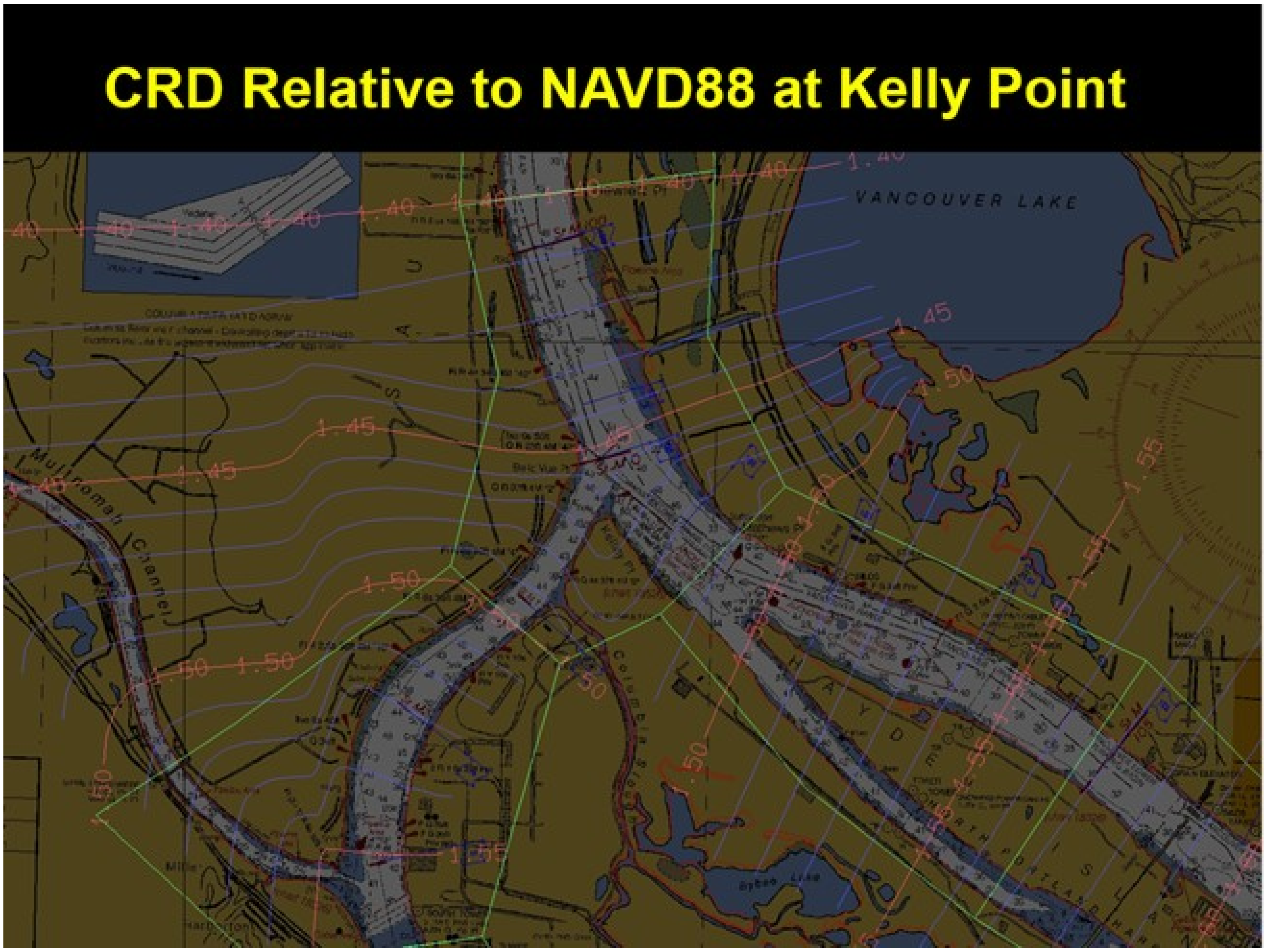
Jon,

See attached for the revised NAD83-LWRP2007/MLLW SEP [m] based upon/incorporating the unadulterated Geoid12B NAVD88, per our discussions through this evening.

Thanks,
Jack
--
Jack L. Riley
Coast Survey Development Lab
240-847-8271

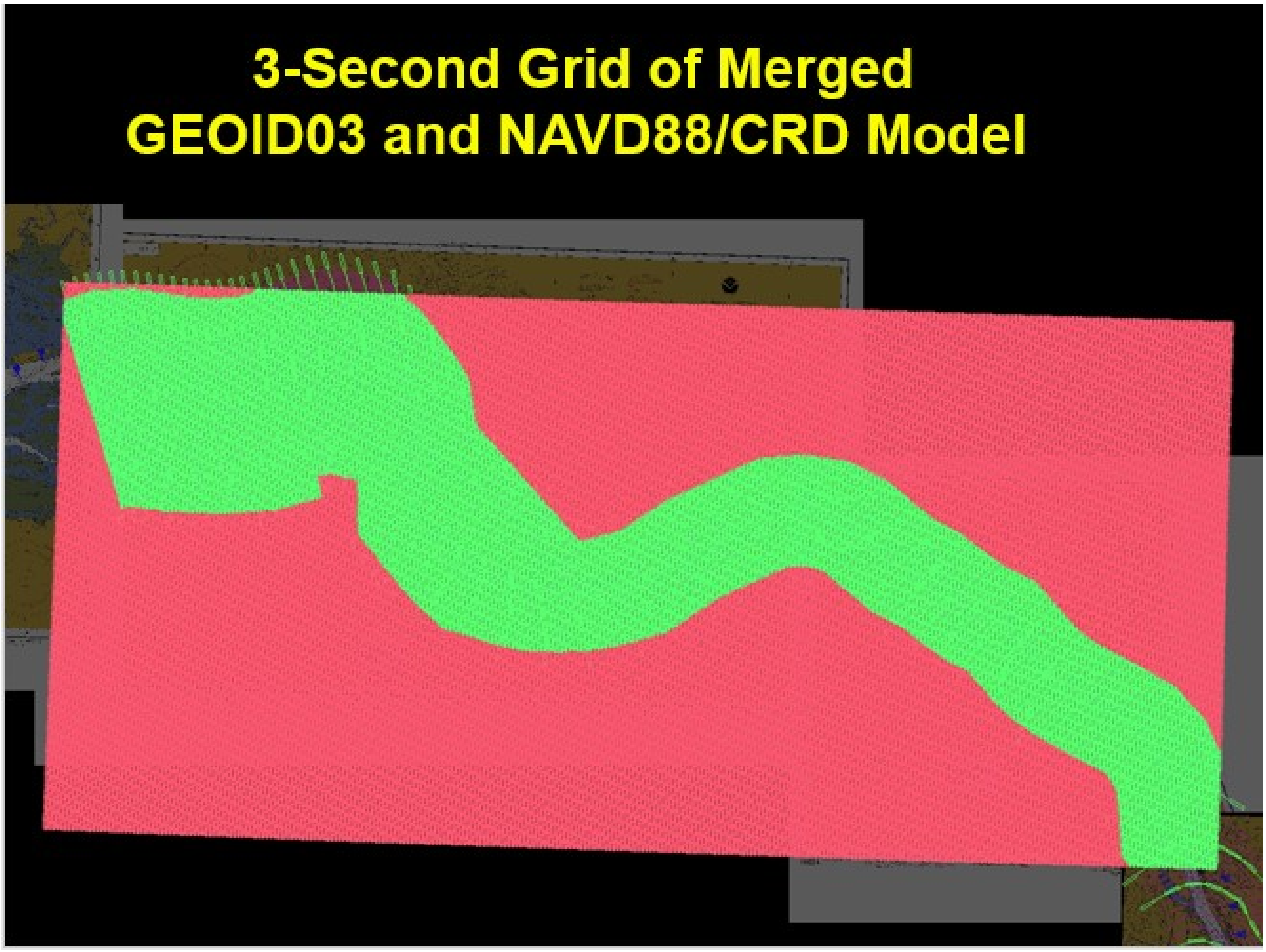
On Fri, May 3, 2019 at 7:48 PM Jon Dasler <Jld@deainc.com> wrote:

> Jack,
>
> I am still in the office if you want to call. I am not sure what you mean by "exclude the 2_D undulations perpendicular to the river". The gradient model should be flat perpendicular to the river and include enough data points to capture geoid undulation when combining with the geoid model (100 meter of 3 arc second grid would be sufficient). Following is and example of the Triangular Irregular Network (TIN) model I generated for the Columbia River.



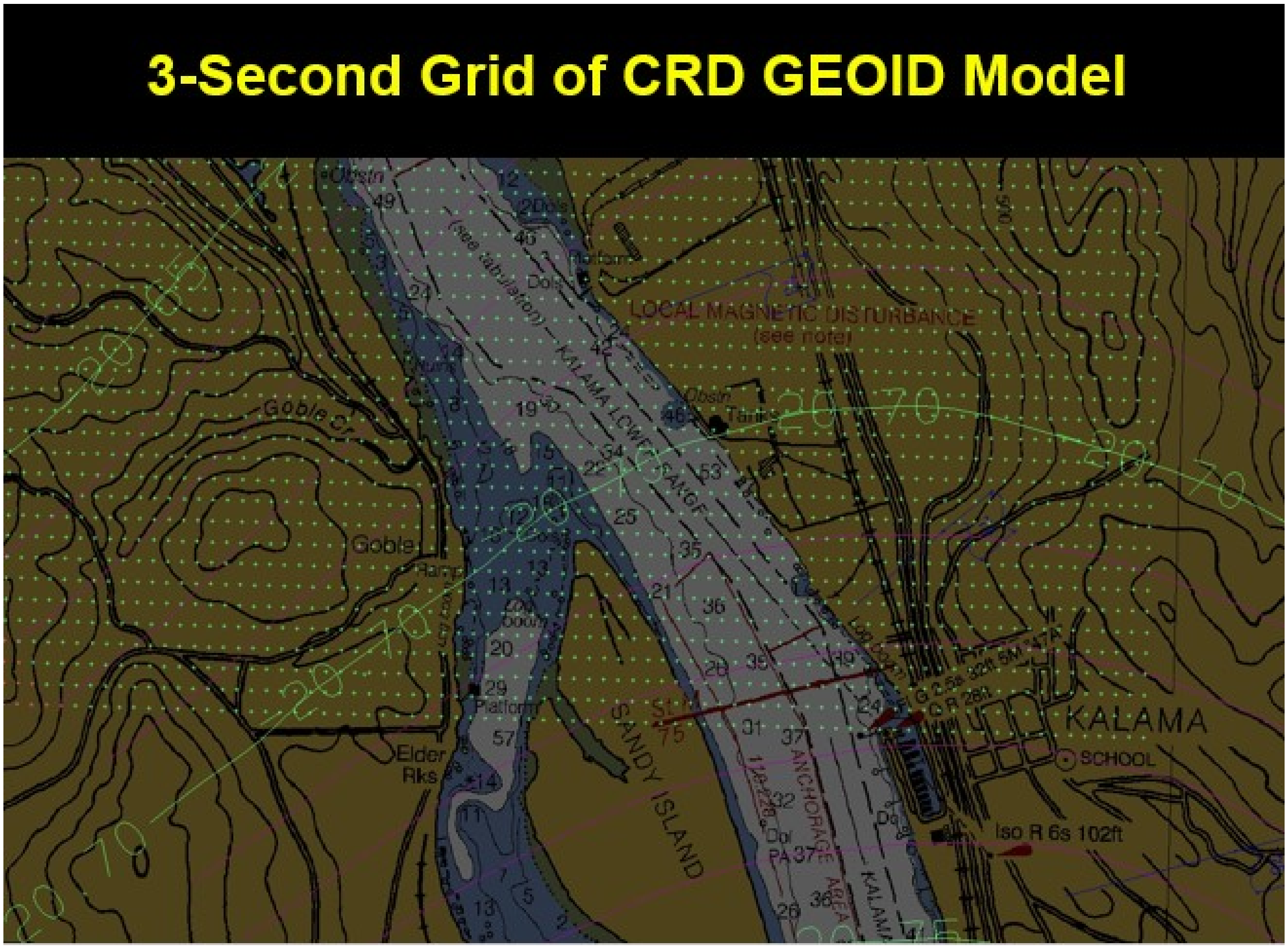
From that surface a 3 arc second grid was generated with values populated from the TIN and those grid values run through the Geoid model to develop

the separation model.



Resultant contours of separation model that incorporates the gradient datum on NAVD88 and the geoid model.

Resolution is sufficient to capture merging channel, river bends, and geoid undulations.



From: Jack Riley - NOAA Federal <jack.riley@noaa.gov>
Sent: Friday, May 03, 2019 4:31 PM
To: Jon Dasler <Jld@deainc.com>
Cc: Jason Creech <Jasc@deainc.com>; Rick Brennan <richard.t.brennan@noaa.gov>; Martha Herzog - NOAA Federal <martha.herzog@noaa.gov>; Corey Allen <corey.allen@noaa.gov>; Glen Rice <glen.rice@noaa.gov>
Subject: Re: FW: Mississippi LWRP Survey Findings PowerPoint

Okay -- the point I missed was the need to include the high-resolution gradient along the river, but [continuing to] exclude the 2-D geoidal undulations perpendicular to the river center line. So while my 2-D LWRP-NAVD88 component is accurate to the hydraulic model (2-D "road" version of the orange line on the plot with the USACE's blue stepped line and SEP -minus- geoid-09 and -12 plot), I need to include more samples to track that gradient path. I can revise and provide a Geoid12B version as well.

I discussed this with HSD today and said I would follow-up with you (per above) and phone call too, if you're available -- anytime is potentially good for me, including through the weekend. We all agreed that the presentation at the meeting next week needs to be simplified in terms of these model details. The slide showing contours on your version of the existing LWRP NOAA Model is inaccurate and comparing the Geoid09-realized LWRP2007 to 12B profiles should be limited to support the argument that's the correct way to go with ellipsoidally-referenced LWRP2007 realization.

Assuming the Geoid12B-version of the revised SEP I will send generates consistent results with the revised comparisons you've computed, we should update that on the slides. LWRP most likely continues to be nearly linear down river from Venice. CO-OPS says LWRP=NAVD88 at HOP (MM 0) and that MLLW=LWRP ~MM 1 on SW Pass & ~MM2 on Pass a Loutre. Our SEP includes the LWRP zero at HOP and continues seaward on MLLW, overriding VDatum by making use of CO-OPS NAVD88 on MLLW corrected values at Pilots Station East (8760922) = +34.8 cm, and Devon Energy Facility (8760417) of +21.7 cm.

Glen Rice (cc'd) will be able to attend the meeting on behalf of NOAA as well. Glen is keen on getting familiar with vertical datum decisions in his primary role with HSTB as Technical Lead on the NOAA National Bathymetric Source Project.

Jack L. Riley

Coast Survey Development Lab

240-847-8271

On Fri, May 3, 2019 at 6:23 PM Jon Dasler <Jld@deainc.com> wrote:

We did one more exercise to see how we would compare to USACE gauge observations if we backed out the NOAA separation model to obtain the original ellipsoid height observation and applied Geoid12B or Geoid09 and subtracted USACE NAVD88 elevation of LWRP to get LWRP. In general, using Geoid12B reduces the difference from gauges with the exceptions being Baton Rouge, New Orleans (Carrolton), Algiers Locks, and Venice. These difference are likely due to USACE applying LWRP offset to old datums (NGVD29, etc.) Although Venice comparison gets worse, this puts the observation much closer at the CO-OPS gauge at Pilottown which we missed by 0.7 feet. Using Geoid12B should drive this down to 0.2 feet or less. We do not have NAVD88 elevations below RM 11 AHP (Venice) for LWRP or MLLW. It would be good to get the CO-OPS NAVD88 elevations from recent maintenance observations. Attached is the full spread sheet to see how these values were computed. The text G12b & USACE LWRP implies that we used GEOID12B to get to NAVD88 from original ellipsoid observations and then applied the appropriate USACE NAVD88 elevation of LWRP based on river mile of the gauge to obtain LWRP water surface elevations.

Gauge	Ship Float G12b & USACE LWRP ft	G12b Delta from Ship Float ft	G12b Delta from Gauge ft	Ship Float G09 & USACE LWRP ft	G09 Delta from Ship Float ft	G09 Delta from Gauge ft
Baton Rouge	21.23	0.19	1.17	21.44	-0.02	0.96

Donaldsonville	15.22	0.04	1.00	15.09	0.17	1.13
Reserve	11.27	-0.11	0.68	11.17	-0.01	0.78
BC NW	11.20	-0.04	0.85	11.13	0.03	0.92
Bonnet Carre	10.43	-0.06	0.65	10.38	-0.01	0.70
New Orleans	9.95	-0.11	0.97	10.00	-0.16	0.92
IHNC Lock	8.79	-0.56	0.39	8.88	-0.65	0.30
Algiers Lock	7.99	-0.21	0.72	7.99	-0.21	0.72
Alliance	4.94	-0.18	0.50	4.69	0.07	0.75
Pt a la Hache	6.36	0.00	0.42	6.33	0.03	0.45
Venice	2.16	0.50	0.40	2.77	-0.11	-0.21

From: Jon Dasler
Sent: Friday, May 03, 2019 1:24 PM
To: Jack Riley - NOAA Federal <jack.riley@noaa.gov>; Jason Creech <Jasc@deainc.com>
Cc: Rick Brennan <richard.t.brennan@noaa.gov>; Martha Herzog - NOAA Federal <martha.herzog@noaa.gov>; Corey Allen <corey.allen@noaa.gov>; Glen Rice <glen.rice@noaa.gov>
Subject: RE: FW: Mississippi LWRP Survey Findings PowerPoint

Below is another example. In this case we took the NAVD88 values at the river mile positions provided by USACE for the LWRP gradient. We computed ellipsoid heights for each point by applying GEOID09 in one test and GEOID12B in another test. We then applied your separation model to the ellipsoid heights (GEOID09 blue points, GEOID12B orange points), which should result in a zero elevation LWRP for at least one of the models. We believe the GEOID12B more accurately defines what we surveyed using NAD83 (2011).

USACE Mississippi LWRP vs N

NOAA Model test using USACE River Mile with NAVD88 elevation of LWRP con
GEOID12B then ellipsoid height converted to LWRP using NOAA Model. All poin
Ellipsoid heights derived using GEOID12B approximates survey using NAD83(20

From: Jon Dasler
Sent: Friday, May 03, 2019 1:11 PM
To: 'Jack Riley - NOAA Federal' <jack.riley@noaa.gov>; Jason Creech <Jasc@deainc.com>
Cc: 'Rick Brennan' <richard.t.brennan@noaa.gov>; 'Martha Herzog - NOAA Federal' <martha.herzog@noaa.gov>; 'Corey Allen' <corey.allen@noaa.gov>; 'Glen Rice' <glen.rice@noaa.gov>
Subject: RE: FW: Mississippi LWRP Survey Findings PowerPoint

To follow on this discussion and our observations, the data points you used to model LWRP are shown in pink on the attached image with associated NAVD88 height of LWRP and river mile. Note that your river miles are off by approximately 4 miles. Your model values match close to the contours (contours have inverse values labeled) of the model we generated by subtracting the geoid model from your separation values (as they should). The circled points are USACE river miles with the assigned NAVD88 value of LWRP with associated rive mile. My assessment of this difference is that you may have used a low resolution model of the NAVD88 elevations defining LWRP and we are seeing artifacts from the geoid or "hydraulic geoid" you applied. In short, if a survey used a geoid model to obtain an NAVD88 orthometric height (call it 6) and applied the NAVD88 elevation of LWRP (call it 1), when applied 6-1=5. If you have a hydraulic geoid model (call it 7) and apply your model of LWRP (call it 2), when applied you should get the same answer 7-2=5. This should hold true for any point in the model.

From: Jon Dasler
Sent: Friday, May 03, 2019 12:39 PM
To: Jack Riley - NOAA Federal <jack.riley@noaa.gov>; Jason Creech <Jasc@deainc.com>
Cc: Rick Brennan <richard.t.brennan@noaa.gov>; Martha Herzog - NOAA Federal <martha.herzog@noaa.gov>; Corey Allen <corey.allen@noaa.gov>; Glen Rice <glen.rice@noaa.gov>
Subject: RE: FW: Mississippi LWRP Survey Findings PowerPoint

Jack

I am not sure what you are using for a "hydraulic GEOID" or how you derived it but the NAVD88 elevations already define the hydraulic gradient. You just need to apply the geoid model to a high resolution model of the NAVD88 gradient to capture changes in the geoid. You should get the same separation at any point in the model when using an NAVD88 height of LWRP and using a GEOID model, generally how the gauge surveys were conducted. This is how the NAVD88 elevations of LWRP were originally defined, exactly the same as Columbia River Datum using a 3 second arc grid (roughly 100 meter grid) of CRD relative to NAVD88. The model of the river should be constructed first relative to the defining datum (NAVD88) using every point along the profile with equal elevations normal to the centerline profile (similar to a flat road surface). The result is the hydraulic gradient of the river relative to NAVD88. From there a high resolution grid is interpolated from the TIN model and the appropriate standard geoid model applied for a separation model from the appropriate datum, NAD83 (2011) in the case of the Mississippi River where the C4G network is being used for ellipsoid heights, to LWRP. At any point on the river the geoid model should be able to be subtracted to get the originally defined NAVD88 elevation of the LWRP gradient datum. This is exactly how the Columbia River model was generated with repeatable results at any gauge location or benchmark and allows for easy translation between NAVD88 and the gradient datum (CRD or NAVD88). To test this in your model, we took all the centerline data points with NAVD88 elevations of LWRP and added the GEOID09 and GEOID12B as two separate tests to obtain ellipsoid heights. We believe adding GEOID12B would more accurately represent ellipsoid heights relative to our survey ellipsoid heights using NAD83(2011). From those ellipsoid heights (again how the gauges were surveyed) we subtract your separation model. The result is the undulation you see in the profile image attached.

We probably should have a conference call to discuss this in detail and I can pull up examples of Columbia River Datum modeling.

Jon

Jon L. Dasler, PE, PLS, CH | Senior Vice President, Director of Marine Services

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DAVID EVANS AND ASSOCIATES INC. MARINE SERVICES

From: Jack Riley - NOAA Federal <jack.riley@noaa.gov>
Sent: Friday, May 03, 2019 12:03 PM
To: Jon Dasler <Jld@deainc.com>; Jason Creech <Jasc@deainc.com>

Cc: Rick Brennan <richard.t.brennan@noaa.gov>; Martha Herzog - NOAA Federal <martha.herzog@noaa.gov>; Corey Allen <corey.allen@noaa.gov>; Glen Rice <glen.rice@noaa.gov>
Subject: Re: FW: Mississippi LWRP Survey Findings PowerPoint

Jon and Jason,

I exported the LWRP2007-NAVD88 component from my TCARI solution and I am not seeing any oscillation in the LWRP profile. I see a monotonically-increasing function. There's also not much athwart variation (mm) in my LWRP -- consistent with a hydraulic datum. The NOAA NAD83-LWRP SEP is similarly hydraulic, where the USACE NAVD88-LWRP2007 values at the "risers" (staircase analogy; "treads" are the [constant] LWRP plateaus) are added to the local NAD83-NAVD88 to change the basis, and that is spatially interpolated (2-D Laplace). You are introducing all this tilt in your analysis when you un-apply the geoid to the *gridded* data. To recover the hydraulic LWRP you need to un-apply a linearly-interpolated "hydraulic geoid" differential surface.

Jack

--

Jack L. Riley

Coast Survey Development Lab

240-847-8271

On Fri, May 3, 2019 at 12:16 PM Jon Dasler <Jld@deainc.com> wrote:

Jack

Thank you for the response. I will be traveling to New Orleans on Monday at 3PM Pacific and will be at Stennis all day Tuesday. The meeting with New Orleans is at 10AM Central on Wednesday. Feel free to reach out to Jason and we can coordinate a conference call as needed.

Jon

Jason Creech

From: Martha Herzog - NOAA Federal <martha.herzog@noaa.gov>
Sent: Thursday, August 1, 2019 1:11 PM
To: Jason Creech
Cc: Jon Dasler
Subject: Re: OPR-J347-KR-18 Revetments

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Jason,

I checked with Gene and he concurs with adding new revetment ares to the FFF as obstructions. For VALSOU, the least death of the MBES data in the area of the area obstruction should work. QUASOU would likely be 'least depth known' and TECSOU would likely be 'found with multibeam.'
The charted revetments can be noted with a retain.

Please let me know if you had additional questions,
Martha

On Tue, Jul 30, 2019 at 5:36 PM Jason Creech <Jasc@deainc.com> wrote:

> Hi Martha
>
> I'm following up on our phone conversation from this afternoon. We are working to finish the portrayal of the revetment areas for the Mississippi River project and want to make sure we are meeting your needs and following contract guidance.
>
> As I mentioned, we are not able to accurately depict the true limits of the revetments as portions of the mats are frequently buried. In these cases we feel it is safer to retain vs delete these sections. I've included a screengrab below showing an example of a charted revetment (included in PRF not CSF) vs revetment extents visible in the survey data and have a few questions.
>
> 1. Should revetments be included in the FFF or a separate file? These were not included in the project CSF.
> 2. Regarding portrayal, is it acceptable to retain all revetments and include new polygons where revetments are surveyed outside of the charted area (red polygons below)? This is what I mentioned when we spoke on the phone. The PRF revetment Investigation requirements are as follows… "Investigate revetment per HSSD section 7.3.1. Unchanged revetment shall be encoded as RESARE with descrp = retain. Inaccurately charted or missing revetment shall be noted with descrp = delete with the new or changed revetment encoded as OBSTRN with descrp = new." As I mentioned, we aren't able to disprove the revetments with MBES data only. It's my understanding that revetments located outside of the known/ charted areas are an issue because ships have been anchoring on top of and damaging the revetment mats.

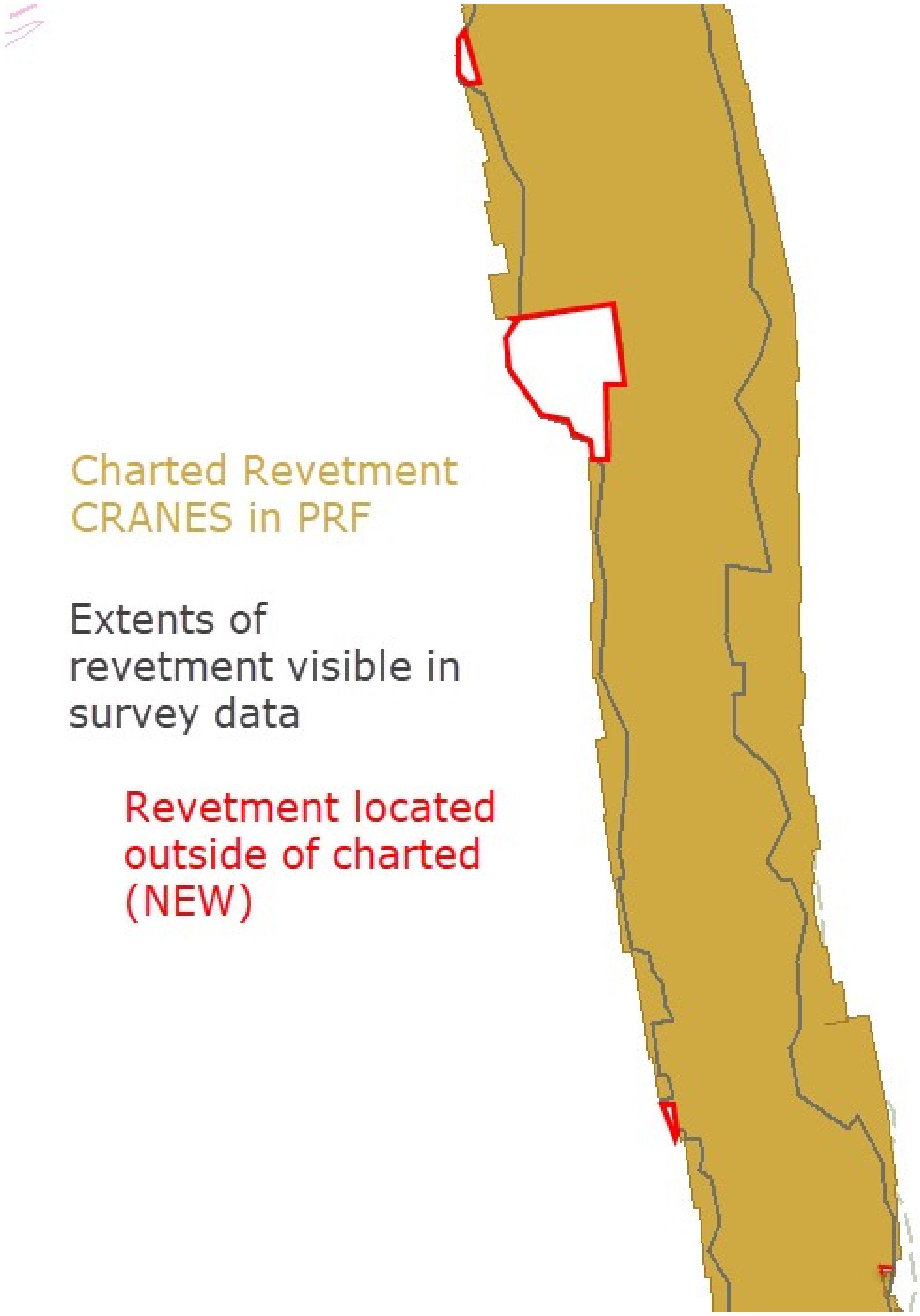
3. We wanted to verify that the feature encoding requirements are correct. Should new revetment areas be Obstruction areas? Obstructions have numerous mandatory attributes that we're unsure about populating when delineating revetments, including VALSOU.

I think that covers our questions.

Let me know if you'd like me to clarify anything.

Thanks,

Jason



Jason Creech, CH | Vice President, Nautical Charting Program Manager

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Jason Creech

From: Martha Herzog - NOAA Federal <martha.herzog@noaa.gov>
Sent: Wednesday, August 7, 2019 4:33 PM
To: Jason Creech
Subject: Marine mammal/turtle logs

Jason,

I received an answer from our Environmental Compliance Coordinator to your question of whether anything needs to be stated if no marine mammals/turtles were seen - no action or statement is needed.

Martha

--
Martha Herzog
NOAA Operations Team Lead | Operations Branch
Hydrographic Surveys Division | Office of Coast Survey
240-533-0028

APPROVAL PAGE

H13195

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NCEI for archive

- Descriptive Report
- Data Acquisition and Processing Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Processed survey data and records
- Geospatial PDF of survey products
- Collection of backscatter mosaics

The survey evaluation and verification have been conducted according to current OCS specifications, and the survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

MCGOVERN.MEGHAN.ELIZABETH.1284020495 Digitally signed by MCGOVERN.MEGHAN.ELIZABETH.1284020495 Date: 2020.06.02 07:02:10 -04'00'

Approved: ______________________________

Commander Meghan McGovern, NOAA
Chief, Atlantic Hydrographic Branch