



**INTRACOASTAL WATERWAY
MAINTENANCE DREDGING
ST. LUCIE COUNTY REACH I, FLORIDA**

APPENDIX E
Bathymetric Survey



LOCATION MAP
1" INCH = 20,000 FEET

HYDROGRAPHIC SURVEY
INTRACOASTAL WATERWAY
ST. LUCIE COUNTY
-FOR-
FLORIDA INLAND NAVIGATION DISTRICT

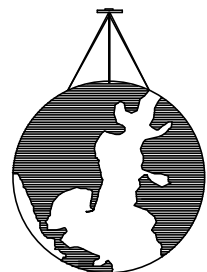
MARCH 6, 2014

COMMISSION NUMBER: 5303.10

PREPARED BY:

MORGAN & EKLUND, INC.

PROFESSIONAL SURVEY CONSULTANTS



8745 US HIGHWAY #1
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LB #4298

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CONTROL TABULATION

DESIGNATION	NAD 83/90 NORTHING	SPCS 0901 EASTING	NAVD 88* ELEVATION	STAMPING	DESCRIPTION
206	1161684.03	867474.71	3.81	206 M&E LB #4298	5/8" IRC
207	1161607.17	867510.17	4.09	207 M&E LB #4298	5/8" IRC
G 401 1991	1159230.63	865846.02	11.11	G 401 1991	NGS DEEP ROD
P 200 1960			12.55	P 200 1960	CGS DISK IN CONCRETE
ND 3 1969	1136048.96	875444.32	5.63	ND 3 1969	CGS CONCRETE MONUMENT
212 BM11	1135863.24	875523.97	5.71	212 BM11	M&E APM
212	1135861.07	875623.48	5.50	212 M&E LB #4298	5/8" IRC
ND 2 1969	1135805.52	875717.71	3.50	ND 2 1969	DISK IN SEAWALL
ND 3 A 1969	1135781.29	875631.81	3.44	ND 3 A 1969	DISK IN SEAWALL
WHITE 2 1966	1109155.44	884158.56	27.69	WHITE 2 1966 ND 5 1985	DISK IN CONCRETE MONUMENT
208	1108617.22	884684.62	22.50	208 M&E LB #4298	5/8" IRC
209	1108525.33	884678.89	22.98	209 M&E LB #4298	5/8" IRC
GPS SAV 3	1108443.96	884448.67	28.49	GPS SAV 3	DISK IN CONCRETE MONUMENT
211	1078564.63	898308.85	21.40	211 M&E LB #4298	5/8" IRC
WEATHERINGTON	1078502.41	897558.18	28.78	GPS WEATHERINGTON	DISK IN CONCRETE MONUMENT
WALTON RM			40.10	WALTON ND 2 1930	DISK IN CONCRETE MONUMENT
210	1078499.04	898380.32	20.87	210 M&E LB #4298	5/8" IRC

* ALL ELEVATION DATA SHOWN ON THE FOLLOWING PAGES HAVE BEEN CONVERTED TO MEAN LOWER LOW WATER USING THE LATEST VERSION OF VDATUM (VERTICAL DATUM TRANSFORMATION) PROVIDED BY NOAA, NATIONAL OCEAN SERVICE (NOS).

LEGEND

ACOE ARMY CORPS OF ENGINEERS
APM ALUMINUM PIPE MONUMENT
CGS COAST & GEODETIC SURVEY
ICWW INTRACOASTAL WATERWAY
IRC IRON ROD & CAP
M&E MORGAN & EKLUND, INC.
MLLW MEAN LOWER LOW WATER
NGS NATIONAL GEODETIC SURVEY
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ASSOCIATION
STATE ROAD

SR
△ FOUND CONTROL POINT
□ SET CONTROL POINT
⊗ RED CHANNEL MARKER
⊙ GREEN CHANNEL MARKER

CERTIFIED TO:
FLORIDA INLAND NAVIGATION DISTRICT.

CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION SHOWN HEREON IS IN ACCORDANCE WITH A RECENT FIELD SURVEY MADE UNDER MY DIRECTION, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE MINIMUM TECHNICAL STANDARDS AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS IN CHAPTER 5J-17, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.

JOHN R. MORGAN, II, PLS
PROFESSIONAL LAND SURVEYOR
FLORIDA CERTIFICATION NUMBER 3520



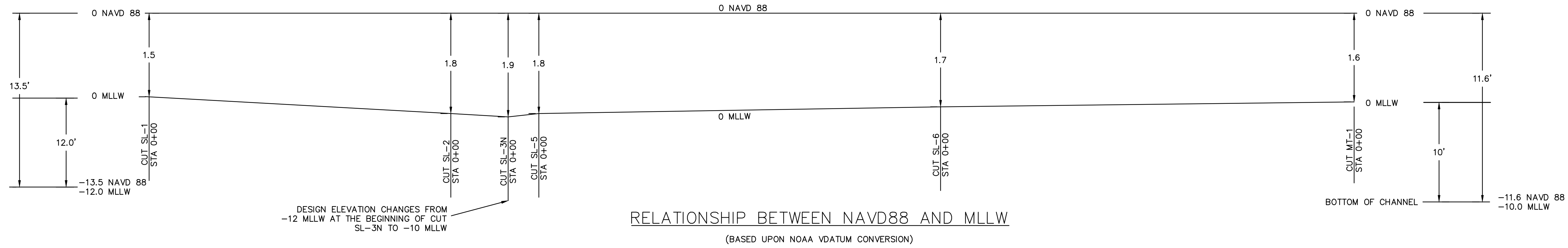
SURVEY NOTES:

- GRID COORDINATES SHOWN ARE IN FEET AND ARE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983, 1990 ADJUSTMENT.
- GRID COORDINATES ARE BASED ON CONTROL MONUMENTS AS SHOWN IN THE CONTROL TABLE.
- ELEVATIONS SHOWN ARE IN FEET AND ARE REFERENCED TO MEAN LOWER LOW WATER. ELEVATION DATA WAS COLLECTED IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) AND CONVERTED TO MLLW USING THE LATEST VERSION OF VDATUM (VERTICAL DATUM TRANSFORMATION) PROVIDED BY NOAA, NATIONAL OCEAN SERVICE (NOS).
- CAUTION:** THE DIFFERENCE BETWEEN NAVD 88 AND MEAN LOWER LOW WATER VARIES AND MAY NOT BE THE SAME AS THE DIFFERENCE USED FOR PREVIOUS ACOE SURVEYS. TO MAKE A DIRECT COMPARISON BETWEEN SURVEYS, THE USER NEEDS TO BE CAREFUL TO VERIFY THE VERTICAL DATUM TRANSFORMATION PARAMETERS FOR EACH PROJECT AREA.
- ELEVATIONS ARE BASED ON CONTROL MONUMENTS AS SHOWN IN THE CONTROL TABLE.
- BATHYMETRIC INFORMATION DEPICTED ON THIS SURVEY REPRESENTS THE EXISTING CONDITIONS ON THE DATE OF THE FIELD SURVEY AND WERE MEASURED USING AN ODOM MB1 MULTIBEAM SWATH BATHYMETRIC SYSTEM OPERATING AT 219 KHZ.
- ELEVATION DATA POINTS SHOWN HEREON WERE INTERPOLATED ALONG A GRIDDED SURFACE DERIVED FROM SOUNDING DATA AND ARE FOR DISPLAY PURPOSES ONLY
- AERIAL IMAGERY WAS OBTAINED FROM FLORIDA DEPARTMENT OF TRANSPORTATION, TAKEN IN 2012.
- AERIAL IMAGERY IS DISPLAYED HEREON FOR INFORMATION PURPOSES ONLY, NO PHOTOGRAPHIC ACCURACY IS IMPLIED BY THIS MAP.
- NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.
- UNDERGROUND UTILITIES AND IMPROVEMENTS NOT LOCATED.
- WATER SURFACE ELEVATIONS WERE OBTAINED USING A TRIMBLE SPS 852 REAL TIME KINEMATIC (RTK) DUAL FREQUENCY GPS RECEIVER WITH REAL TIME CORRECTIONS APPLIED FROM A TRIMBLE 5700 DUAL FREQUENCY BASE STATION OCCUPYING POINTS SHOWN IN THE CONTROL TABLE AND WERE VERIFIED TO A TIDE STAFF ELEVATED FROM CONTROL POINTS SHOWN IN THE CONTROL TABLE.
- LOCATION OF THE INTRACOASTAL WATERWAY CHANNEL IS BASED UPON A COORDINATE FILE PROVIDED BY THE JACKSONVILLE OFFICE OF THE U.S. ARMY CORPS OF ENGINEERS ON MAY 9, 2013.
- INTRACOASTAL WATERWAY DESIGN DEPTHS BASED ON INFORMATION PROVIDED BY THE FLORIDA INLAND NAVIGATION DISTRICT JANUARY 14, 2014.

SHEET INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	INDEX SHEET
3-12	ELEVATION DATA
13-14	CHANNEL MARKER DATA

FIELD BOOKS:
FIND 10, PAGES 16 - 29
FIND 11, PAGES 13 - 15
FIND 13, PAGES 15 - 30
FIND 14, PAGES 21 - 39
FIND 15, PAGES 1 - 6
IRC 243, PAGES 61 - 64



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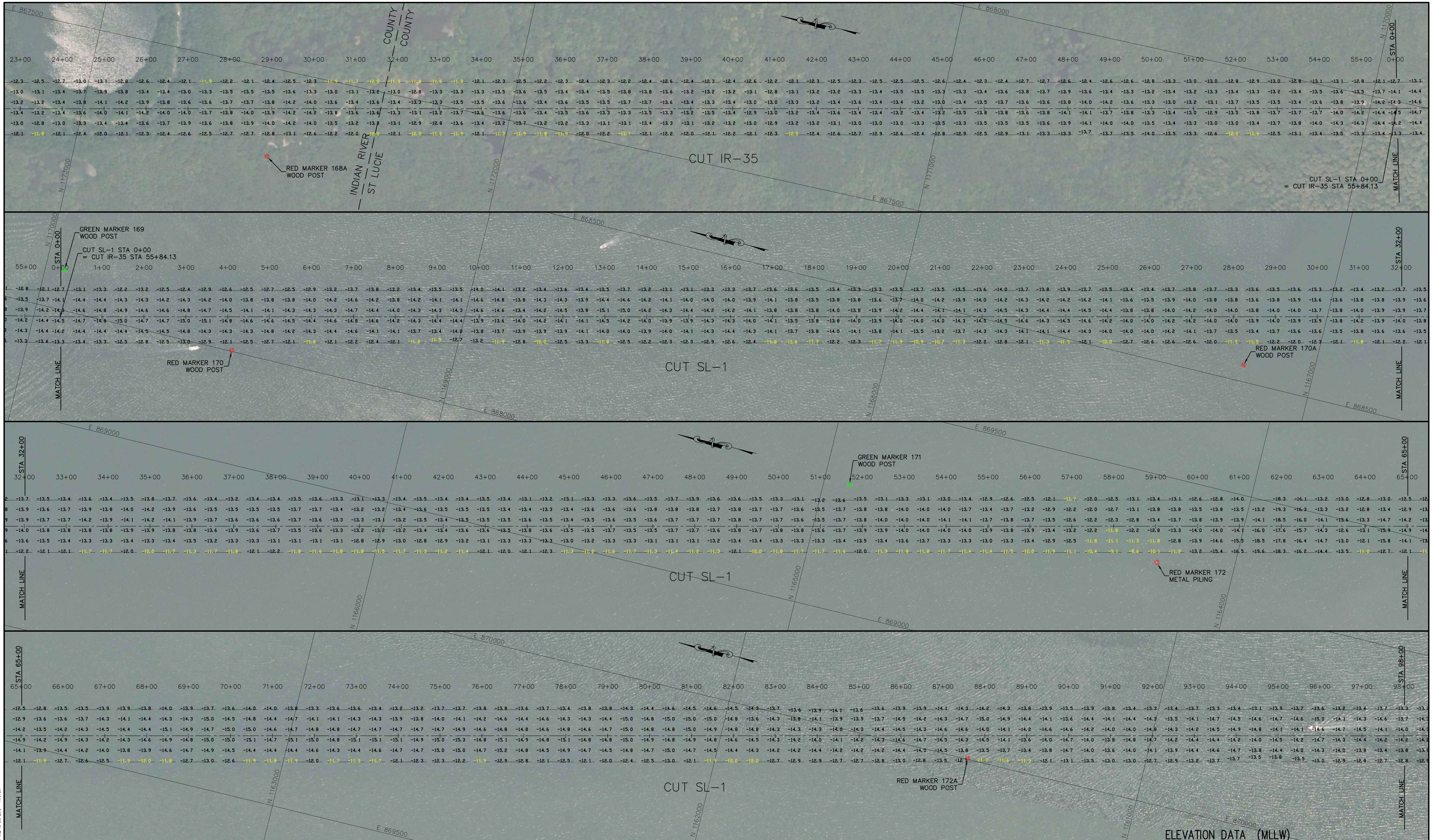
1159 SW 1ST WAY
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CERTIFICATE OF SURVEYOR - I HEREBY CERTIFY THAT THE INFORMATION SHOWN HEREON IS IN ACCORDANCE WITH A RECENT FIELD SURVEY MADE UNDER MY DIRECTION, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE MINIMUM TECHNICAL STANDARDS AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS IN CHAPTER 54-17, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.

JOHN R. MORGAN, II, PLS
PROFESSIONAL LAND SURVEYOR #3520
STATE OF FLORIDA

INDEX SHEET
HYDROGRAPHIC SURVEY
INTRACOASTAL WATERWAY
ST. LUCIE COUNTY
- FOR -
FLORIDA INLAND NAVIGATION DISTRICT

DRAWN BY LFP	CHECKED BY JRM	FIELD BOOK PAGE NO.	SEE COVER	DATE OF SURVEY 3/6/14	COMMISSION NO. 5303.10 SCALE 1" = 5,000' DATE 5/15/14 SHEET 2 OF 14
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0100'200'

HORIZONTAL SCALE 1" = 100'
INTENDED DISPLAY SCALE

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STATE OF FLORIDA

ELEVATION DATA (MLLW)

HYDROGRAPHIC SURVEY (-12 PROJECT)
INTRACOASTAL WATERWAY CUT IR-35 TO SL-1
ST. LUCIE COUNTY
- FOR -
FLORIDA INLAND NAVIGATION DISTRICT

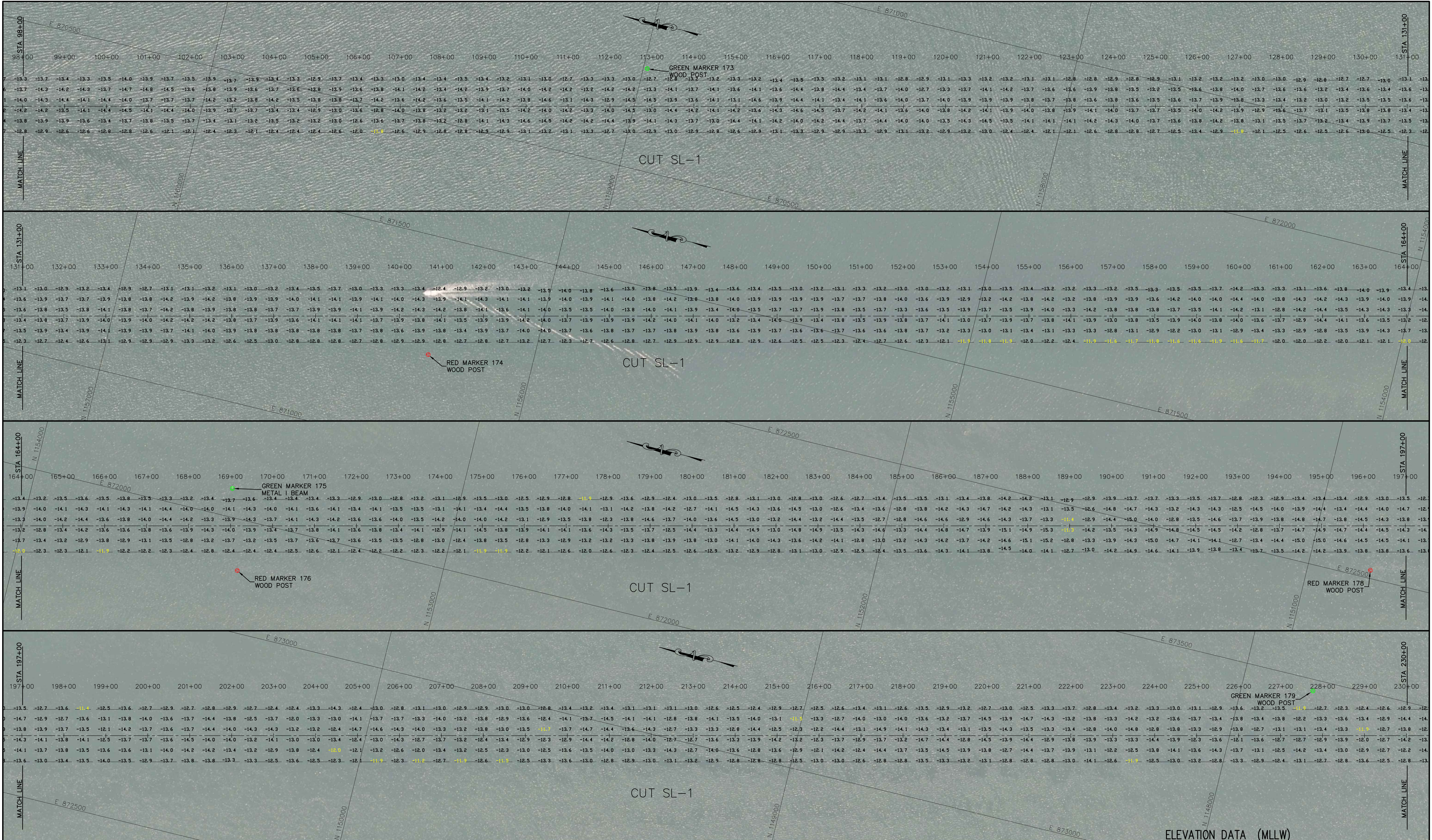
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COMMISSION NO.
5303.10

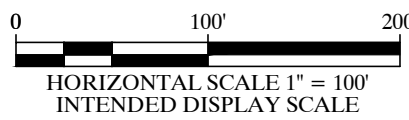
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5/15/14

SHEET 3 OF 14



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SEE SHEET 1 FOR NOTES



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STATE OF FLORIDA

ELEVATION DATA (MLLW) HYDROGRAPHIC SURVEY (-12 PROJECT) INTRACOASTAL WATERWAY CUT SL-1 ST. LUCIE COUNTY - FOR - FLORIDA INLAND NAVIGATION DISTRICT

COMMISSION NO.
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DATE
5/15/14

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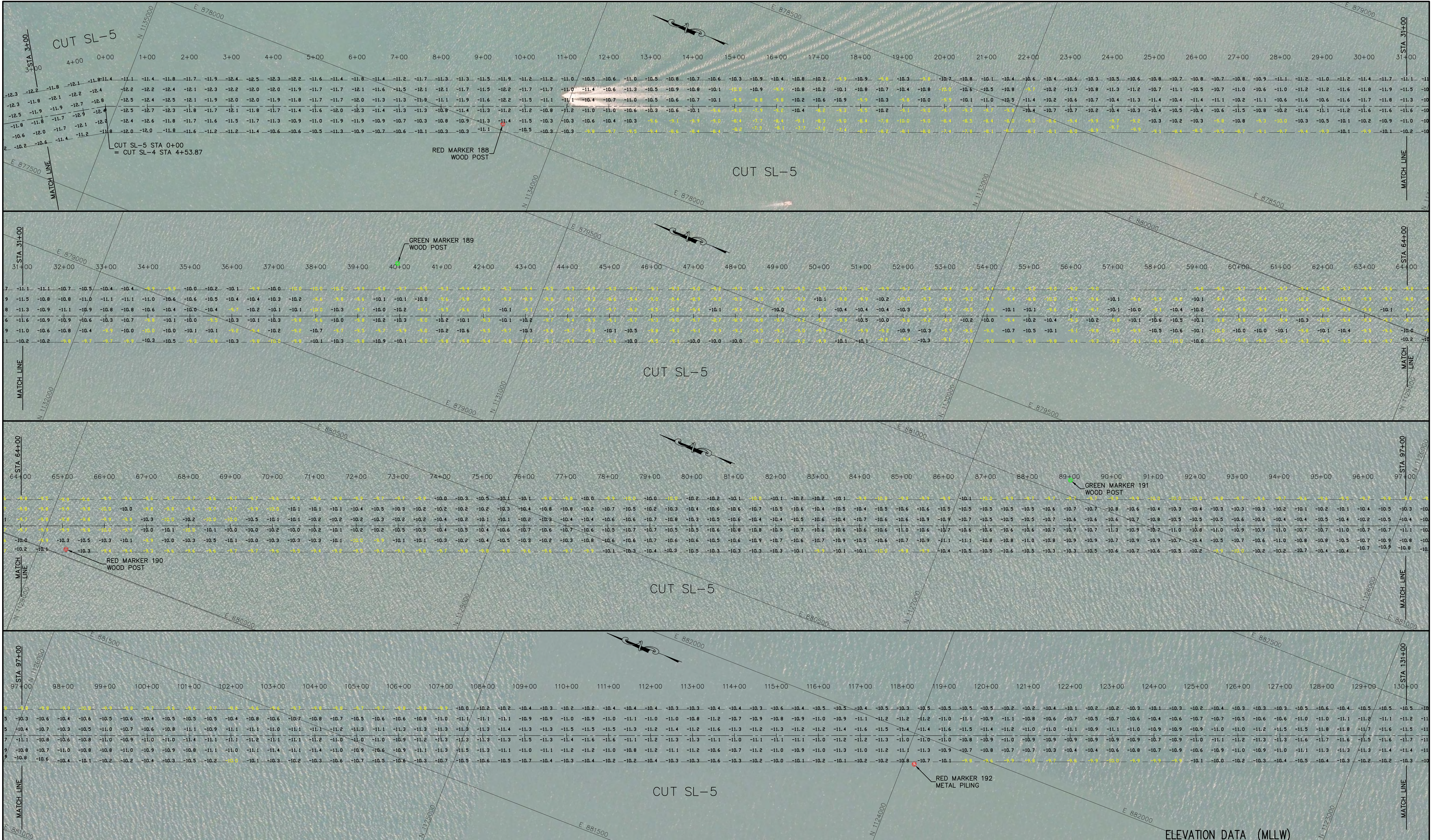
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DATE OF SURVEY
3/6/14

SHEET 4 OF 14



10/13/15 REVISE CUT NUMBERS

0100'200'

HORIZONTAL SCALE 1" = 100'
INTENDED DISPLAY SCALE

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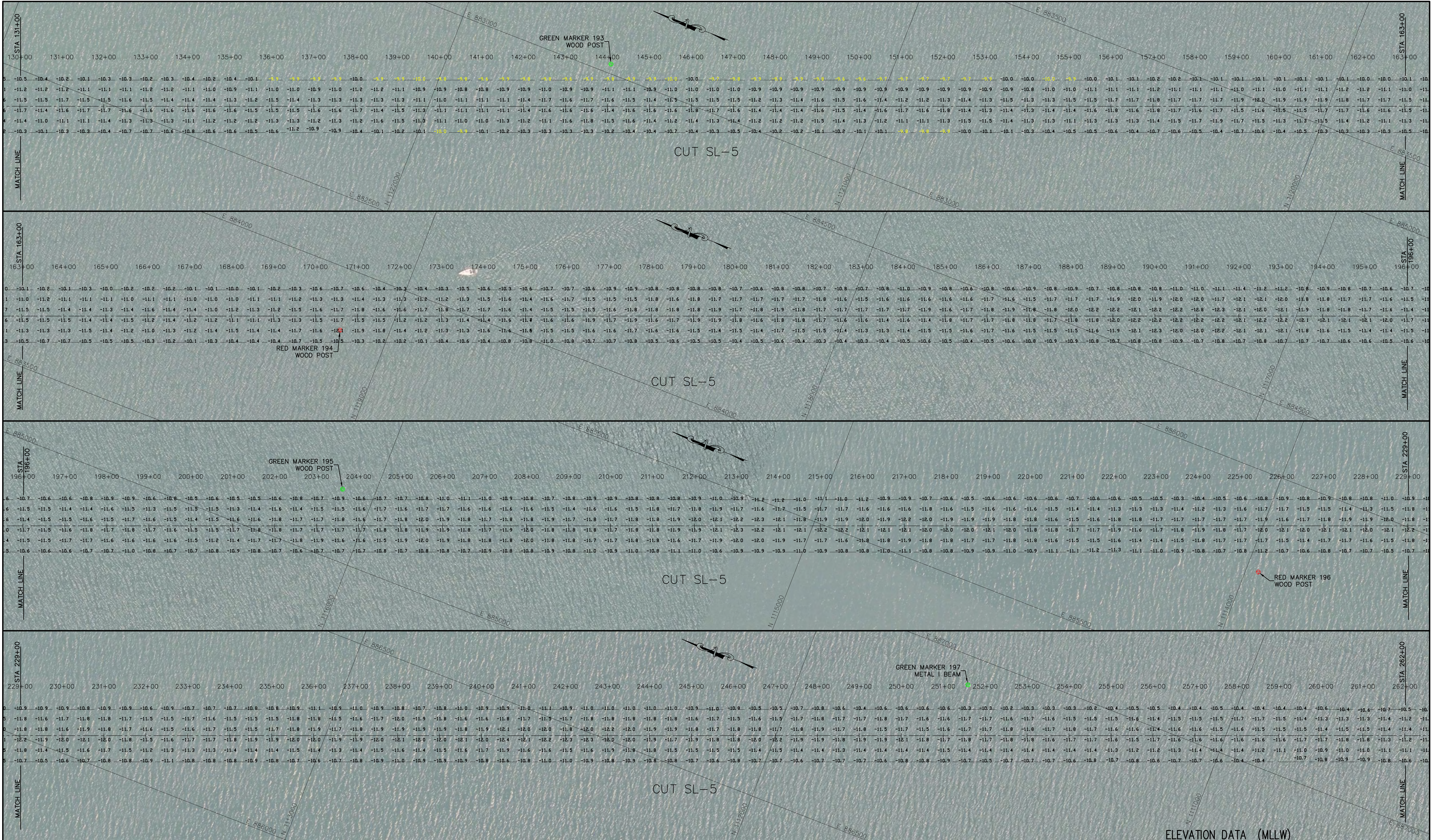
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3/6/14

SHEET
6 OF 14

ELEVATION DATA (MLLW)
HYDROGRAPHIC SURVEY (-10 PROJECT)
INTRACOASTAL WATERWAY CUT SL-5
ST. LUCIE COUNTY
- FOR -
FLORIDA INLAND NAVIGATION DISTRICT

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INTRACOASTAL WATERWAY CUT SL-5
ST. LUCIE COUNTY
- FOR -
FLORIDA INLAND NAVIGATION DISTRICT

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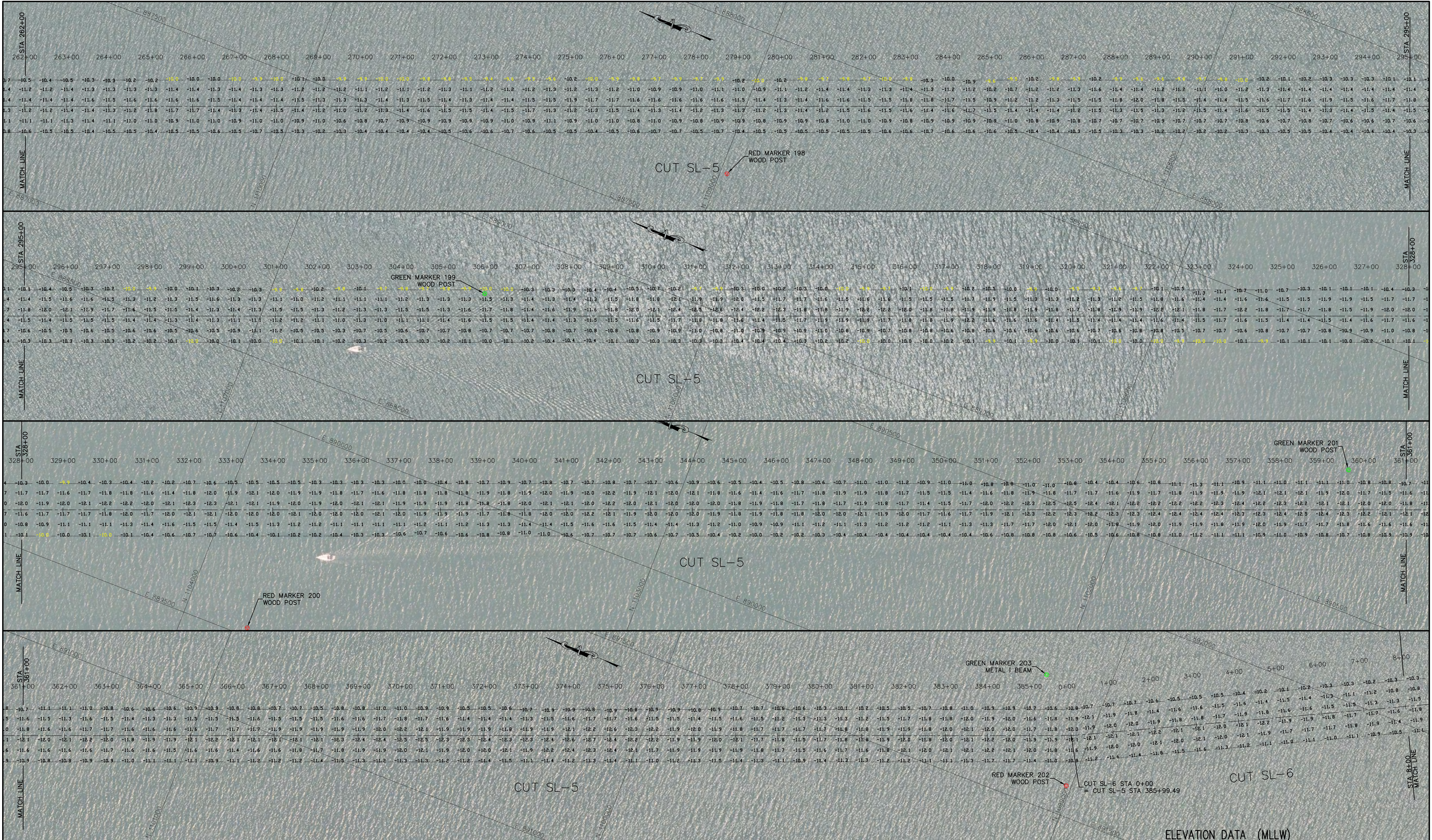
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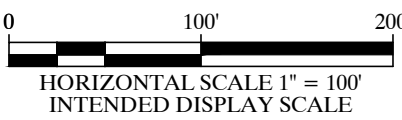
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SHEET 7 OF 14



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STATE OF FLORIDA

ELEVATION DATA (MLLW)
HYDROGRAPHIC SURVEY (-10 PROJECT)
INTRACOASTAL WATERWAY CUT SL-5 TO CUT SL-6
ST. LUCIE COUNTY
- FOR -
FLORIDA INLAND NAVIGATION DISTRICT

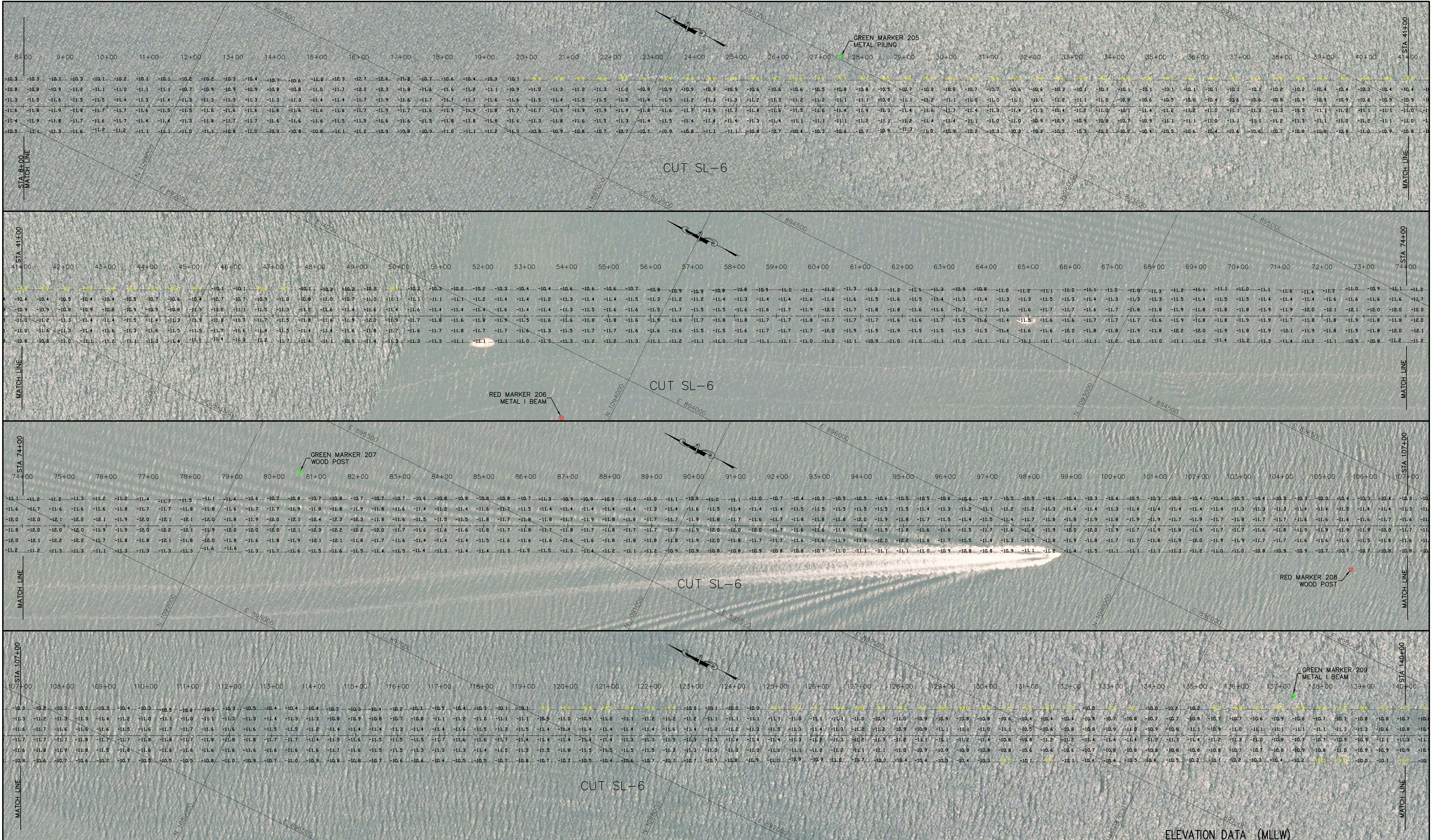
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0100'200'

HORIZONTAL SCALE 1" = 100'
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STATE OF FLORIDA

ELEVATION DATA (MLLW)
HYDROGRAPHIC SURVEY (-10 PROJECT)
INTRACOASTAL WATERWAY CUT SL-6
ST. LUCIE COUNTY
- FOR -
FLORIDA INLAND NAVIGATION DISTRICT

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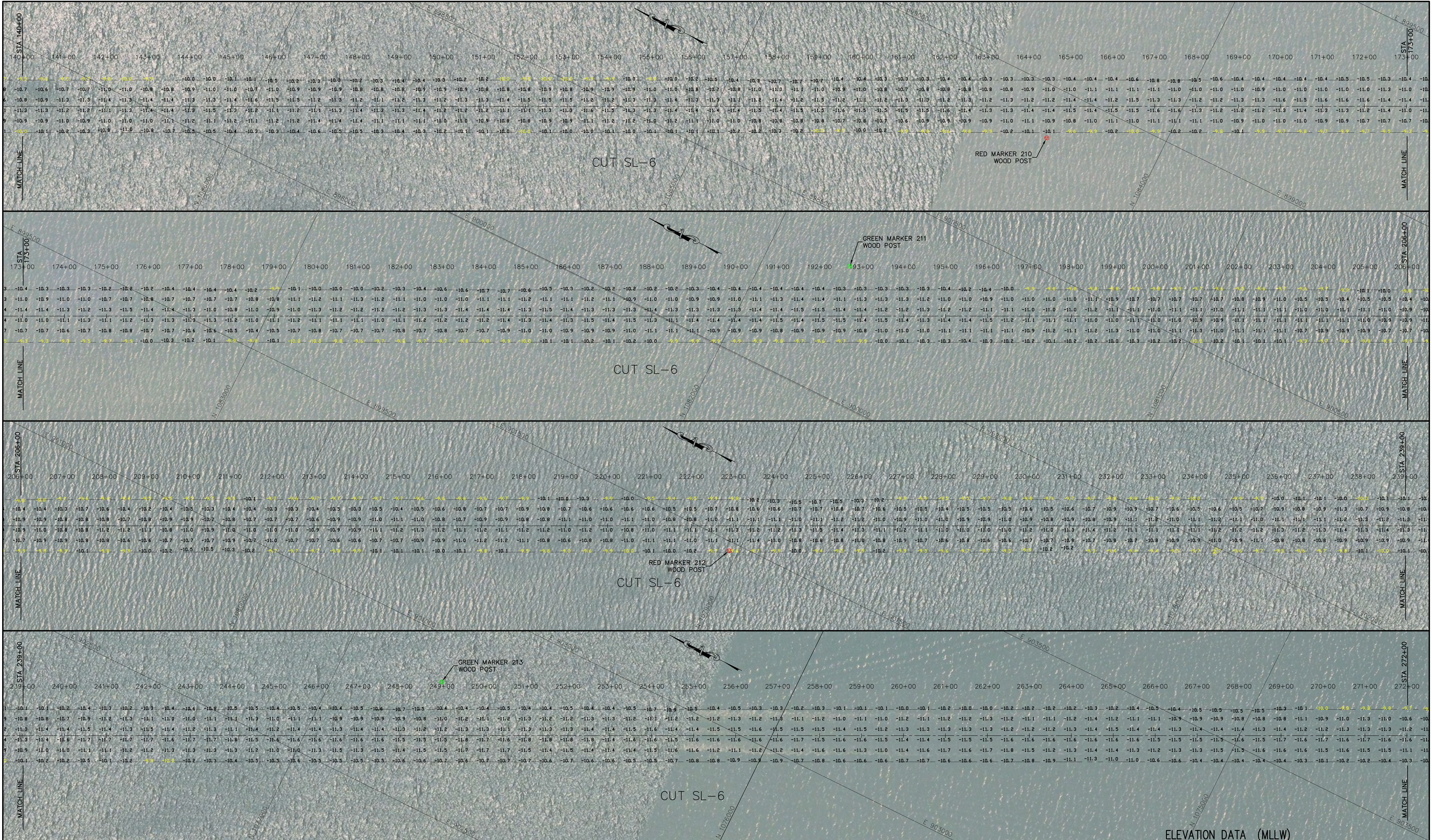
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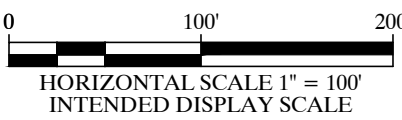
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SHEET
9 OF 14



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SEE SHEET 1 FOR NOTES



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STATE OF FLORIDA

ELEVATION DATA (MLLW)
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INTRACOASTAL WATERWAY CUT SL-6
ST. LUCIE COUNTY
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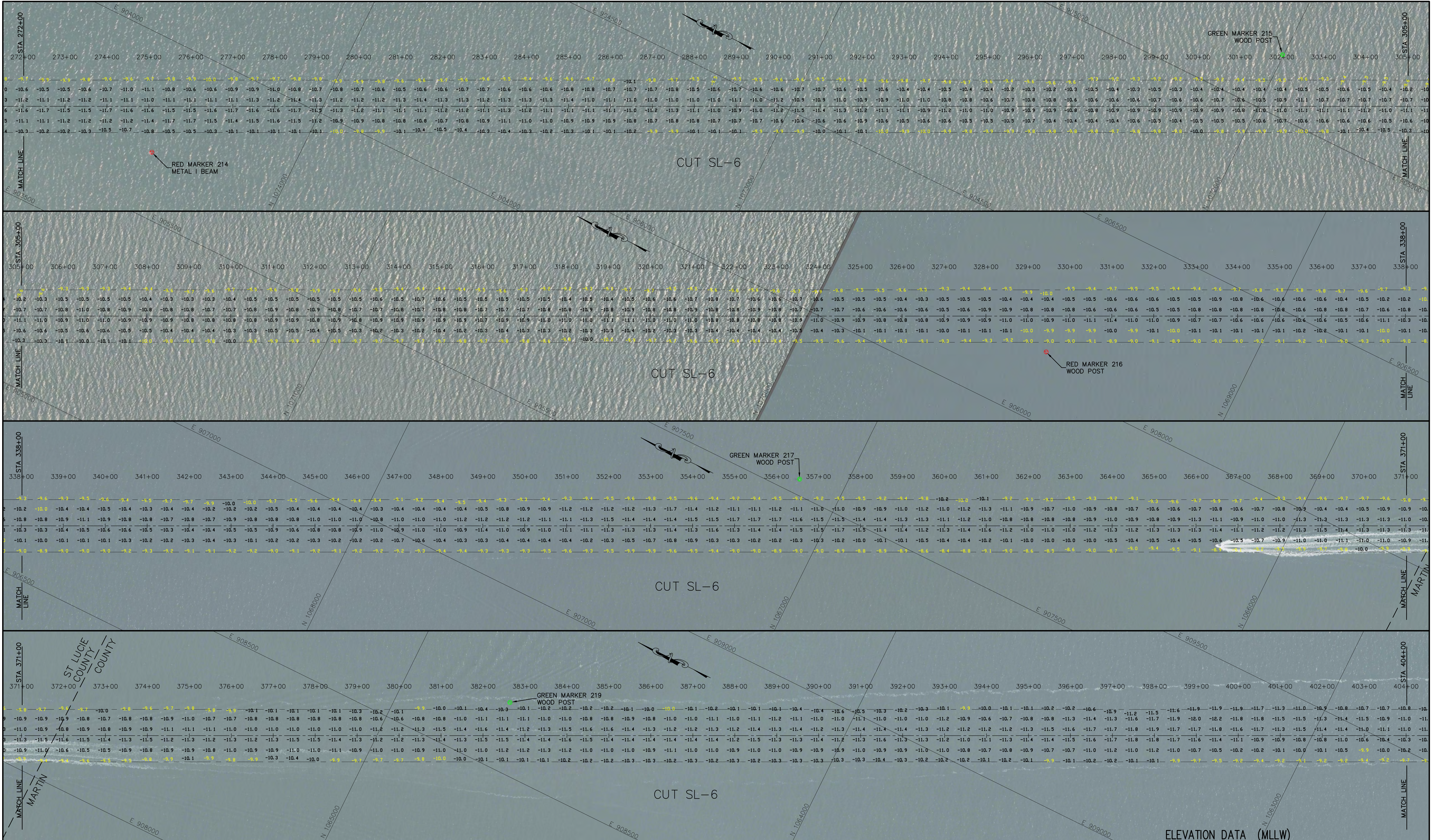
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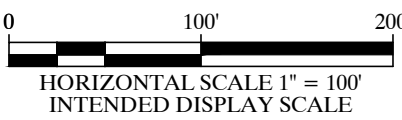
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SHEET 10 OF 14



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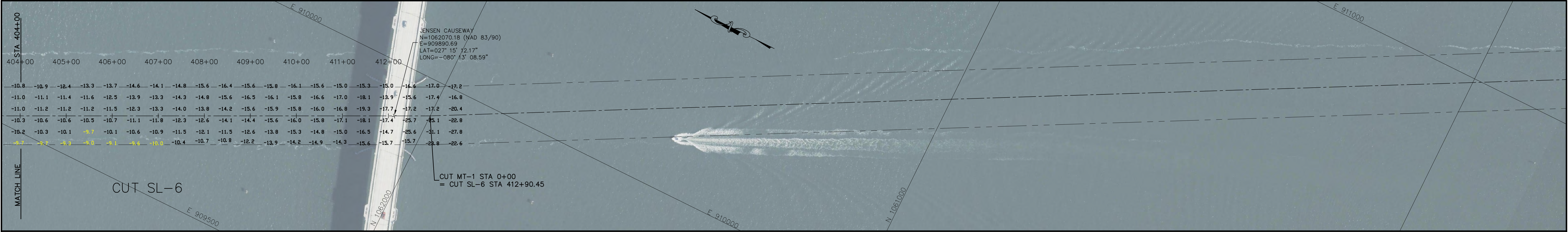
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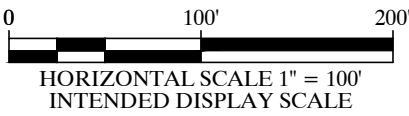
JOHN R. MORGAN II, PLS
PROFESSIONAL LAND SURVEYOR #3520
STATE OF FLORIDA

ELEVATION DATA (MLLW) HYDROGRAPHIC SURVEY (-10 PROJECT) INTRACOASTAL WATERWAY CUT SL-6 ST. LUCIE COUNTY - FOR - FLORIDA INLAND NAVIGATION DISTRICT

DRAWN BY	CHECKED BY	FIELD BOOK	SEE	DATE OF SURVEY	COMMISSION NO.
LFP	JRM	PAGE NO.	COVER	3/6/14	5303.10
SCALE					1" = 100'
DATE					5/15/14
SHEET					11 OF 14



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10/13/15 REVISE CUT NUMBERS

SEE SHEET 1 FOR NOTES



MORGAN & EKLUND, INC.

PROFESSIONAL SURVEY CONSULTANTS

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JOHN R. MORGAN II, PLS
FLORIDA CERTIFICATION #3520

LB #4298

CERTIFICATE OF SURVEYOR - I HEREBY CERTIFY THAT THE INFORMATION SHOWN HEREON IS IN ACCORDANCE WITH A RECENT FIELD SURVEY MADE UNDER MY DIRECTION, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE MINIMUM TECHNICAL STANDARDS AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS IN CHAPTER 54-17, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.

JOHN R. MORGAN II, PLS
PROFESSIONAL LAND SURVEYOR #3520
STATE OF FLORIDA

ELEVATION DATA (MLLW)
HYDROGRAPHIC SURVEY (-10 PROJECT)
INTRACOASTAL WATERWAY CUT SL-6 TO CUT MT-1
ST. LUCIE COUNTY
- FOR -
FLORIDA INLAND NAVIGATION DISTRICT

COMMISSION NO.

5303.10

SCALE

1" = 100'

DATE

5/15/14

DRAWN BY

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FIELD BOOK

PAGE NO.

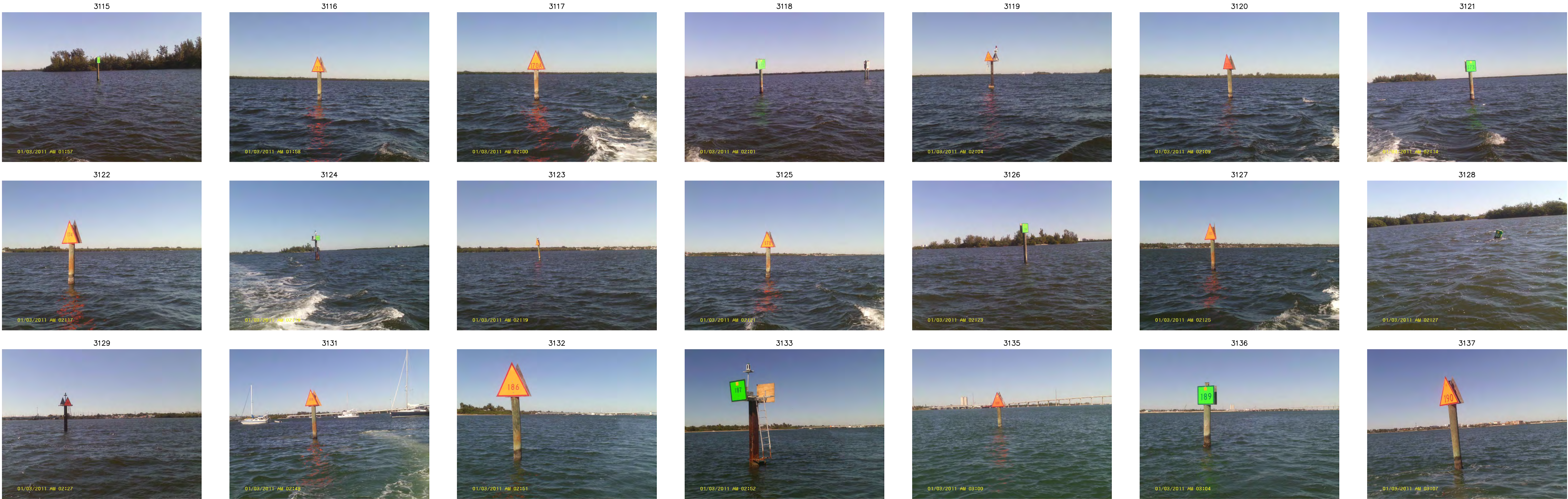
SEE

COVER

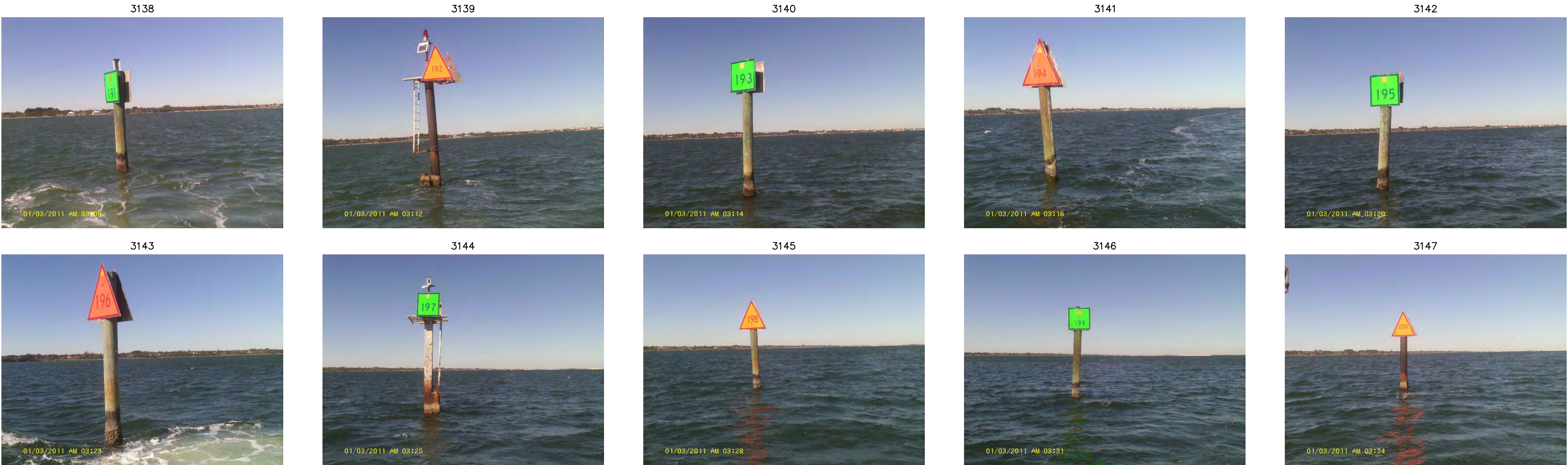
DATE OF SURVEY

3/6/14

SHEET 12 OF 14



ST. LUCIE COUNTY CHANNEL MARKERS						
POINT	NORTHING	EASTING	LATITUDE	LONGITUDE	MARKER NO.	MATERIAL
3115	1169954	868095	N 27° 33' 02.840"	W 80° 20' 45.398"	GREEN MARKER 169	WOOD POST
3116	1169521	868002	N 27° 32' 58.556"	W 80° 20' 46.456"	RED MARKER 170	WOOD POST
3117	1167167	868540	N 27° 32' 35.215"	W 80° 20' 40.626"	RED MARKER 170A	WOOD POST
3118	1164939	869302	N 27° 32' 13.116"	W 80° 20' 32.285"	GREEN MARKER 171	WOOD POST
3119	1164182	869296	N 27° 32' 05.624"	W 80° 20' 32.405"	RED MARKER 172	METAL PILING
3120	1161415	870002	N 27° 31' 38.182"	W 80° 20' 24.717"	RED MARKER 172A	WOOD POST
3121	1158991	870740	N 27° 31' 14.141"	W 80° 20' 16.670"	GREEN MARKER 173	WOOD POST
3122	1156247	871221	N 27° 30' 46.947"	W 80° 20' 11.489"	RED MARKER 174	WOOD POST
3123	1153477	871880	N 27° 30' 19.477"	W 80° 20' 04.336"	RED MARKER 176	WOOD POST
3124	1153534	872067	N 27° 30' 20.040"	W 80° 20' 02.252"	GREEN MARKER 175	METAL I BEAM
3125	1150853	872519	N 27° 29' 53.461"	W 80° 19' 57.395"	RED MARKER 178	WOOD POST
3126	1147832	873473	N 27° 29' 23.503"	W 80° 19' 46.985"	GREEN MARKER 179	WOOD POST
3127	1146088	873693	N 27° 29' 06.217"	W 80° 19' 44.647"	RED MARKER 180	WOOD POST
3128	1143182	874577	N 27° 28' 37.395"	W 80° 19' 35.003"	GREEN BUOY 181	ANCHORED FLOAT
3129	1142638	874503	N 27° 28' 32.008"	W 80° 19' 35.854"	RED MARKER 182	METAL I BEAM
3131	1140000	875651	N 27° 28' 05.831"	W 80° 19' 23.272"	RED MARKER 184	WOOD POST
3132	1138752	876286	N 27° 27' 53.439"	W 80° 19' 16.305"	RED MARKER 186	WOOD POST
3133	1138222	876731	N 27° 27' 48.165"	W 80° 19' 11.389"	GREEN MARKER 187	METAL I BEAM
3135	1134127	878015	N 27° 27' 07.541"	W 80° 18' 57.384"	RED MARKER 188	WOOD POST
3136	1131346	879275	N 27° 26' 39.939"	W 80° 18' 43.573"	GREEN MARKER 189	WOOD POST
3137	1128938	880016	N 27° 26' 16.053"	W 80° 18' 35.498"	RED MARKER 190	WOOD POST
3138	1126766	881036	N 27° 25' 54.487"	W 80° 18' 24.307"	GREEN MARKER 191	WOOD POST
3139	1123974	881931	N 27° 25' 26.796"	W 80° 18' 14.557"	RED MARKER 192	METAL PILING
3140	1121630	883022	N 27° 25' 03.526"	W 80° 18' 02.593"	GREEN MARKER 193	WOOD POST
3141	1119112	883856	N 27° 24' 38.538"	W 80° 17' 53.494"	RED MARKER 194	WOOD POST
3142	1116076	885165	N 27° 24' 08.406"	W 80° 17' 39.163"	GREEN MARKER 195	WOOD POST
3143	1113971	885771	N 27° 23' 47.522"	W 80° 17' 32.574"	RED MARKER 196	WOOD POST
3144	1111617	886933	N 27° 23' 24.146"	W 80° 17' 19.829"	GREEN MARKER 197	METAL I BEAM
3145	1108984	887653	N 27° 22' 58.036"	W 80° 17' 12.009"	RED MARKER 198	WOOD POST
3146	1106521	888839	N 27° 22' 33.580"	W 80° 16' 59.006"	GREEN MARKER 199	WOOD POST
3147	1103846	889519	N 27° 22' 07.050"	W 80° 16' 51.634"	RED MARKER 200	WOOD POST



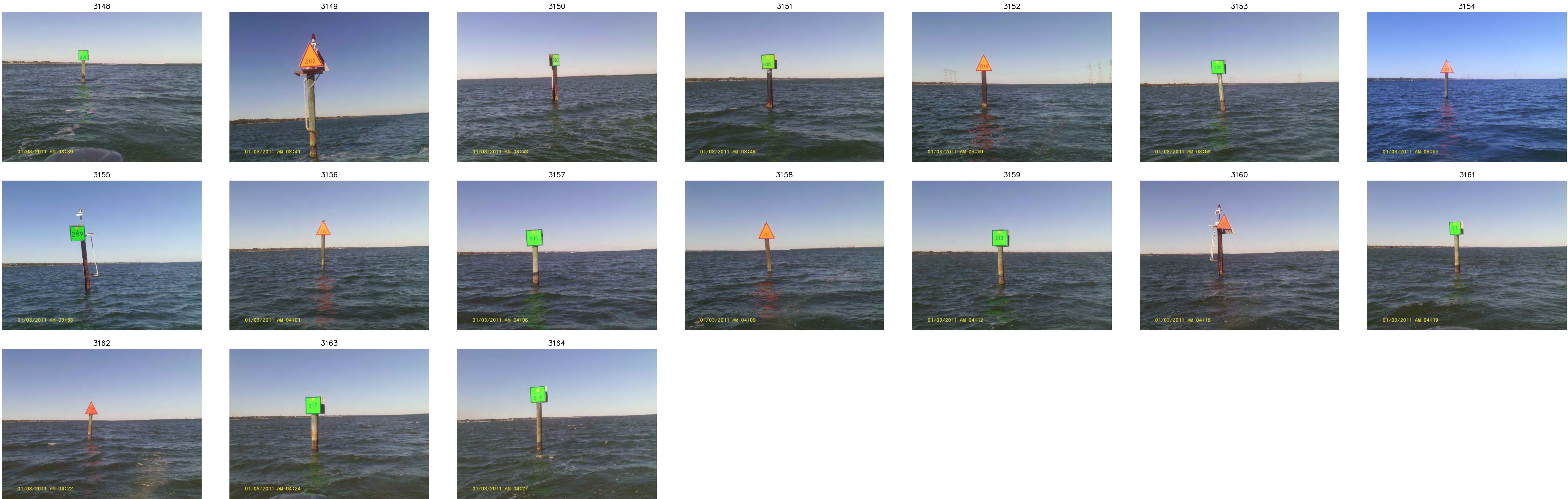
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JOHN R. MORGAN, II, PLS
PROFESSIONAL LAND SURVEYOR #3520
STATE OF FLORIDA

CHANNEL MARKER DATA
HYDROGRAPHIC SURVEY
INTRACOASTAL WATERWAY CUT IR-35 TO CUT SL-6
ST. LUCIE COUNTY
- FOR -
FLORIDA INLAND NAVIGATION DISTRICT

DRAWN BY LFP
CHECKED BY JRM
FIELD BOOK PAGE NO.
SEE COVER
DATE OF SURVEY 3/6/14

COMMISSION NO. 5303.10
SCALE -
DATE 4/29/14
SHEET 13 OF 14



ST. LUCIE COUNTY CHANNEL MARKERS						
POINT	NORTHING	EASTING	LATITUDE	LONGITUDE	MARKER NO.	MATERIAL
3148	1101535	890820	N 27° 21' 44.095"	W 80° 16' 37.352"	GREEN MARKER 201	WOOD POST
3149	1099012	891571	N 27° 21' 19.067"	W 80° 16' 29.196"	RED MARKER 202	WOOD POST
3150	1099151	891800	N 27° 21' 20.433"	W 80° 16' 26.640"	GREEN MARKER 203	METAL I BEAM
3151	1096630	893007	N 27° 20' 55.396"	W 80° 16' 13.423"	GREEN MARKER 205	METAL PILING
3152	1094103	893849	N 27° 20' 30.329"	W 80° 16' 04.253"	RED MARKER 206	METAL I BEAM
3153	1091868	895362	N 27° 20' 08.105"	W 80° 15' 47.622"	GREEN MARKER 207	WOOD POST
3154	1089518	896261	N 27° 19' 44.786"	W 80° 15' 37.805"	RED MARKER 208	WOOD POST
3155	1086764	897838	N 27° 19' 17.419"	W 80° 15' 20.497"	GREEN MARKER 209	METAL I BEAM
3156	1084259	898882	N 27° 18' 52.557"	W 80° 15' 09.097"	RED MARKER 210	WOOD POST
3157	1081807	900306	N 27° 18' 28.184"	W 80° 14' 53.471"	GREEN MARKER 211	WOOD POST
3158	1079021	901479	N 27° 18' 00.526"	W 80° 14' 40.650"	RED MARKER 212	WOOD POST
3159	1076762	902800	N 27° 17' 38.081"	W 80° 14' 26.165"	GREEN MARKER 213	WOOD POST
3160	1074318	903739	N 27° 17' 13.821"	W 80° 14' 15.925"	RED MARKER 214	METAL I BEAM
3161	1072002	905137	N 27° 16' 50.811"	W 80° 14' 00.579"	GREEN MARKER 215	WOOD POST
3162	1069451	906162	N 27° 16' 25.483"	W 80° 13' 49.401"	RED MARKER 216	WOOD POST
3163	1067105	907536	N 27° 16' 02.171"	W 80° 13' 34.334"	GREEN MARKER 217	WOOD POST
3164	1064751	908660	N 27° 15' 38.785"	W 80° 13' 22.045"	GREEN MARKER 219	WOOD POST

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SEE SHEET 1 FOR NOTES



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