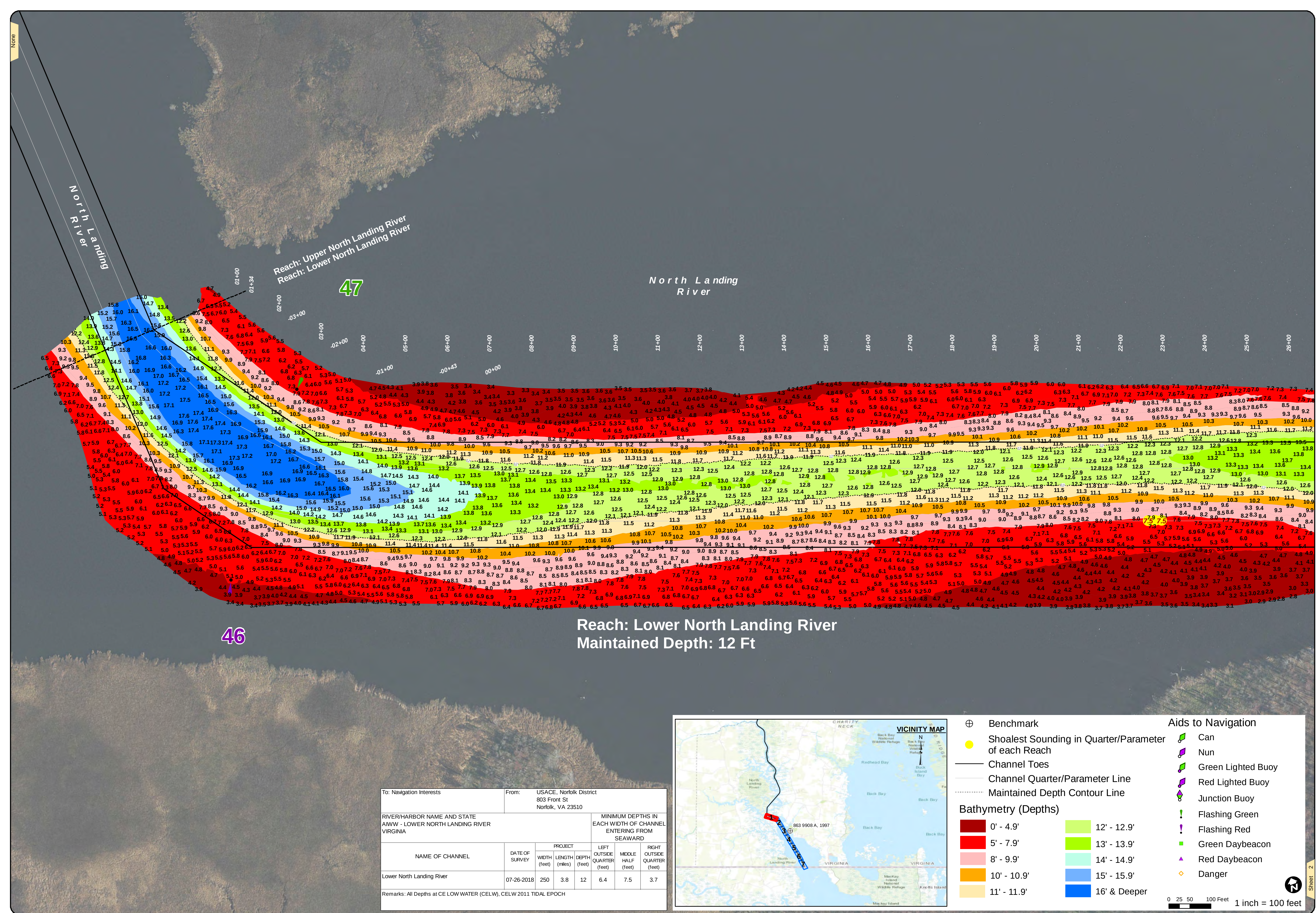




US Army Corps
of Engineers
Norfolk District

NOTES:

- PROF. V. CHANNEL 12 FEET DEEP AND 250 FEET WIDE
- NOT FOR NAVIGATION USE. THE INFORMATION DERIVED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE AT THE TIME OF THE SURVEY. THE DATA ON WHICH THIS MAP IS BASED MAY BE INCOMPLETE OR INACCURATE. THE USER OF THIS MAP IS ADVISED THAT THE DATA INDICATED CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.
- SOUNDINGS SHOWN IN FEET CENTERED ON POINT OF SHOALEST DEPTH IN 20 FT. RADII.
- BACKGROUND, VGN IS IMAGERY WEB SERVICE
- ADS TO NAVIGATION LOCATED WITH SURVEY VESSEL "J-10" FEET ON DATE OF SURVEY.
- SURVEY XYZ ("XYZ" AND METADATA ("MET" FILE NAME REFERENCED BY "XYZ" FILE NAME.

[illegible]

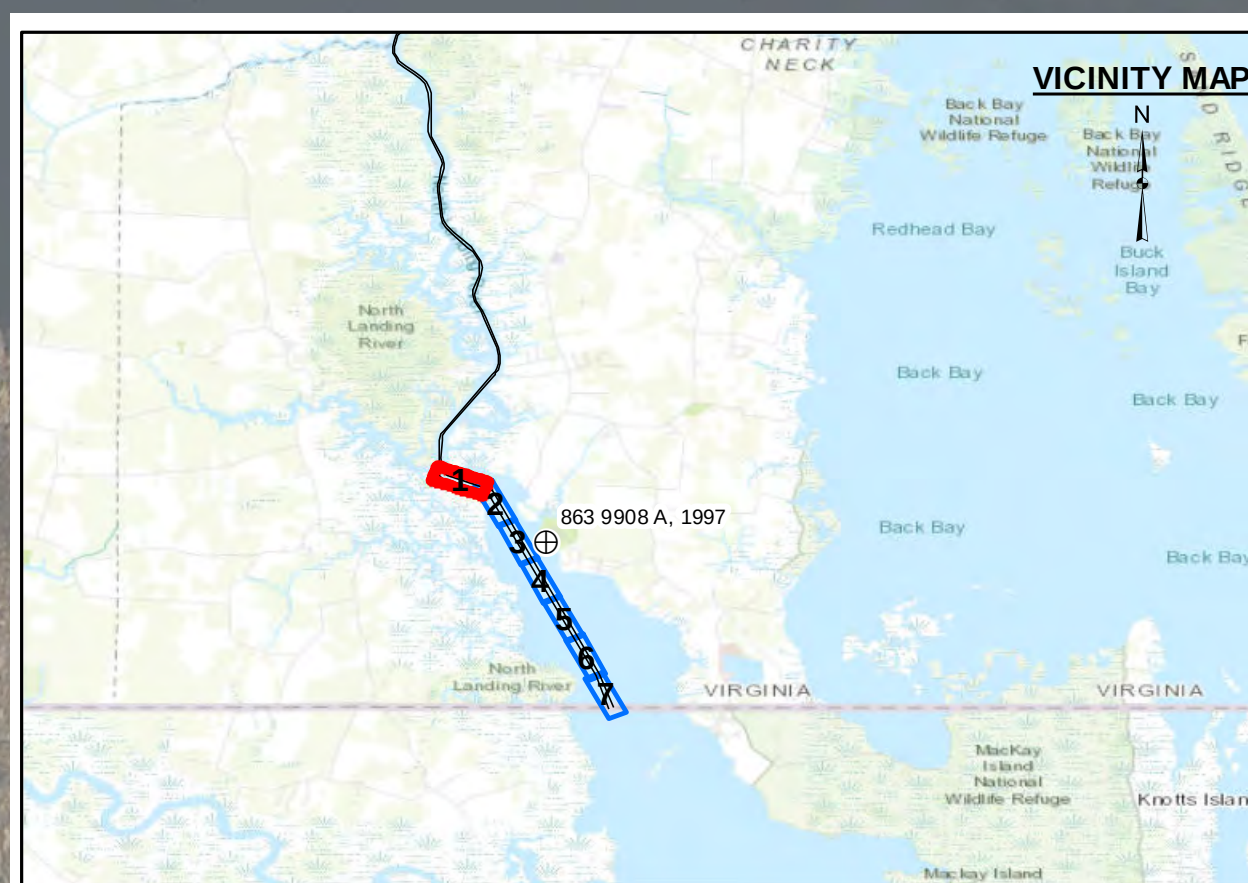
**ATLANTIC INTRACOASTAL
WATERWAY (AIW)
LOWER NORTH LANDING RIVER
PROJECT CONDITION SURVEY**

**SURVEY DATES:
July 26 & 27, 2018**

SHEET 1 of 7
Map Produced: 10/3/20

APPROVED: _____
Chief, Navigation Analysis Section

APPROVED: _____
Chief, Navigation Support and Survey Section



- ⊕ Benchmark**

● Shoalest Sounding in Quarter/Parameter of each Reach

— Channel Toes

— Channel Quarter/Parameter Line

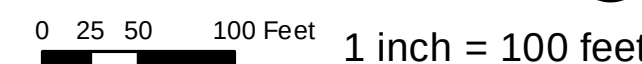
----- Maintained Depth Contour Line

Bathymetry (Depths)

0' - 4.9'	12' - 12.9'
5' - 7.9'	13' - 13.9'
8' - 9.9'	14' - 14.9'
10' - 10.9'	15' - 15.9'
11' - 11.9'	16' & Deeper

Aids to Navigation

 - Can
 - Nun
 - Green Lighted Buoy
 - Red Lighted Buoy
 - Junction Buoy
 - Flashing Green
 - Flashing Red
 - Green Daybeacon
 - Red Daybeacon
 - Danger



Sheet

VERTICAL REFERENCE DATUM: CE LOW WATER	CE LOW WATER
IMPLIED VERTICAL ACCURACY:	RTK/LEICA SMART NET
VERTICAL CONTROL:	RTK/NOAA DATUM MDL
TIDE APPLICATION:	MULTI-BEAM
SYSTEM METHOD:	5X5
BIN SIZE:	AVERAGE CELL CENTER
BIN SELECTION METHOD:	
CONTROL MONUMENTS	
AV088	MEAN RANGE OF TIDE
GEOID32A	AREA
	-04+00 to 198+96
	NON TIDAL

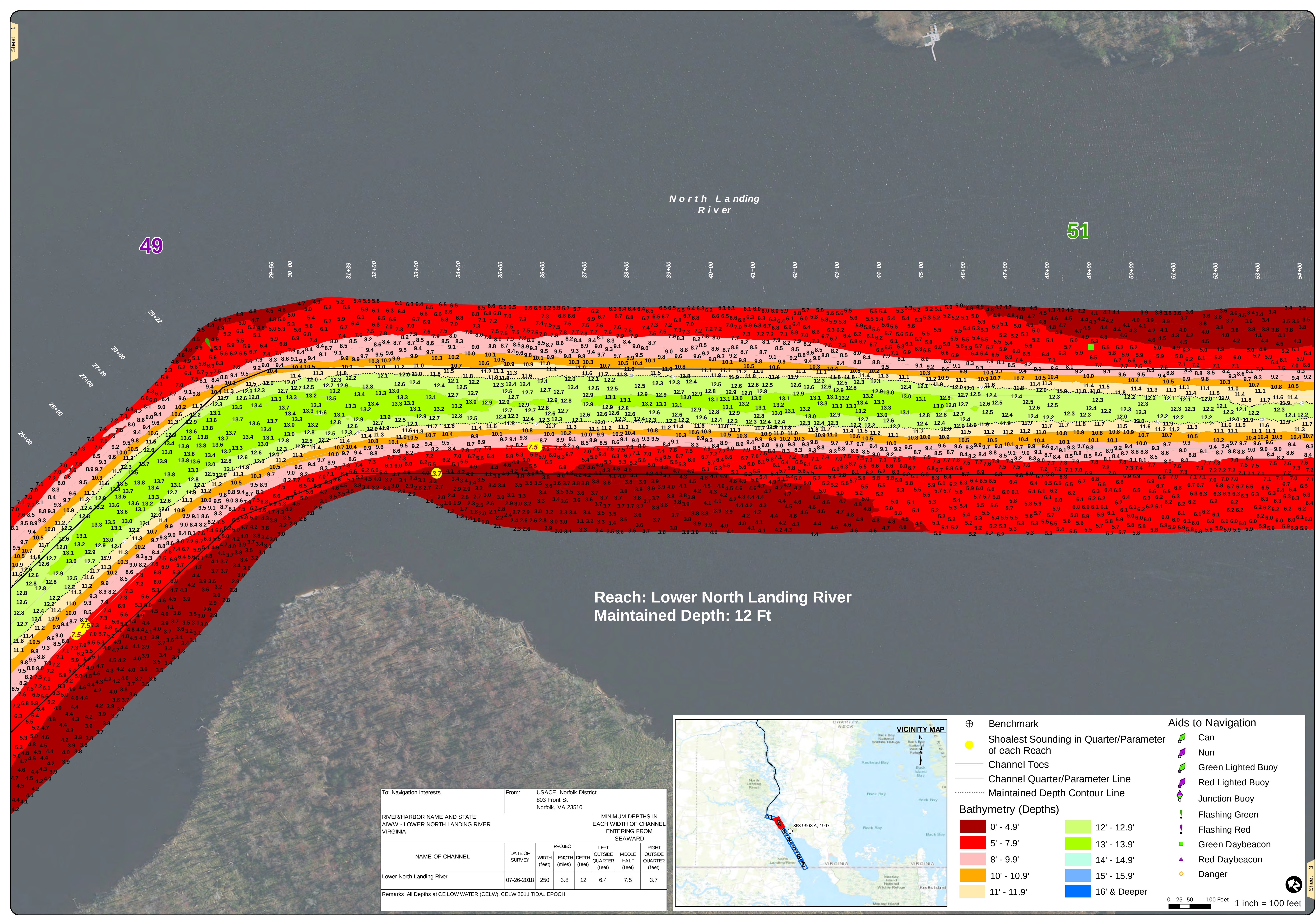
PROJECTED COORDINATE SYSTEM: STATE PLANE DATUM NAME: VIRGINIA SOUTH ZONE PROJECTED COORDINATE UNITS: US SURVEY FEET IMPLIED HORIZONTAL ACCURACY: +/- 1 FOOT HORIZONTAL CONTROL: RTK/LEICA SMART NET	GEODETIC CONTROL MONUMENT CE LOW WATER NOS 863 9908A, 1997 2.91' 182'
---	--

**ATLANTIC INTRACOASTAL
WATERWAY (AIWW)
LOWER NORTH LANDING RIVER
PROJECT CONDITION SURVEY**

SURVEY DATES:
July 26 & 27, 2018

JURVEY BY: USACE Team Lead: Joseph N. Moore Jr.

SHEET 2 of 7
Map Produced: 10/3/2018
PROVED: _____
Chief, Navigation Analysis Section
PROVED: _____
Chief, Navigation Support and Survey Section



NOTES:

1. PROJECT: A CHANNEL 12 FEET DEEP AND 250 FEET WIDE
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) SHOWN AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. SOUNDINGS: INDICATED IN FEET CENTERED ON POINT OF SHALLEST DEPTH IN 20 FT RADIIUS.
4. BACKGROUND: VGIN GIS IMAGERY WEB SERVICE
5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL -4/-10 FEET ON DATE OF SURVEY.
6. SURVEY XYZ (.XYZ) AND METADATA (.MET) FILE NAME REFERENCED BY #HYDRO FILE NAME.

GEODETIC CONTROL MONUMENTS					
MONUMENT	CE LOW WATER	NAV/D88	MEAN RANGE OF TIDE	AREA	
NOS-963 0986A; 1997	2.9'	132' (GEOD12A)	NON TOTAL	-04+00 ± 156+98	

**ATLANTIC INTRACOASTAL
WATERWAY (AIW)
LOWER NORTH LANDING RIVER
PROJECT CONDITION SURVEY**

SURVEY DATES:
July 26 & 27, 2018

BY: USACE Team Lead: Joseph N. Moore Jr.

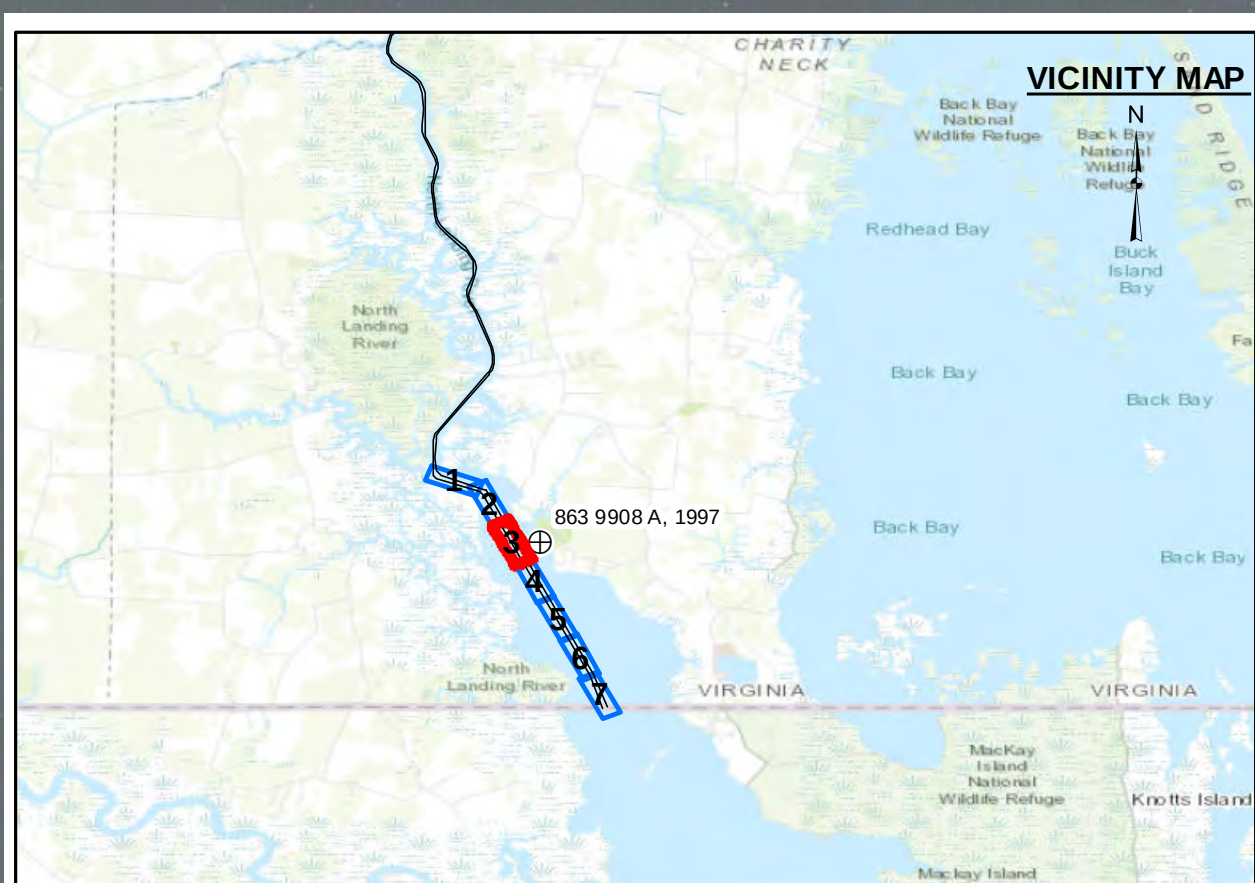
SHEET 3 of 7
Map Produced: 10/3/2018

PROVED:

Chief, Navigation Analysis Section

PROVED:

Chief, Navigation Support and Survey Section



- Benchmark**

Shoalest Sounding in Quarter/Parameter of each Reach

Channel Toes

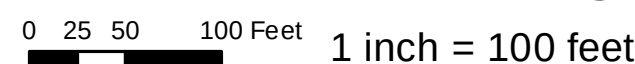
Channel Quarter/Parameter Line

Maintained Depth Contour Line

Bathymetry (Depths)

Aids to Navigation

 - Can
 - Nun
 - Green Lighted Buoy
 - Red Lighted Buoy
 - Junction Buoy
 - Flashing Green
 - Flashing Red
 - Green Daybeacon
 - Red Daybeacon
 - Danger



To: Navigation Interests		From: USACE, Norfolk District 803 Front St Norfolk, VA 23510					
RIVER/HARBOR NAME AND STATE A1WW - LOWER NORTH LANDING RIVER VIRGINIA				MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD			
NAME OF CHANNEL	DATE OF SURVEY	PROJECT			LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
		WIDTH (feet)	LENGTH (miles)	DEPTH (feet)			
Lower North Landing River	07-26-2018	250	3.8	12	6.4	7.5	3.7
Remarks: All Depths at CE LOW WATER (CELW), CELW 2011 TIDAL EPOCH							

RESULTS OF SURVEYS MADE
TIONS EXISTING AT THAT TIME.

NOTES:

1. PROJECT: CHANNEL 12 FEET DEEP AND 350 FEET WIDE

2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF A SURVEY CONDUCTED ON 11/11/2015. THE DATE(S) INDICATED CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDUCT OF THE SURVEY. THE DATA WAS COLLECTED AT A TIDE OF APPROXIMATELY 1.5 METERS.

3. SOUNDINGS: SHOWN IN FEET CENTERED ON POINT OF SHALLOWEST DEPTH IN 20 FT RADIUS.

4. BACKGROUND: VGIN GIS IMAGERY WEB SERVICE

5. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL 4'; 10 FEET ON DATE OF SURVEY.

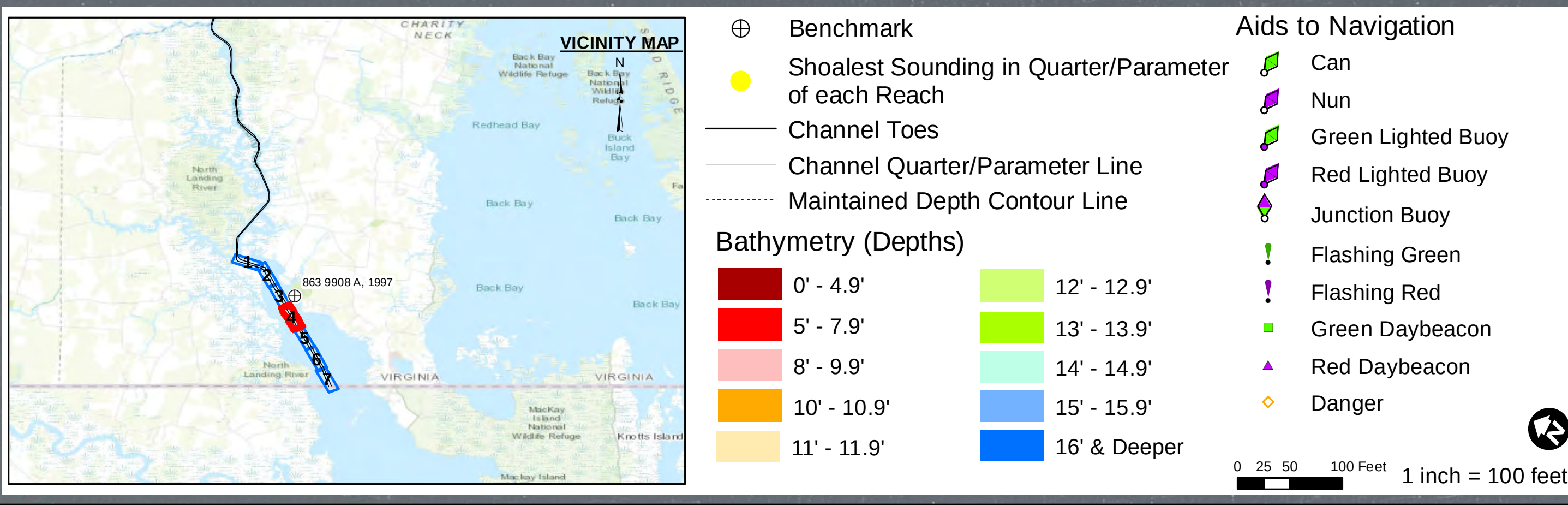
6. SURVEY XYZ (.XYZ) AND METADATA (.MET) FILE NAME REFERENCED BY HYDRO FILE NAME.

VERTICAL REFERENCE UNDOY: CE LOW WATER	
CWLY ZONE:	
IMPLIED VERTICAL ACCURACY: RTK/LEICA SMART NET	
TIDE APPLICATION CONTROL: RTK/NOAA DATUM MSL	
SYS/TM METHOD: MULTIBEAM	
BIN SIZE: 5X5'	
BIN SELECTION METHOD: AVERAGE CELL CENTER	
ROL MONUMENTS	
AV088:	AREA
SE01D12A)	-04+00 TO 198+96
	NON TIDAL

DATUM NAME: NAD 83 PROJECTED COORDINATE SYSTEM: STATE PLANE ZONE: VIRGINIA SOUTH ZONE SURVEY FEET PROJECTED HORIZONTAL UNITS: U.S. SURVEY FEET IMPLIED HORIZONTAL ACCURACY: +/- 1 FOOT HORIZONTAL CONTROL: RTK/LEICA SMART NET	GEODETIC CONTROL:
MONUMENT NOS 983 9908A, 1987	CE LOW WATER 2.91' 1.82' (CE)

WATERWAY (AIW)
LOWER NORTH LANDING RIVER
PROJECT CONDITION SURVEY
SURVEY DATES:
July 26 & 27, 2018
SURVEY BY: USACE Team Lead, Joseph A. Moore Jr.

SHEET 4 of 7	
Map Produced: 10/3/2018	
PROVED:	
Chief, Navigation Analysis Section	
PROVED:	
Chief, Navigation Support and Survey Section	



To: Navigation Interests		From: USACE, Norfolk District 803 Front St Norfolk, VA 23510					
RIVER/HARBOR NAME AND STATE A1WW - LOWER NORTH LANDING RIVER VIRGINIA				MINIMUM DEPTHS IN EACH WIDTH OF CHANNEL ENTERING FROM SEAWARD			
NAME OF CHANNEL	DATE OF SURVEY	PROJECT			LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
		WIDTH (feet)	LENGTH (miles)	DEPTH (feet)			
Lower North Landing River	07-26-2018	250	3.8	12	6.4	7.5	3.7
Remarks: All Depths at CE LOW WATER (CELW), CELW 2011 TIDAL EPOCH							

THE RESULTS OF SURVEYS MADE
ON CONDITIONS EXISTING AT THAT TIME.
IS.
AWIE.

NOTES:

PROJECT: A CHANNEL 12 FEET DEEP AND 250 FEET WIDE
NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED
IN THE DATE(S) INDICATED & CAN ONLY BE CONSIDERED AS
SOUNDINGS: SHOWN IN FEET CENTERED ON POINT OF SOUNDING
BACKGROUND: VGIN GIS IMAGERY WEB SERVICE
AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL #1-
SURVEY# XYZ ("XYZ) AND METADATA ("MET) FILE NAME RE

PRE-EMERGENCY WATER TIDAL EPOCH IMPLIED VERTICAL ACCURACY: 42.04 FEET TIDAL CONTROL: RTK/LEICA SMART NET RTK/NOAA VDATUM MDI MULTIBEAM SYSTEM/METHOD: 5X5 BIN SELECTION METHOD: AVERAGE CELL CENTER	TOL. MONUMENTS D/88 E00122A)	MEAN RANGE OF TIDE NON TIDAL	AREA -04+00 to 196+96
--	------------------------------------	---------------------------------	--------------------------

PROJECTED COORDINATE SYSTEM:	STATE PLANE
PROJECTED COORDINATE SYSTEM:	VIRGINIA SOUTH ZONE
HORIZONTAL ZONE:	SURVEY FEET
PROJECTED COORDINATE UNITS:	+/- 1 FOOT
PROJECTED HORIZONTAL ACCURACY:	RTK/LEICA SMART NET
HORIZONTAL CONTROL:	
GEODETIC CONTROL	
MONUMENT	
NOS:663 9906A*, 1997	
CE LOW WATER	2.91'
N	1.82'

**ATLANTIC INTRACOASTAL
WATERWAY (AIW)
LOWER NORTH LANDING RIVER
PROJECT CONDITION SURVEY**

SURVEY DATES:
July 26 & 27, 2018

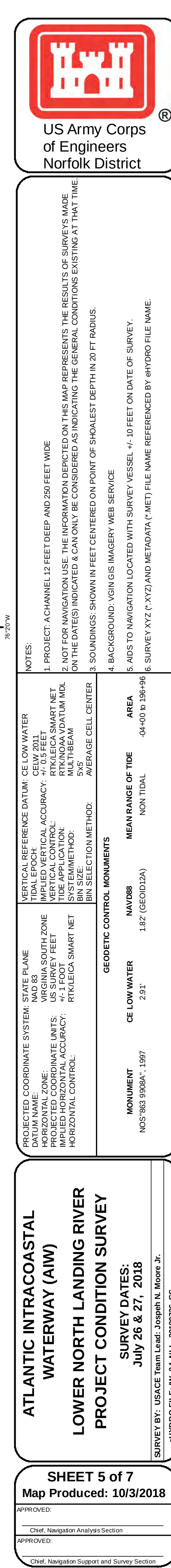
SHEET 5 of 7
Map Produced: 10/3/20
PROVED:
Chief, Navigation Analysis Section
PROVED:
Chief, Navigation Support and Survey Section

SHEET 5 of 7
Map Produced: 10/3/20

Chief, Navigation Analysis Section

PROVED:

Chief, Navigation Support and Survey Section



RESULTS OF SURVEYS MADE
ON THE PRESENT SITUATIONS EXISTING AT THAT TIME.

NOTES:

PROJECT_A.CHANNEL.12 FEET DEEP AND 250 FEET WIDE

NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESEARCH DATA AND ANALYSIS OF THE DATA. IT IS NOT TO BE USED FOR NAVIGATION PURPOSES. THE DATA (S) INDICATED & CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDTION OF THE AREA. THE DATA IS NOT TO BE USED FOR NAVIGATION PURPOSES. THE DATA IS NOT TO BE USED FOR NAVIGATION PURPOSES. THE DATA IS NOT TO BE USED FOR NAVIGATION PURPOSES.

SOUNDINGS SHOWN IN FEET CENTERED ON POINT OF SHORALEST DEPTH IN 20 FT RADIUS.

BACKGROUND: VGIN GIS IMAGERY WEB SERVICE

AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET ON DATE OF SURVEY.

SURVEY XYZ Z (X,Y,Z) AND METAADATA (.MET) FILE NAME REFERENCED BY #HYDRO FILE NAME.

ZONE	VERTICAL REFERENCE UNIT: CELL LOW WATER	1
	CELL 201	2
	IMPLIED VERTICAL ACCURACY:	3
	VERTICAL CONTROL:	4
NET	TIDE APPLICATION:	5
	SYSTEM METHOD:	6
	BIN SIZE:	7
	BIN SELECTION METHOD:	8
CONTROL MONUMENTS	AVERAGE CELL CENTER	9
		10
NAVD88	MEAN RANGE OF TIDE	11
1.82 (GEOID12A)	AREA	12
	-04.00 to 196.96	13
	NON TIDAL	14

PROJECTED COORDINATE SYSTEM: STATE PLANE DATUM NAME: NAD 83 ZONE: VIRGINIA SOUTH ZONE SURVEY FEET PROJECTED COORDINATE UNITS: +3.1 FOOT IMPLIED HORIZONTAL ACCURACY: RTK/LEICA SMART HORIZONTAL CONTROL:	GEODETIC CE LOW WATER 2.91'
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WATERWAY (AIW)

LOWER NORTH LANDING RIVER

PROJECT CONDITION SURVEY

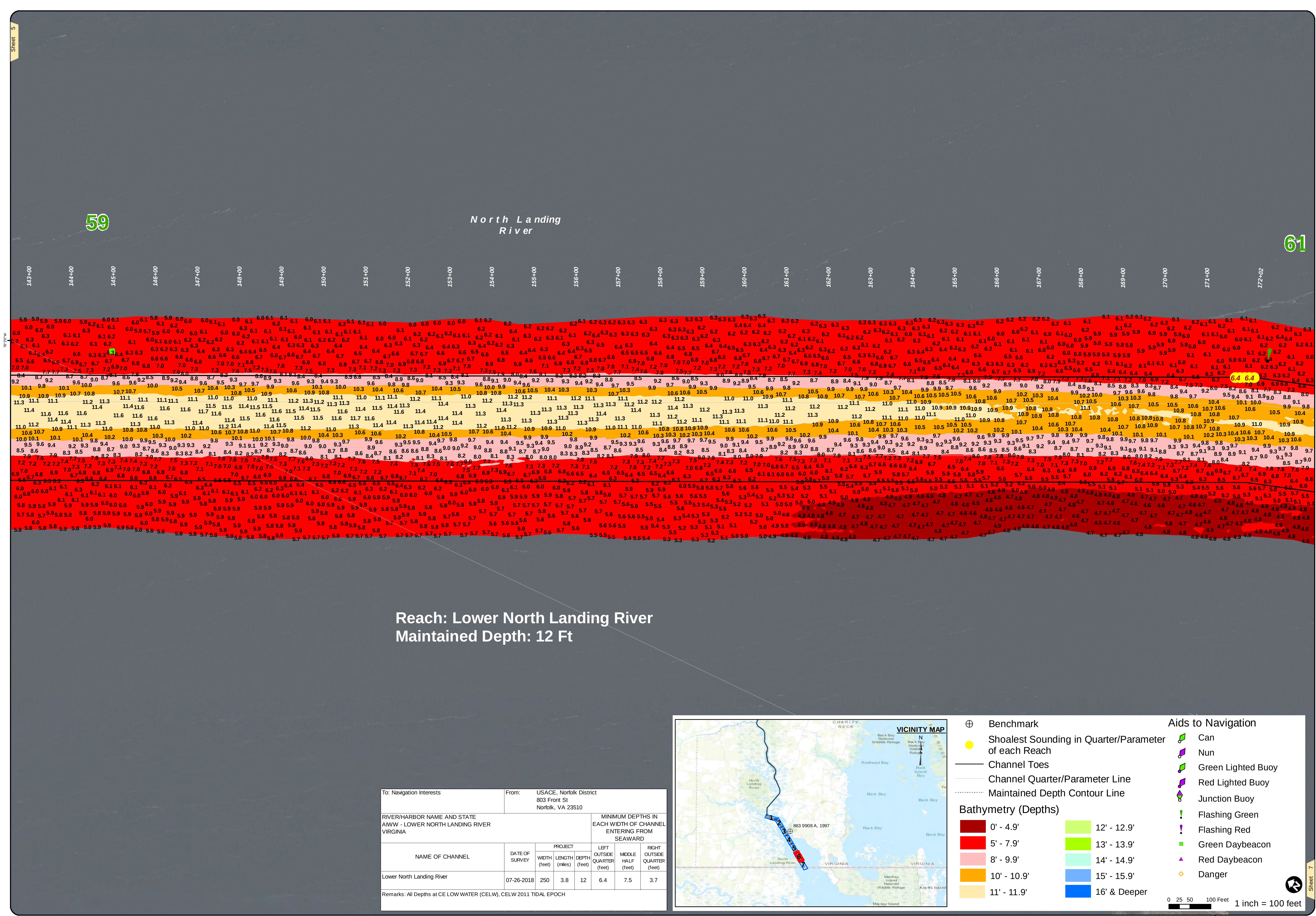
SURVEY DATES:
July 26 & 27, 2018

SURVEY BY: USACE Team Lead: Joseph N. Moore Jr.

SHEET 6 of 7
Map Produced: 10/3/2018
PROVED:

Chief, Navigation Analysis Section
PROVED:

Chief, Navigation Support and Survey Section



RESULTS OF SURVEYS MADE
IONS EXISTING AT THAT TIME.

NOTES:

PROJECT: ACHANNEL 12 FEET DEEP AND 250 FEET WIDE

DONOT FOR NAVIGATION USE THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF A SURVEY CONDUCTED IN 2017. ANY CHANGES TO THE DATA SINCE THAT DATE WILL NOT BE REFLECTED IN THIS MAP. THE DATA IS PROVIDED AS-IS AND WITHOUT WARRANTY. THE USER SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF THE DATA PRIOR TO USING IT FOR NAVIGATION PURPOSES.

THE DATA IS PROVIDED AS-IS AND WITHOUT WARRANTY. THE USER SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF THE DATA PRIOR TO USING IT FOR NAVIGATION PURPOSES.

SOUNDINGS SHOWN IN FEET CENTERED ON POINT OF SHOALEST DEPTH IN 20 FT RADIUS.

BACKGROUND: VGIN GIS IMAGERY WEB SERVICE

POINTS: AID TO NAVIGATION LOCATED WITH SURVEY VESSEL +/- 10 FEET ON DATE OF SURVEY.

SURVEY XYZ (.X,Y,Z) AND METADATA (.MET) FILE NAME REFERENCED BY @HYDRO FILE NAME.

VERIFICATION DATA:	CE LOW WATER
LEVELING METHOD:	CEN. POINT
IMPERIAL VERTICAL ACCURACY:	RTK/LEICA SMART NET
VERTICAL CONTROL:	RTK/NOAA SVATUM MDL
TIDE APPLICATION:	MULTI-BEAM
SYS/TEM/METHOD:	5X5'
BIN SIZE:	AVERAGE CELL CENTER
BIN SELECTION METHOD:	
ROL. MONUMENTS	
E088	MEAN RANGE OF TIDE AREA
(DD612A)	-04'-10" TO 198'-96"
	NON TIDAL

DATUM NAME: NAD83 ZONE: 18N PROJECTED COORDINATE SYSTEM: UTM PROJECTED HORIZONTAL ACCURACY: 1.0 METERS IMPLIED HORIZONTAL ACCURACY: 1.0 METERS HORIZONTAL CONTROL: RTK/LEICA SMART NET	GEODETIC CONTROL: MONUMENT CE LOW WATER: 2.91' NAD83: 963 99086", 1997 NAD83: 182'
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**ATLANTIC INTRACOASTAL
WATERWAY (AIW)
LOWER NORTH LANDING RIVER
PROJECT CONDITION SURVEY**

SURVEY DATES:
July 26 & 27, 2018

SURVEY BY: USACE Team Lead: Joseph N. Moore Jr.

SHEET 7 of 7
Map Produced: 10/3/2018

PROVED:

Chief, Navigation Analysis Section

PROVED:

Chief, Navigation Support and Survey Section

**ATLANTIC INTRACOASTAL
WATERWAY (AIW)
LOWER NORTH LANDING RIVER
PROJECT CONDITION SURVEY**

SURVEY DATES:
July 26 & 27, 2018

BY: USACE Team Lead: Joseph N. Moore Jr.

SURVEY

SHEET 7 of 7

Map Produced: 10/3/2018

PROVED: _____

Chief, Navigation Analysis Section

PROVED: _____

Chief, Navigation Support and Survey Section

