



⊕ Benchmark

● Shoalest Sounding in Quarter/Parameter of each Reach

— Channel Toes

— Channel Quarter/Parameter Line

— Maintained Depth Contour Line

Bathymetry

0' - 2.9'	7' - 7.9'
3' - 3.9'	8' - 8.9'
4' - 4.9'	9' - 10.9'
5' - 5.9'	11' and Deeper
6' - 6.9'	

0 100 200 400 Feet

1 IN = 200 FEET

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 MILFORD HAVEN VIRGINIA				MINIMUM DEPTHS (FT) 80% OF CHANNEL ENTERING FROM SEAWARD	
NAME OF CHANNEL	DATE OF SURVEY	PROJECT			80% of Project Width - 40% on Either Side of Center Line
		WIDTH (feet)	LENGTH (miles)	DEPTH (feet)	
Pagan River	11-04-2023	80 100	6.8	6.0	5.4
Remarks: All Depths at Mean Lower Low Water (MLLW), 1983-2001 Tidal Epoch					



US Army Corps
of Engineers
Norfolk District

NOTES:

1. A CHANNEL 10 FEET DEEP AND 80 FEET WIDE BETWEEN SMITHFIELD AND THE 10 FOOT CONTOUR IN THE JAMES RIVER, A 6 FOOT DEEP AND 80 FOOT WIDE CHANNEL WILL BE MAINTAINED UNTIL TRAFFIC INDICATES THE NEED FOR A CHANGE.
2. NOT FOR NAVIGATION USE. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) INDICATED & CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. ADDITIONAL SURVEY DATA WAS COLLECTED AUGUST 21, 2024 TO CAPTURE RE-ALIGNMENT CHANNEL SECTION 98+00 TO 150+00.
4. SOUNDINGS SHOWN IN FEET CENTERED ON POINT OF SHOALEST DEPTH IN 25 FT RADIUS GENERATED FROM HYDROSURVEY DATA.
5. AID TO NAVIGATION LOCATED WITH SURVEY VESSEL 4'-10 FEET.
6. SURVEY XYZ (.XYZ) AND METADATA (.MET) FILE NAME REFERENCED BY #HYDRO FILE NAME.

VERTICAL REFERENCE DATUM: NOS MLLW	STATE PLANE	MONUMENT	MEAN RANGE OF TIDE
POSITIONING SYSTEM: PRKALW A.1 54	VIRGINIA SOUTH ZONE	CE "PORK, 2011"	2.51'
SYSTEM METHOD: MULTI-BEAM	US SURVEY FEET		
BIN SIZE: 33'	4'-1.0 FOOT		
SECTION METHOD: 0+0.0 TO 388+31	4'-0.0 FOOT		
AREA SURVEYED:			

PAGAN RIVER

PROJECT CONDITION SURVEY

SURVEY DATES:
November 4-6, 2023

SHEET 1 of 5
Map Produced: 9/10/2024

APPROVED:
Chief, Navigation Analysis Section

APPROVED:
Scott Titus
Chief, Navigation Support and Survey Section

SURVEY BY: Geodynamics Team Lead: Abby Satterwhite
#HYDRO FILE: PG_01_PAG_20231104_CS



Bathymetry

0' - 2.9'	7' - 7.9'
3' - 3.9'	8' - 8.9'
4' - 4.9'	9' - 10.9'
5' - 5.9'	11' and Deeper
6' - 6.9'	

Aids to Navigation

Benchmark	Can
Shoalest Sounding in Quarter/Parameter of each Reach	Nun
Channel Toes	Green Lighted Buoy
Channel Quarter/Parameter Line	Red Lighted Buoy
Maintained Depth Contour Line	Junction Buoy
	Flashing Green
	Flashing Red
	Green Daybeacon
	Red Daybeacon
	Danger

1 IN = 200 FEET



NOTES:

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5. AID TO NAVIGATION LOCATED WITH SURVEY VESSEL 4'-10 FEET.
6. SURVEY XYZ (.XYZ) AND METADATA (.MXT) FILE NAME REFERENCED BY #HYDRO FILE NAME.

VERTICAL REFERENCE DATUM: NOS MLLW	PRKALW A.1 54
POSITIONING SYSTEM: MULTI-BEAM	333
BN SIZE: 333	0400 388+31
AREA SURVEYED:	
PROJECTED COORDINATE SYSTEM: STATE PLANE	
HORIZONTAL ZONE: VIRGINIA SOUTH ZONE	
US SURVEY FEET	
IMPLIED HORIZONTAL ACCURACY: +/- 1 FOOT	
IMPLIED VERTICAL ACCURACY:	
MONUMENT	CE "PORK, 2011"
MLLW	5.63
NAVD88	4.09(GEOD19)
MEAN RANGE OF TIDE	2.51'

PAGAN RIVER

PROJECT CONDITION SURVEY

SURVEY DATES:
November 4-6, 2023

SURVEY BY: Geodynamics Team Lead: Abby Slatte-White
#HYDRO FILE: PG_01_PAG_20231104_CS

SHEET 2 of 5

Map Produced: 9/10/2024

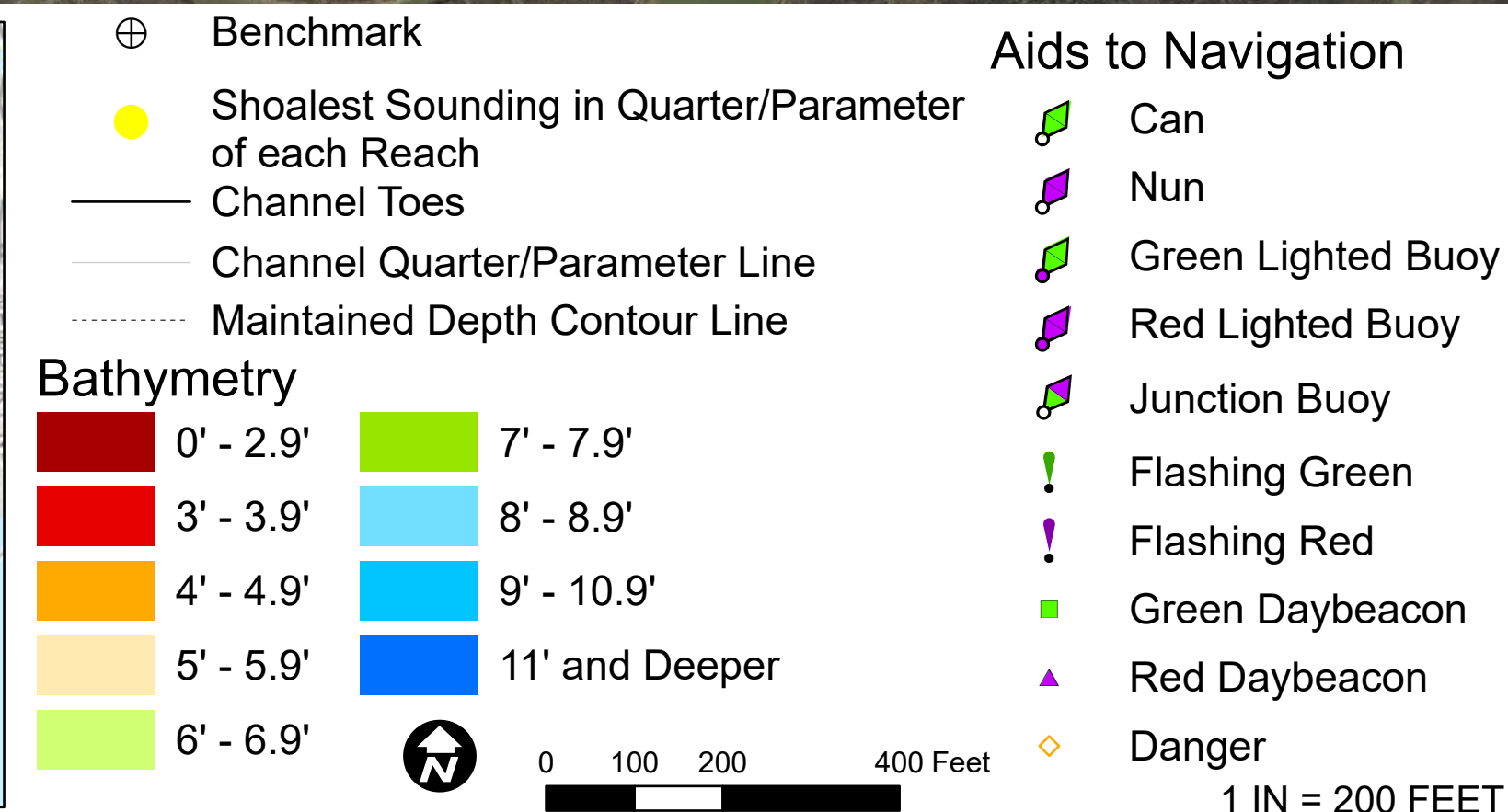
APPROVED:

Chief, Navigation Analysis Section

APPROVED:

Chief, Navigation Support and Survey Section

To: Navigation Interests	From: USACE, Norfolk District 803 Front St Norfolk, VA 23510	
RIVER/HARBOR NAME AND STATE MILFORD HAVEN VIRGINIA		MINIMUM DEPTHS (FT) 80% OF CHANNEL ENTERING FROM SEAWARD
NAME OF CHANNEL	DATE OF SURVEY	PROJECT WIDTH (feet) LENGTH (miles) DEPTH (feet)
Pagan River	11-04-2023	80 100 6.8 6.0
Remarks: All Depths at Mean Lower Low Water (MLLW), 1983-2001 Tidal Epoch		



To: Navigation Interests		From: USACE, Norfolk District 803 Front St Norfolk, VA 23510			
RIVER/HARBOR NAME AND STATE MILFORD HAVEN VIRGINIA			MINIMUM DEPTHS (FT) 80% OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	PROJECT			80% of Project Width - 40% on Either Side of Center Line
		WIDTH (feet)	LENGTH (miles)	DEPTH (feet)	
Pagan River	11-04-2023	80 100	6.8	6.0	5.4

Remarks: All Depths at Mean Lower Low Water (MLLW), 1983-2001 Tidal Epoch



US Army Corps of Engineers Norfolk District	
SURVEY BY: Geodynamics Team Lead: Abby Satterwhite eHYDRO FILE: PG_01_PAG_20231104_CS	
PAGAN RIVER PROJECT CONDITION SURVEY SURVEY DATES: November 4-6, 2023	
SHEET 3 of 5 Map Produced: 9/10/2024	
APPROVED:	
Chief, Navigation Analysis Section	
APPROVED:	
Chief, Navigation Support and Survey Section	



Bathymetry

0' - 2.9'	7' - 7.9'
3' - 3.9'	8' - 8.9'
4' - 4.9'	9' - 10.9'
5' - 5.9'	11' and Deeper
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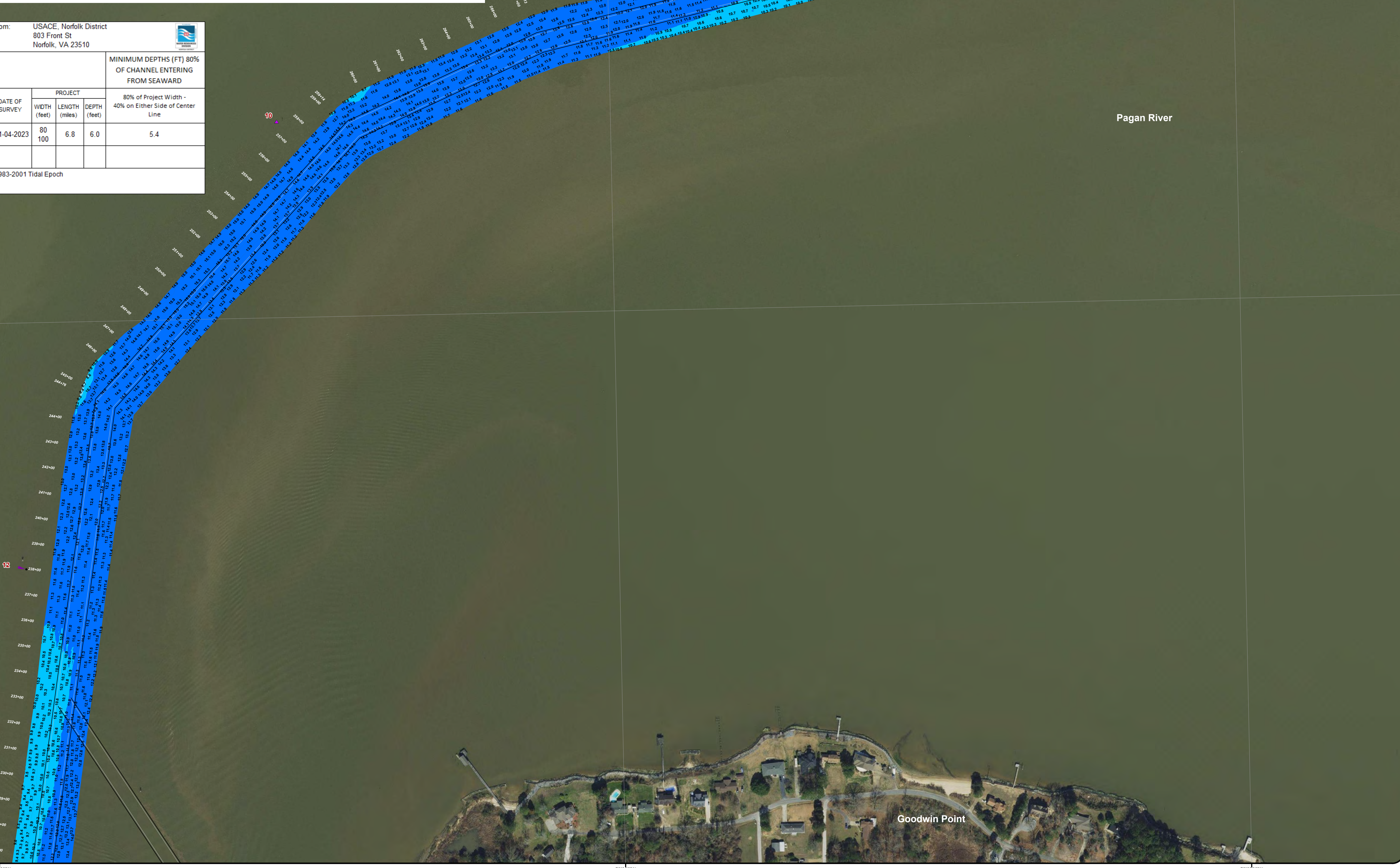
0 100 200 400 Feet

1 IN = 200 FEET

Aids to Navigation

- Can
- Nun
- Green Lighted Buoy
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NOTES:

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4. SOUNDINGS SHOWN IN FEET CENTERED ON POINT OF SHOALEST DEPTH IN 25 FT RADIUS GENERATED FROM HYDRO SURVEY DATA.
5. BACKGROUNND: VIRGINIA BASE MAPPING PROGRAM MOST RECENT IMAGERY GIS WEB SERVICE.
6. AIDS TO NAVIGATION LOCATED WITH SURVEY VESSEL 4' - 10 FEET.
7. SURVEY XYZ (.XYZ AND META) DATA (.NET) FILE NAME REFERENCED BY HYDRO FILE NAME.

VERTICAL REFERENCE DATUM: NOS MLLW	POSITIONING SYSTEM: PRKALLW A.1 54	MEAN RANGE OF TIDE
PROJECTED COORDINATE SYSTEM: STATE PLANE	SYSTEM METHOD: MULTI-BEAM	2.51'
PROJECTED COORDINATE UNITS: US SURVEY FEET	BIN SIZE COLLECTION METHOD: 0+0.0 388+31	
IMPLIED HORIZONTAL ACCURACY: +/- 1 FOOT	AREA SURVEYED:	
IMPLIED VERTICAL ACCURACY: +/- 0.5 FEET		
MONUMENT	GEODETIC CONTROL MONUMENTS	
CE "PORK, 2011"	NAVD88	
	4.09(GEOD19)	

PAGAN RIVER

PROJECT CONDITION SURVEY

SURVEY DATES:
November 4-6, 2023

SURVEY BY: Geodynamics Team Lead: Abby Satterwhite
HYDRO FILE: PG_01_PAG_20231104_CS



Bathymetry

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NAME OF CHANNEL	DATE OF SURVEY	PROJECT	
		WIDTH (feet)	LENGTH (miles)
Pagan River	11-04-2023	80	6.8
		100	6.0
Remarks: All Depths at Mean Lower Low Water (MLLW), 1983-2001 Tidal Epoch			

Reach: Pagan River
Maintained Depth: 6 Ft



- NOTES:
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VERTICAL REFERENCE DATUM: NOS MLLW POSITIONING SYSTEM: PRKALW 1.1 54 SYSTEM METHOD: MULTI-BEAM BIN SIZE: 333 SECTION METHOD: 0+0.0 TO 388+31 AREA SURVEYED:	MEAN RANGE OF TIDE 2.51'	
	MONUMENT CE PORK, 2011"	GEODETIC CONTROL MONUMENTS NAVD88 4.09(GEOD19)

PAGAN RIVER PROJECT CONDITION SURVEY	
SURVEY DATES: November 4-6, 2023	
SURVEY BY: Geodynamics Team Lead: Abby Satterwhite HYDRO FILE: PG_01_PAG_20231104_CS	

SHEET 5 of 5 Map Produced: 9/10/2024	
APPROVED:	
APPROVED:	