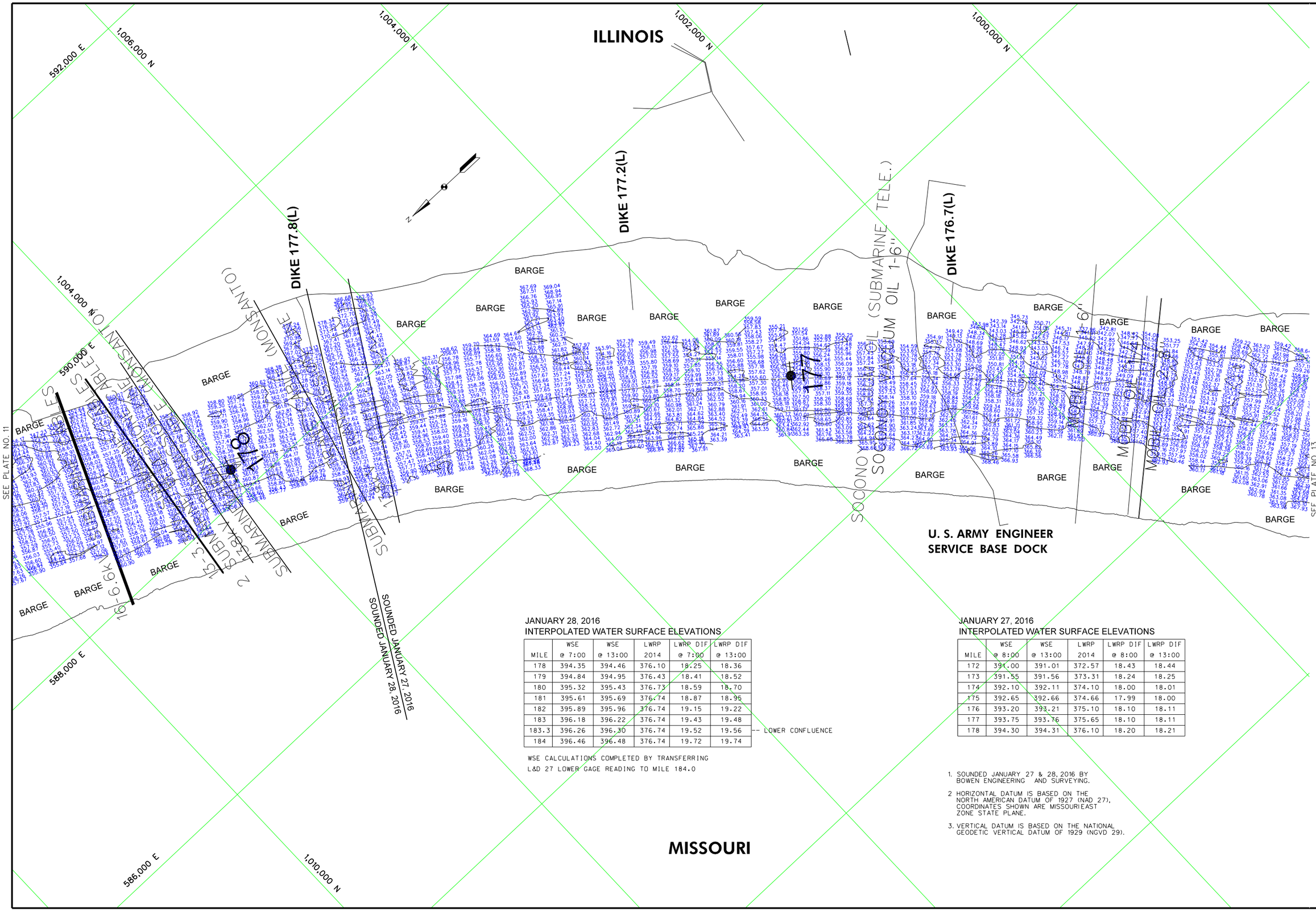


JANUARY 28, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 7:00	WSE @ 13:00	LWRP 2014	LWRP DIF @ 7:00	LWRP DIF @ 13:00	
178	394.35	394.46	376.10	18.25	18.36	
179	394.84	394.95	376.43	18.41	18.52	
180	395.32	395.43	376.73	18.59	18.70	
181	395.61	395.69	376.74	18.87	18.95	
182	395.89	395.96	376.74	19.15	19.22	
183	396.18	396.22	376.74	19.43	19.48	
183.3	396.26	396.30	376.74	19.52	19.56	-- LOWER CONFLUENCE
184	396.46	396.48	376.74	19.72	19.74	

WSE CALCULATIONS COMPLETED BY TRANSFERRING
L&D 27 LOWER GAGE READING TO MILE 184.0

JANUARY 27, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 8:00	WSE @ 13:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 13:00
172	391.00	391.01	372.57	18.43	18.44
173	391.55	391.56	373.31	18.24	18.25
174	392.10	392.11	374.10	18.00	18.01
175	392.65	392.66	374.66	17.99	18.00
176	393.20	393.21	375.10	18.10	18.11
177	393.75	393.76	375.65	18.10	18.11
178	394.30	394.31	376.10	18.20	18.21

1. SOUNDED JANUARY 27 & 28, 2016 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27), COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	CHESTER, IL	BRICKEY'S LANDING, MO	JEFFERSON BARRACKS	ST. LOUIS, MO
ZERO N.G.V.D.	341.05	357.78	377.69	379.94
MILE	109.9	136.0	168.70	179.6
LWRP 2014	340.65	354.19	369.99	376.74
27 JAN 2016	x	MALFUNCTIONING	11.58(600)	15.46(600) 15.47(1300)
28 JAN 2016	x	x	x	15.38(7:00) 15.49(1300)

Surveyed by: BOWEN ENGINEERING
Survey Date: JANUARY 27 & 28, 2016
Drawn by: X
Reviewed by: X
Ckd by: X
SUBMITTED: X
APPROVED: X
File name: 888STRONGRIDEPROFILEPLATEN.DGN
Plot date: 888STRONGRIDEPROFILEPLATEN.DGN

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

240 METERS 120 0 120 400 0 400 800 FEET

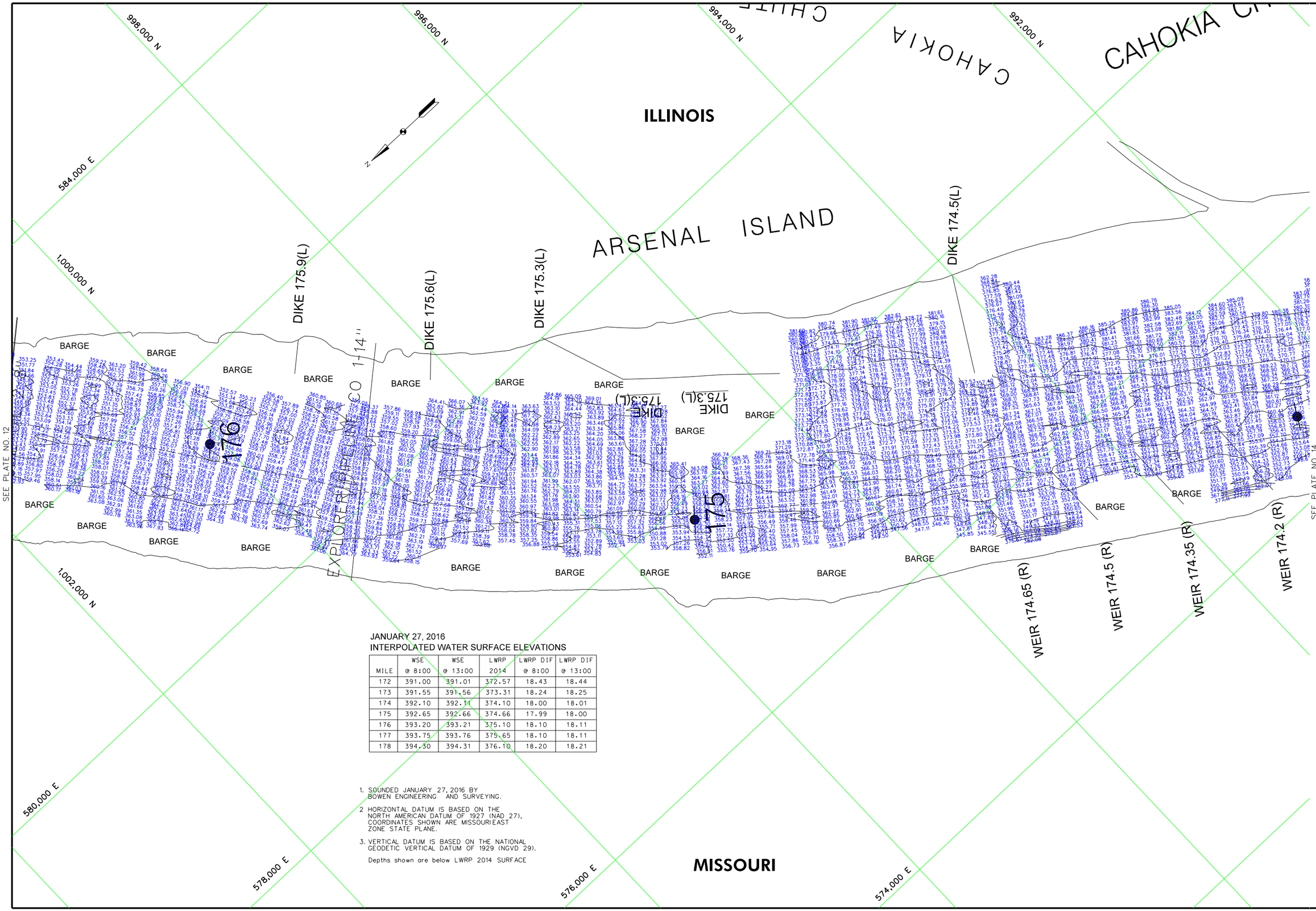
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE AT THE TIME INDICATED AND MAY NOT BE ACCURATE AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

HYDROGRAPHIC SURVEYS

RIVER MILES 176.2 – 178.2

PLATE NUMBER

12



JANUARY 27, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 8:00	WSE @ 13:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 13:00
172	391.00	391.01	372.57	18.43	18.44
173	391.55	391.56	373.31	18.24	18.25
174	392.10	392.11	374.10	18.00	18.01
175	392.65	392.66	374.66	17.99	18.00
176	393.20	393.21	375.10	18.10	18.11
177	393.75	393.76	375.65	18.10	18.11
178	394.30	394.31	376.10	18.20	18.21

1. SOUNDED JANUARY 27, 2016 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27), COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

Depths shown are below LWRP 2014 SURFACE

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	CHESTER, IL	BRICKEY'S LANDING, MO	JEFFERSON BARRACKS	ST. LOUIS, MO
ZERO N.G.V.D.	341.05	357.78	377.69	379.94
MILE	109.9	136.0	168.70	179.6
LWRP 2014	340.65	354.19	369.99	376.74
27 JAN 2016	x	MALFUNCTIONING	11.58(600)	15.46(600) 15.47(1300)

Surveyed by: BOWEN ENGINEERING
Survey Date: JANUARY 27, 2016
Drawn by: X
Reviewed by: X
Ckd by: X
SUBMITTED: X
APPROVED: X
File name: BBBBTSCNAPFLEEPRCPLATE13.DGN
Plot date: BBBBTSYYEYTMTBBBB

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

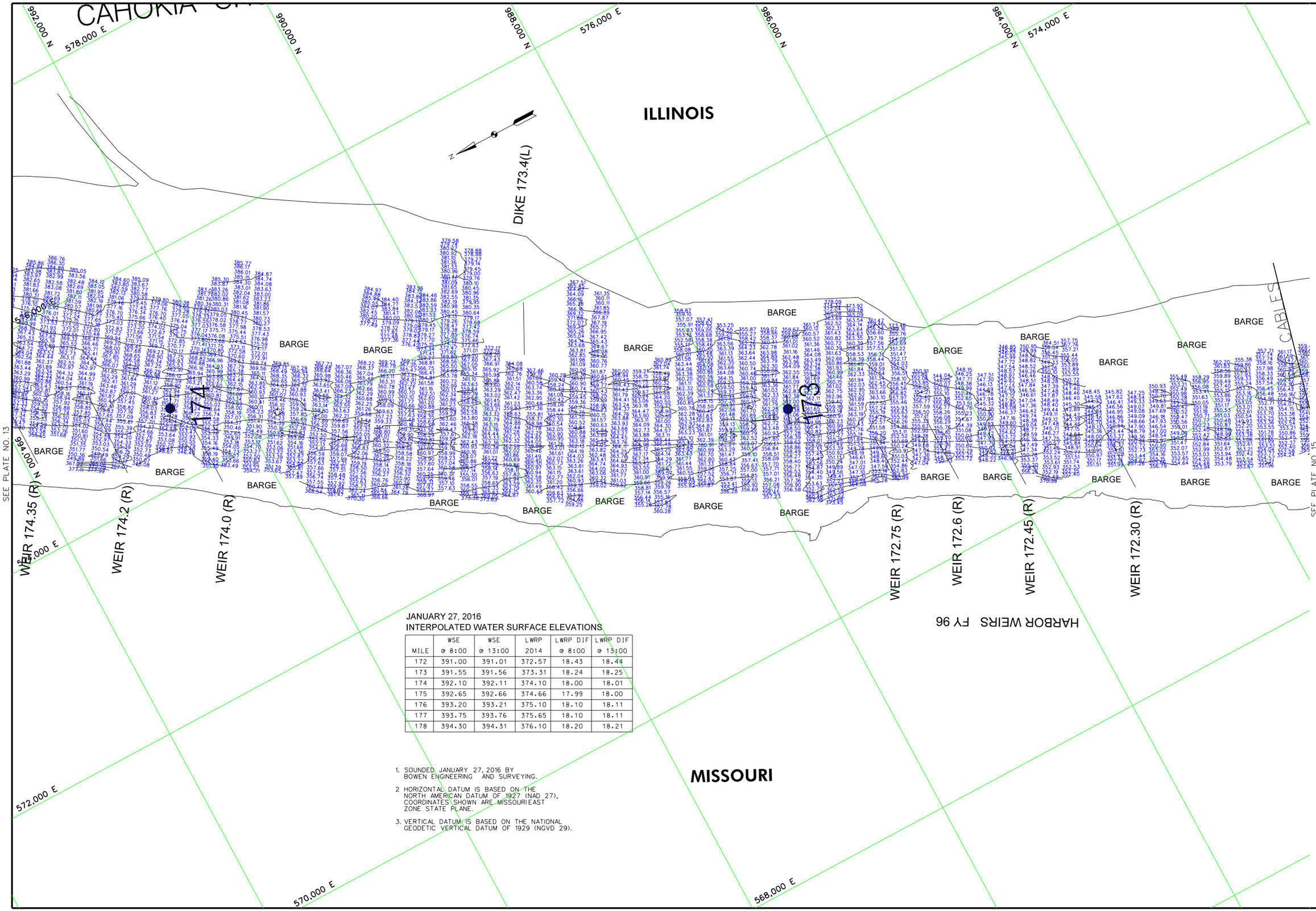
240 METERS 800 FEET
120 0 120 400 0 400

THE INFORMATION REPORTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE BY THE ST. LOUIS DISTRICT, CORPS OF ENGINEERS AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

HYDROGRAPHIC SURVEYS

RIVER MILES 174.1 – 176.2

PLATE NUMBER
13



JANUARY 27, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 8:00	WSE @ 13:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 13:00
172	391.00	391.01	372.57	18.43	18.44
173	391.55	391.56	373.31	18.24	18.25
174	392.10	392.11	374.10	18.00	18.01
175	392.65	392.66	374.66	17.99	18.00
176	393.20	393.21	375.10	18.10	18.11
177	393.75	393.76	375.65	18.10	18.11
178	394.30	394.31	376.10	18.20	18.21

1. SOUNDED JANUARY 27, 2016 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27), COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	CHESTER, IL	BRICKEY'S LANDING, MO	JEFFERSON BARRACKS	ST. LOUIS, MO
ZERO N.G.V.D.	341.05	357.78	377.69	379.94
MILE	109.9	136.0	168.70	179.6
LWRP 2014	340.65	354.19	369.99	376.74
27 JAN 2016	x	MALFUNCTIONING	11.58(600)	15.46(600) 15.47(1300)

Surveyed by: BOWEN ENGINEERING
Survey Date: JANUARY 27, 2016
Drawn by: X
Reviewed by: X
Ckd by: X
SUBMITTED: X
APPROVED: X
File name: 888B1SCHARF-EEPROTLAYOUT.DGN
Plot date: 888B1TUE-17MAR888

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

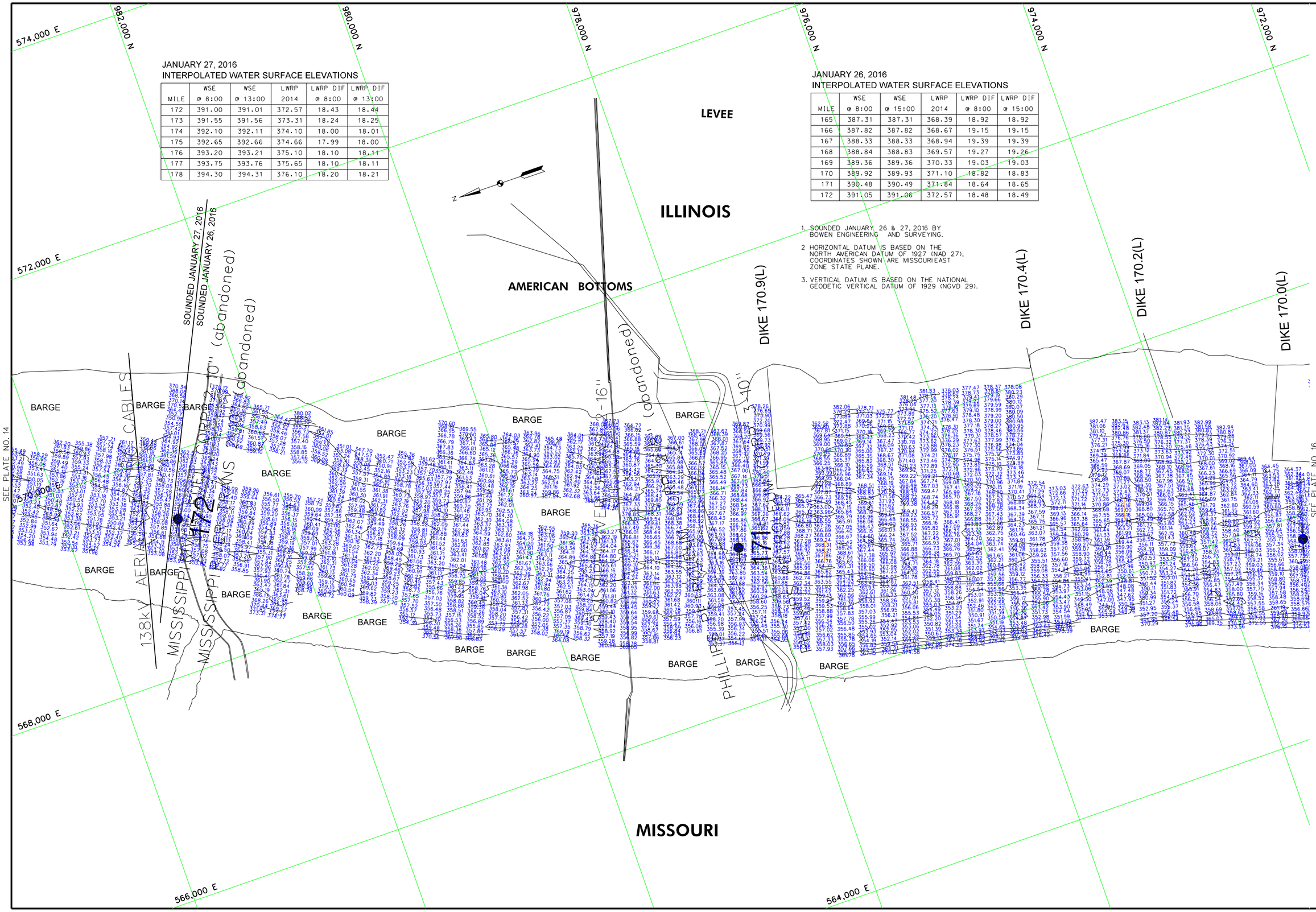
240 METERS
800 FEET
120 0 120
0 400
120 400

THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE BY THE ST. LOUIS DISTRICT, CORPS OF ENGINEERS AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

HYDROGRAPHIC SURVEYS

RIVER MILES 172.2 – 174.1

PLATE NUMBER
14



JANUARY 27, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 8:00	WSE @ 13:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 13:00
172	391.00	391.01	372.57	18.43	18.44
173	391.55	391.56	373.31	18.24	18.25
174	392.10	392.11	374.10	18.00	18.01
175	392.65	392.66	374.66	17.99	18.00
176	393.20	393.21	375.10	18.10	18.11
177	393.75	393.76	375.65	18.10	18.11
178	394.30	394.31	376.10	18.20	18.21

JANUARY 26, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 8:00	WSE @ 15:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 15:00
165	387.31	387.31	368.39	18.92	18.92
166	387.82	387.82	368.67	19.15	19.15
167	388.33	388.33	368.94	19.39	19.39
168	388.84	388.83	369.57	19.27	19.26
169	389.36	389.36	370.33	19.03	19.03
170	389.92	389.93	371.10	18.82	18.83
171	390.48	390.49	371.84	18.64	18.65
172	391.05	391.06	372.57	18.48	18.49

1. SOUNDED JANUARY 26 & 27, 2016 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27), COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

US Army Corps of Engineers
St. Louis District

GAGE RECORD

ZERO N.G.V.D.	CHESTER, IL	BRICKEY'S LANDING, MO	JEFFERSON BARRACKS	ST. LOUIS, MO
MILE	341.05	357.78	377.69	379.94
LWRP 2014	109.9	136.0	168.70	179.6
26 JAN 2016	340.65	354.19	369.99	376.74
26 JAN 2016	18.348(00)	18.271(5-00)	MALFUNCTIONING	11.5(8-00)	15.618(00)	15.641(5-00)
27 JAN 2016	x	MALFUNCTIONING	11.5(8-00)	15.46(8-00)	15.47(13-00)

Survey Date: JANUARY 26 & 27, 2016
Reviewed by: X
Ckd by: X
Drawn by: BOWEN ENGINEERING
APPROVED: X
SUBMITTED: X
File name:
Plot date:

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

HYDROGRAPHIC SURVEYS

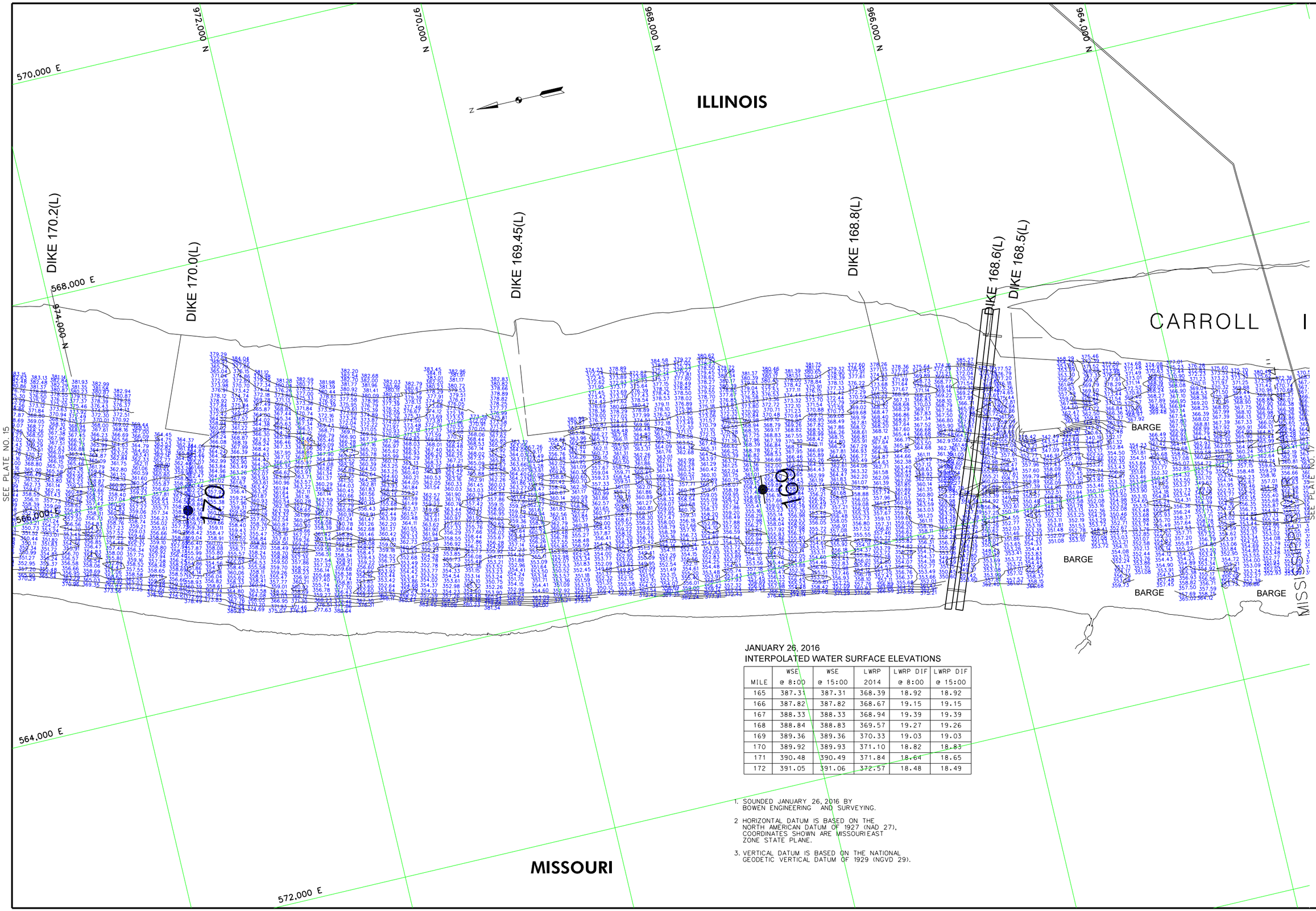
RIVER MILES 170.1 – 172.2

240 METERS 120 0 120 400 800 FEET

THE INFORMATION REPORTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND IS PRESENTED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

PLATE NUMBER

15



JANUARY 26, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 8:00	WSE @ 15:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 15:00
165	387.31	387.31	368.39	18.92	18.92
166	387.82	387.82	368.67	19.15	19.15
167	388.33	388.33	368.94	19.39	19.39
168	388.84	388.83	369.57	19.27	19.26
169	389.36	389.36	370.33	19.03	19.03
170	389.92	389.93	371.10	18.82	18.83
171	390.48	390.49	371.84	18.64	18.65
172	391.05	391.06	372.57	18.48	18.49

1. SOUNDED JANUARY 26, 2016 BY BOWEN ENGINEERING AND SURVEYING.

2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27), COORDINATES SHOWN ARE MISSOURIEAST ZONE STATE PLANE.

3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	CHESTER, IL	BRICKEY'S LANDING, MO	JEFFERSON BARRACKS	ST. LOUIS, MO
ZERO N.G.V.D.	341.05	357.78	377.69	379.94
MILE	109.9	136.0	168.70	179.6
LWRP 2014	340.65	354.19	369.99	376.74
26 JAN 2016	18.348(00) 18.271(-00)	MALFUNCTIONING	11.5(8-00)	15.618(00) 15.641(-00)

Survey Date: JANUARY 26, 2016
Ckd by: X
Surveyed by: BOWEN ENGINEERING
Reviewed by: X
APPROVED: X
Drawn by: X
SUBMITTED: X
Plot date: 8/8/2017 5:15:17 PM CDT
File name: J:\EngineeringDivision\Hydrographic Surveys\Upper Mississippi River Basin\Mississippi River\Mile 168.2 - 170.1\Plate 16 - Mile 168.2 - 170.1.dwg

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

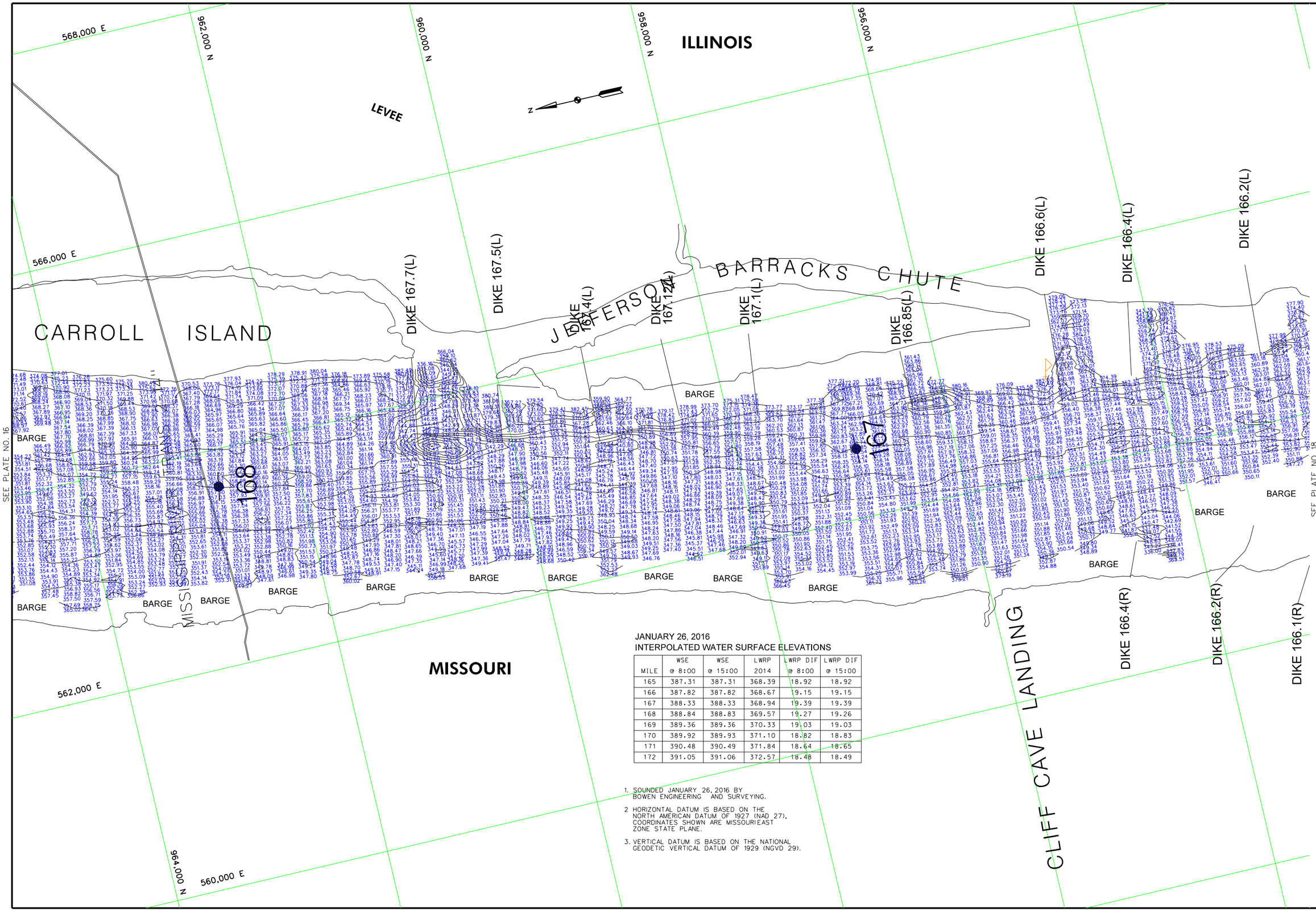
MISSISSIPPI RIVER

HYDROGRAPHIC SURVEYS

RIVER MILES 168.2 – 170.1

240 METERS 120 0 120 240
800 FEET 400 0 400 800
THE INFORMATION REPORTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYING WITH THE EQUIPMENT AND METHODS USED AT THE TIME AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

PLATE NUMBER
16



JANUARY 26, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 8:00	WSE @ 15:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 15:00
165	387.31	387.31	368.39	18.92	18.92
166	387.82	387.82	368.67	19.15	19.15
167	388.33	388.33	368.94	19.39	19.39
168	388.84	388.83	369.57	19.27	19.26
169	389.36	389.36	370.33	19.03	19.03
170	389.92	389.93	371.10	18.82	18.83
171	390.48	390.49	371.84	18.64	18.65
172	391.05	391.06	372.57	18.48	18.49

1. SOUNDED JANUARY 26, 2016 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	CHESTER, IL	BRICKEY'S LANDING, MO	JEFFERSON BARRACKS	ST. LOUIS, MO
ZERO N.G.V.D.	341.05	357.78	377.69	379.94
MILE	109.9	136.0	168.70	179.6
LWRP 2014	340.65	354.19	369.99	376.74
26 JAN 2016	18.348(00) 18.271(-00)	MALFUNCTIONING	11.5(8-00)	15.618(00) 15.641(-00)

Surveyed by: BOWEN ENGINEERING
Survey Date: JANUARY 26, 2016
Drawn by: X
Reviewed by: X
Ckd by: X
SUBMITTED: X
APPROVED: X
File name: 8888PROJMAP-8888PROJMAPLAYOUT.MXD
Plot date: 8/8/2017 9:17:45 PM 8/8/8888

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

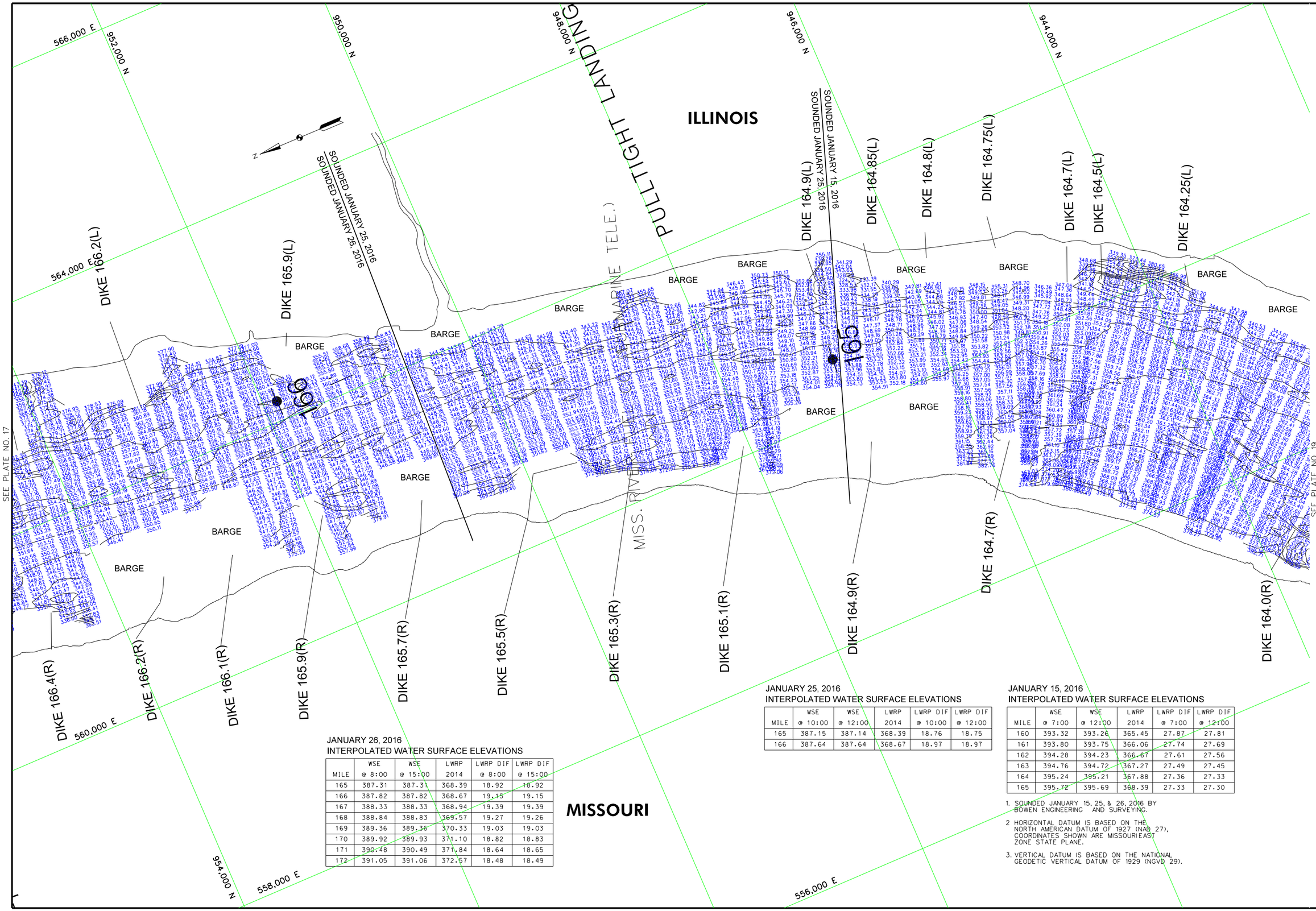
MISSISSIPPI RIVER

240 METERS
800 FEET
THE INFORMATION REPORTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYING AND MAPPING ACCOMPLISHED ON THE DATE SHOWN AND AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

HYDROGRAPHIC SURVEYS

RIVER MILES 166.3 – 168.2

PLATE NUMBER
17



JANUARY 26, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 8:00	WSE @ 15:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 15:00
165	387.31	387.31	368.39	18.92	18.92
166	387.82	387.82	368.67	19.15	19.15
167	388.33	388.33	368.94	19.39	19.39
168	388.84	388.83	369.57	19.27	19.26
169	389.36	389.36	370.33	19.03	19.03
170	389.92	389.93	371.10	18.82	18.83
171	390.48	390.49	371.84	18.64	18.65
172	391.05	391.06	372.57	18.48	18.49

JANUARY 25, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 12:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 12:00
165	387.15	387.14	368.39	18.76	18.75
166	387.64	387.64	368.67	18.97	18.97

JANUARY 15, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 7:00	WSE @ 12:00	LWRP 2014	LWRP DIF @ 7:00	LWRP DIF @ 12:00
160	393.32	393.26	365.45	27.87	27.81
161	393.80	393.75	366.06	27.74	27.69
162	394.28	394.23	366.67	27.61	27.56
163	394.76	394.72	367.27	27.49	27.45
164	395.24	395.21	367.88	27.36	27.33
165	395.72	395.69	368.39	27.33	27.30

1. SOUNDED JANUARY 15, 25, & 26, 2016 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	CHESTER, IL	BRICKEY'S LANDING, MO	JEFFERSON BARRACKS	ST. LOUIS, MO
ZERO N.G.V.D.	341.05	357.78	377.69	379.94
MILE	109.9	136.0	168.70	179.6
LWRP 2014	340.65	354.19	369.99	376.74
15 JAN 2016	28.29(7:00) 27.86(12:00)	MALFUNCTIONING	19.81(2:00)	23.72(7:00) 23.33(12:00)
25 JAN 2016	18.64(10:00) 18.59(12:00)	MALFUNCTIONING	11.31(0:30)	15.22(10:00) 15.28(12:00)
26 JAN 2016	18.34(8:00) 18.27(15:00)	MALFUNCTIONING	11.5(8:00)	15.61(8:00) 15.64(15:00)

Surveyed by: BOWEN ENGINEERING
Drawn by: X
Reviewed by: X
Ckd by: X
SUBMITTED: X
APPROVED: X
File name: 888801CHP-EEPROPLATN.DGN
Plot date: 888801YR-TYM888

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

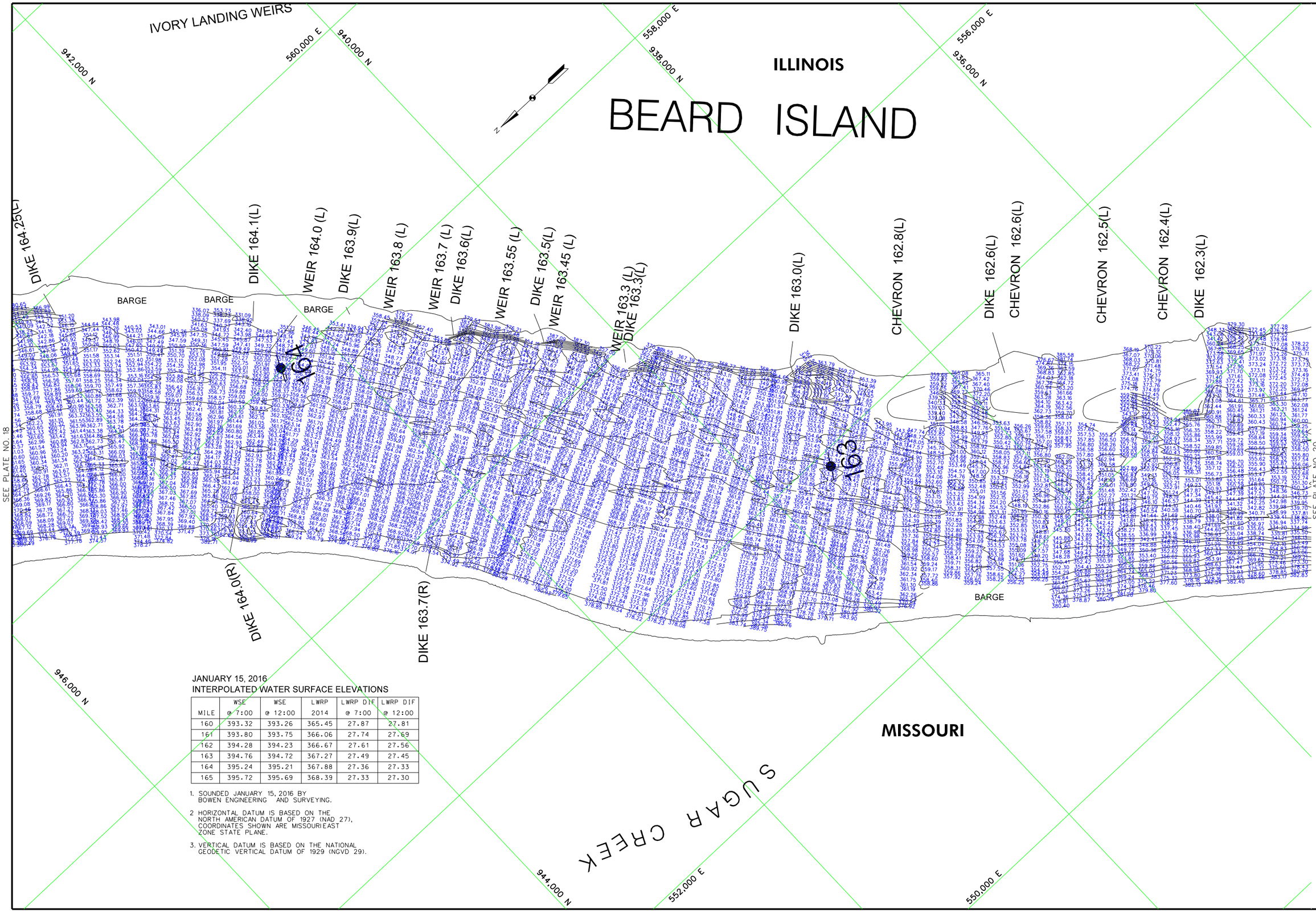
240 METERS
800 FEET
120 0 120 400
0 400

THE INFORMATION REPORTED IN THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE IN THE FIELD. THE RIVER BOTTOM IS SHOWN AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

HYDROGRAPHIC SURVEYS

RIVER MILES 164.3 – 166.3

PLATE NUMBER
18



JANUARY 15, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 7:00	WSE @ 12:00	LWRP 2014	LWRP DIF @ 7:00	LWRP DIF @ 12:00
160	393.32	393.26	365.45	27.87	27.81
161	393.80	393.75	366.06	27.74	27.69
162	394.28	394.23	366.67	27.61	27.56
163	394.76	394.72	367.27	27.49	27.45
164	395.24	395.21	367.88	27.36	27.33
165	395.72	395.69	368.39	27.33	27.30

1. SOUNDED JANUARY 15, 2016 BY BOWEN ENGINEERING AND SURVEYING.

2 HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27), COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.

3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	CHESTER, IL	BRICKEY'S LANDING, MO	JEFFERSON BARRACKS	ST. LOUIS, MO
ZERO N.G.V.D.	341.05	357.78	377.69	379.94
MILE	109.9	136.0	168.70	179.6
LWRP 2014	340.65	354.19	369.99	376.74
15 JAN 2016	28.29(7:00) 27.86(12:00)	MALFUNCTIONING	19.81(2:00)	23.72(7:00) 23.33(12:00)

Survey Date: JANUARY 15, 2016
Chd by: X
Reviewed by: X
Drawn by: X
APPROVED: X
SUBMITTED: X
Plot date: 8/8/2017 1:17:45 PM EST
File name: P:\Projects\Mississippi River Basin\Beard Island\Beard Island Plate 19.dwg

Surveyed by: BOWEN ENGINEERING

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

240 METERS 120 0 120 240
800 FEET 400 0 400 800

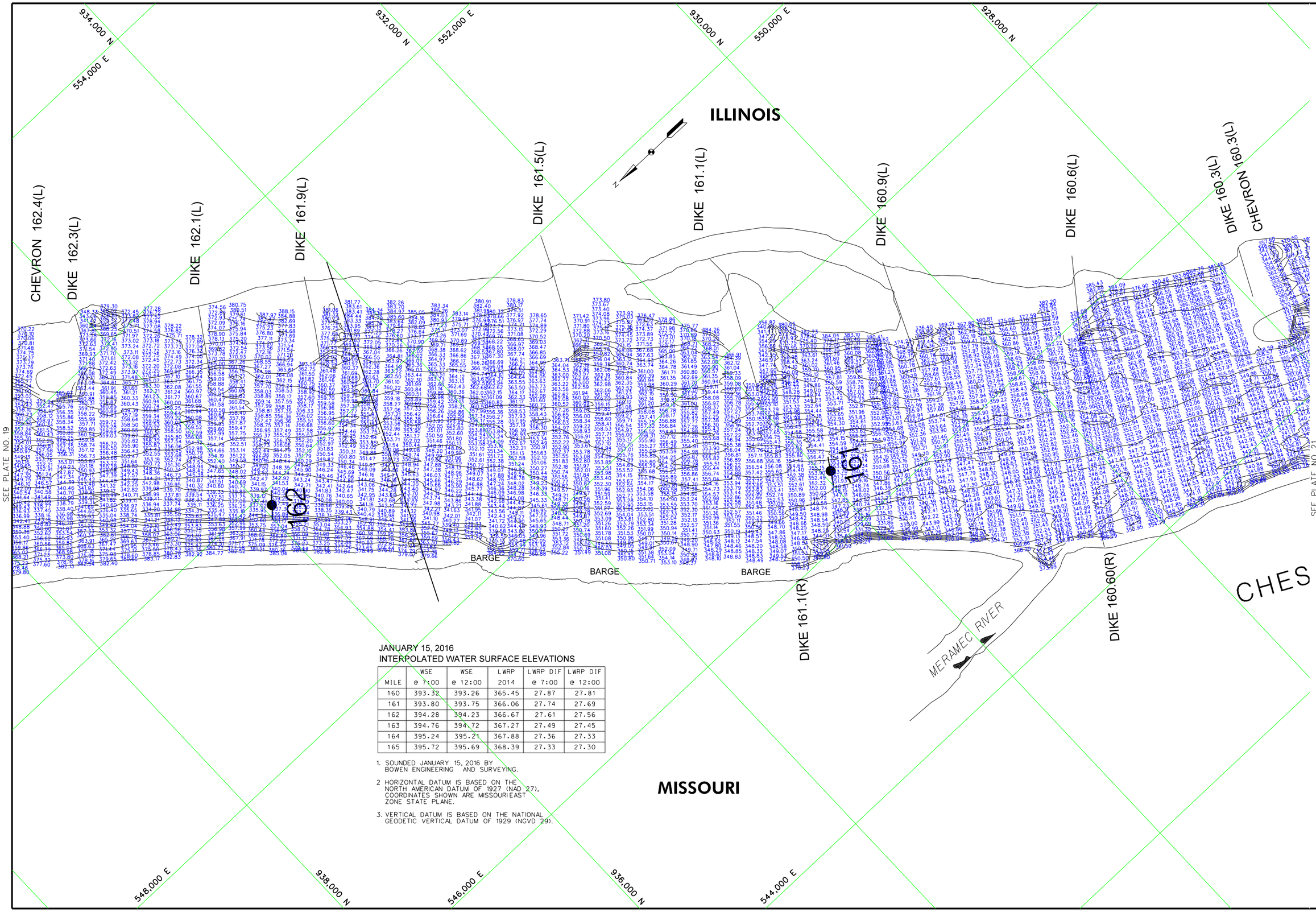
THE INFORMATION REPORTED IN THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND SHOULD BE INTERPRETED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

HYDROGRAPHIC SURVEYS

RIVER MILES 162.3 – 164.3

PLATE NUMBER

19



JANUARY 15, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 7:00	WSE @ 12:00	LWRP 2014	LWRP DIF @ 7:00	LWRP DIF @ 12:00
160	393.32	393.26	365.45	27.87	27.81
161	393.80	393.75	366.06	27.74	27.69
162	394.28	394.23	366.67	27.61	27.56
163	394.76	394.72	367.27	27.49	27.45
164	395.24	395.21	367.88	27.36	27.33
165	395.72	395.69	368.39	27.33	27.30

1. SOUNDED JANUARY 15, 2016 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27), COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	CHESTER, IL	BRICKEY'S LANDING, MO	JEFFERSON BARRACKS	ST. LOUIS, MO
ZERO N.G.V.D.	341.05	357.78	377.69	379.94
MILE	109.9	136.0	168.70	179.6
LWRP 2014	340.65	354.19	369.99	376.74
15 JAN 2016	28.29(7:00) 27.86(12:00)	MALFUNCTIONING	19.81(2:00)	23.72(7:00) 23.33(12:00)

Surveyed by: BOWEN ENGINEERING
Survey Date: JANUARY 15, 2016
Drawn by: X
Reviewed by: X
Ckd by: X
SUBMITTED: X
APPROVED: X
Plot date: 8/8/2016 7:15:17 PM EDT
File name: ...

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

240 METERS 800 FEET
120 400
0 0
120 400

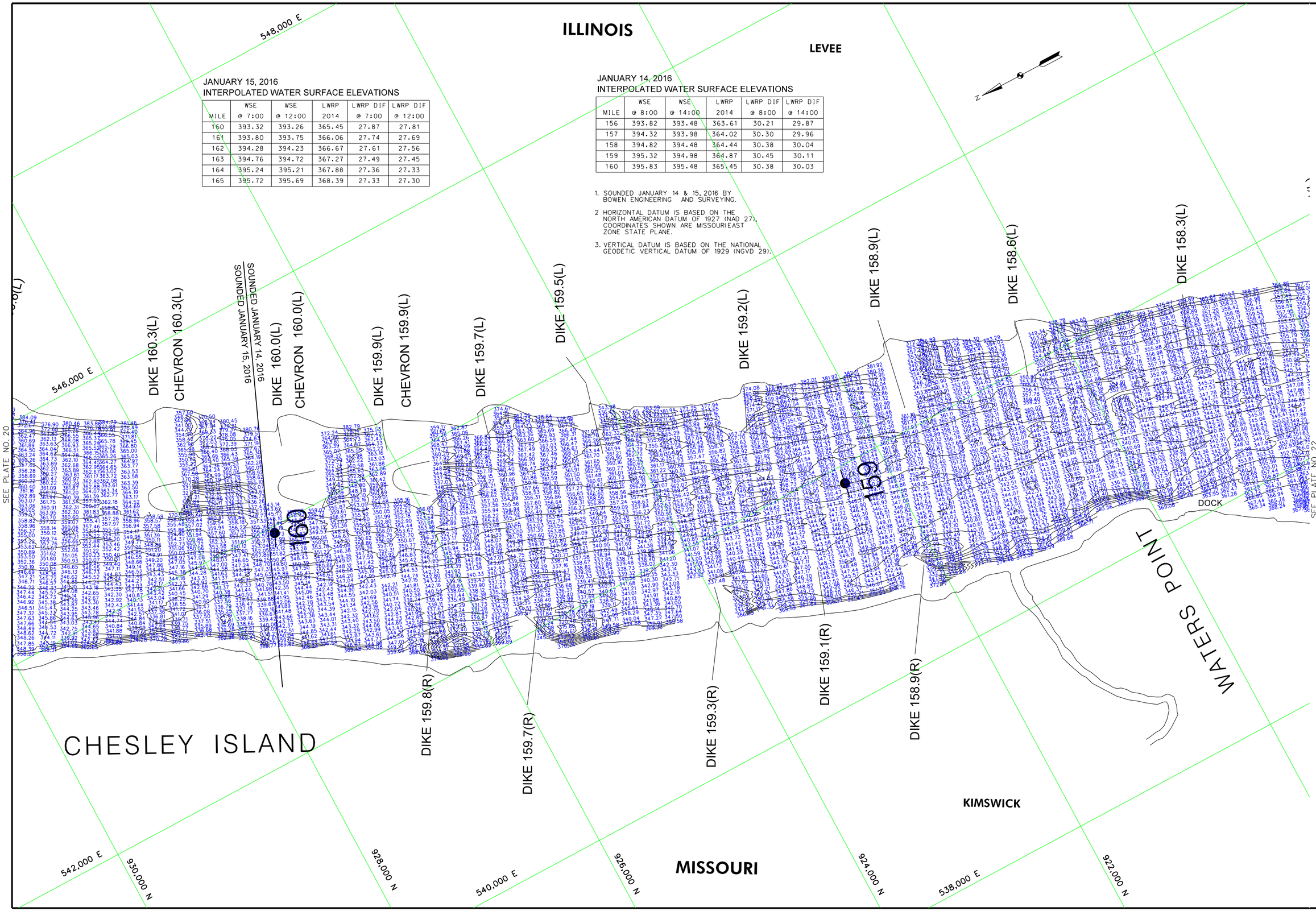
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE AT THE TIME AND DATE INDICATED AND IS INTENDED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

HYDROGRAPHIC SURVEYS

RIVER MILES 160.3 – 162.3

PLATE NUMBER

20



JANUARY 15, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 7:00	WSE @ 12:00	LWRP 2014	LWRP DIF @ 7:00	LWRP DIF @ 12:00
160	393.32	393.26	365.45	27.87	27.81
161	393.80	393.75	366.06	27.74	27.69
162	394.28	394.23	366.67	27.61	27.56
163	394.76	394.72	367.27	27.49	27.45
164	395.24	395.21	367.88	27.36	27.33
165	395.72	395.69	368.39	27.33	27.30

JANUARY 14, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 8:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 14:00
156	393.82	393.48	363.61	30.21	29.87
157	394.32	393.98	364.02	30.30	29.96
158	394.82	394.48	364.44	30.38	30.04
159	395.32	394.98	364.87	30.45	30.11
160	395.83	395.48	365.45	30.38	30.03

1. SOUNDED JANUARY 14 & 15, 2016 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

GAGE RECORD

	CHESTER, IL	BRICKEY'S LANDING, MO	JEFFERSON BARRACKS	ST. LOUIS, MO
ZERO N.G.V.D.	341.05	357.78	377.69	379.94
MILE	109.9	136.0	168.70	179.6
LWRP 2014	340.65	354.19	369.99	376.74
14 JAN 2016	29.64(8:00) 29.42(14:00)	MALFUNCTIONING	X	25.92(8:00) 25.52(14:00)
15 JAN 2016	28.29(7:00) 27.86(12:00)	MALFUNCTIONING	19.81(2:00)	23.72(7:00) 23.33(12:00)

US Army Corps of Engineers
St. Louis District

Surveyed by: BOWEN ENGINEERING
Survey Date: JANUARY 14 & 15, 2016
Drawn by: X
Checked by: X
Reviewed by: X
SUBMITTED: X
APPROVED: X
File name: ##########
Plot date: ##########

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

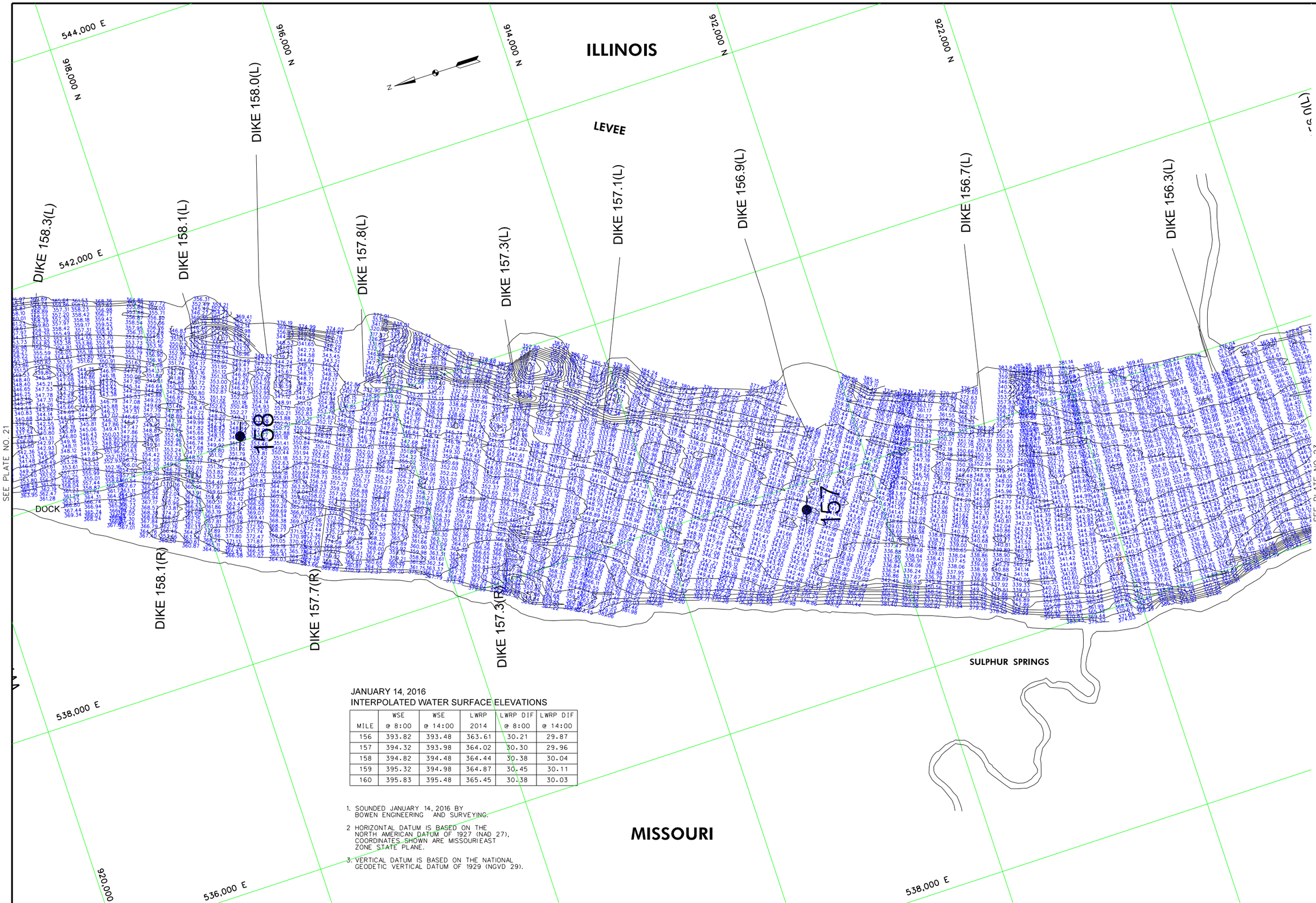
HYDROGRAPHIC SURVEYS

RIVER MILES 158.3 – 160.3

0 120 240 METERS
0 400 800 FEET

THE INFORMATION REPORTED ON THIS MAP REPRESENTS THE DEPTHS OF WATER AS SOUNDED ON THE DATES INDICATED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

PLATE NUMBER
21



JANUARY 14, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 8:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 14:00
156	393.82	393.48	363.61	30.21	29.87
157	394.32	393.98	364.02	30.30	29.96
158	394.82	394.48	364.44	30.38	30.04
159	395.32	394.98	364.87	30.45	30.11
160	395.83	395.48	365.45	30.38	30.03

1. SOUNDED JANUARY 14, 2016 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES SHOWN ARE MISSOURIEAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	BISHOPS LANDING, MO	CHESTER, IL	BRICKEYS LANDING, MO	ST. LOUIS, MO
ZERO N.G.V.D.	334.11	341.05	357.78	379.94
MILE	100.8	109.9	136.0	179.6
LWRP 2014	335.56	340.65	354.19	376.74
14 JAN 2016	x	29.5418(00) 29.42(14:00)	MALFUNCTIONING	25.9218(00) 25.52(14:00)

Surveyed by: BOWEN ENGINEERING
Survey Date: JANUARY 14, 2016
Drawn by: X
Reviewed by: X
Ckd by: X
SUBMITTED: X
APPROVED: X
File name: ##BBBYSCANF1EEPROJPLATN.##BB
Plot date: ##BBBYYYYMMDD##BB

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

240 METERS 120 0 120 400
800 FEET 400 0 400

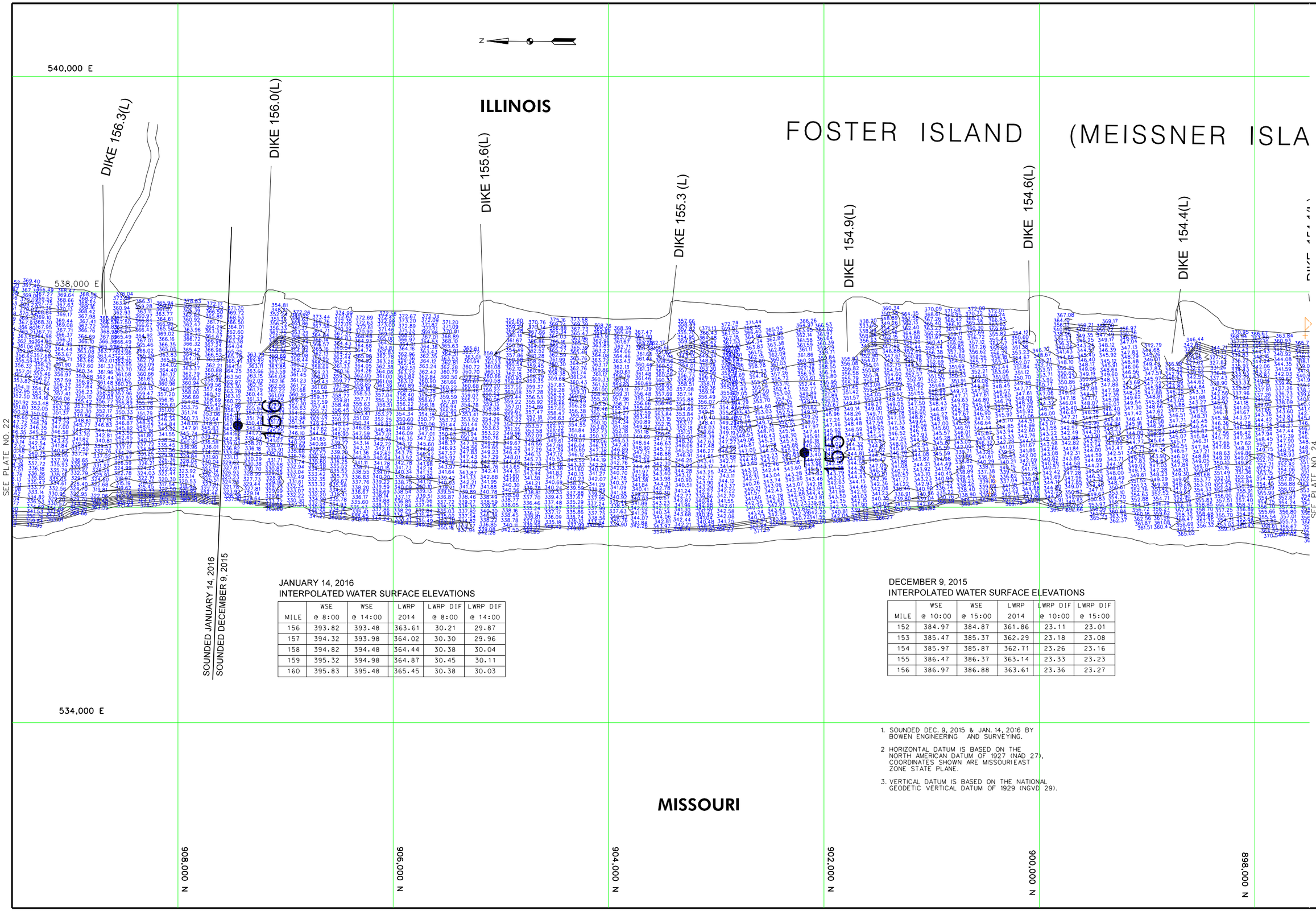
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE AT THE TIME INDICATED AND MAY NOT BE ACCURATE AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

HYDROGRAPHIC SURVEYS

MILES 156.2 – 158.3

PLATE NUMBER

22



JANUARY 14, 2016
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 8:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 14:00
156	393.82	393.48	363.61	30.21	29.87
157	394.32	393.98	364.02	30.30	29.96
158	394.82	394.48	364.44	30.38	30.04
159	395.32	394.98	364.87	30.45	30.11
160	395.83	395.48	365.45	30.38	30.03

DECEMBER 9, 2015
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 15:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 15:00
152	384.97	384.87	361.86	23.11	23.01
153	385.47	385.37	362.29	23.18	23.08
154	385.97	385.87	362.71	23.26	23.16
155	386.47	386.37	363.14	23.33	23.23
156	386.97	386.88	363.61	23.36	23.27

1. SOUNDED DEC. 9, 2015 & JAN. 14, 2016 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	BISHOPS LANDING, MO	CHESTER, IL	BRICKEYS LANDING, MO	ST. LOUIS, MO
ZERO N.G.V.D.	334.11	341.05	357.78	379.94
MILE	100.8	109.9	136.0	179.6
LWRP 2014	335.56	340.65	354.19	376.74
09 DEC 2015	x	x	19.18(10:00) 19.06(15:00)	19.04(10:00) 18.98(15:00)
14 JAN 2016	x	x	29.84(8:00) 29.42(14:00)	25.92(8:00) 25.52(14:00)

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

Surveyed by: BOWEN ENGINEERING
Survey Date: DEC. 9, 2015 & JAN. 14, 2016
Drawn by: X
Reviewed by: X
Ckd by: X
SUBMITTED: X
APPROVED: X
Plot date: 8/8/2017 5:17:51 PM EDT
File name: J:\Projects\MISSISSIPPI\Bowen\Plates\Plate 23.dwg

240 METERS 800 FEET
120 0 120 400
0 400

THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED. THE DATA SHOWN IS AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

HYDROGRAPHIC SURVEYS

MILES 154.3 – 156.2

PLATE NUMBER

23

DECEMBER 9, 2015
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 15:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 5:00
152	384.97	384.87	361.86	23.11	23.01
153	385.47	385.37	362.29	23.18	23.08
154	385.97	385.87	362.71	23.26	23.16
155	386.47	386.37	363.14	23.33	23.23
156	386.97	386.88	363.61	23.36	23.27

1. SOUNDED DECEMBER 9, 2015 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27), COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	BISHOPS LANDING, MO	CHESTER, IL	BRICKEYS LANDING, MO	ST. LOUIS, MO
ZERO N.G.V.D.	334.11	341.05	357.78	379.94
MILE	100.8	109.9	136.0	179.6
LWRP 2014	335.56	340.65	354.19	376.74
09 DEC 2015	x	x	19.58(10:00) 19.08(15:00)	19.04(10:00) 18.98(15:00)

Surveyed by: BOWEN ENGINEERING
Drawn by: X
Reviewed by: X
Ckd by: X
SUBMITTED: X
APPROVED: X
Survey Date: DECEMBER 9, 2015
Plot date: 8/8/2017 5:15:17 PM EDT
File name: E:\BEST\DESIGN\GIS\PROJECTS\HYDRO\PLATES\PLATE NO. 25.DGN

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

UPPER MISSISSIPPI RIVER BASIN

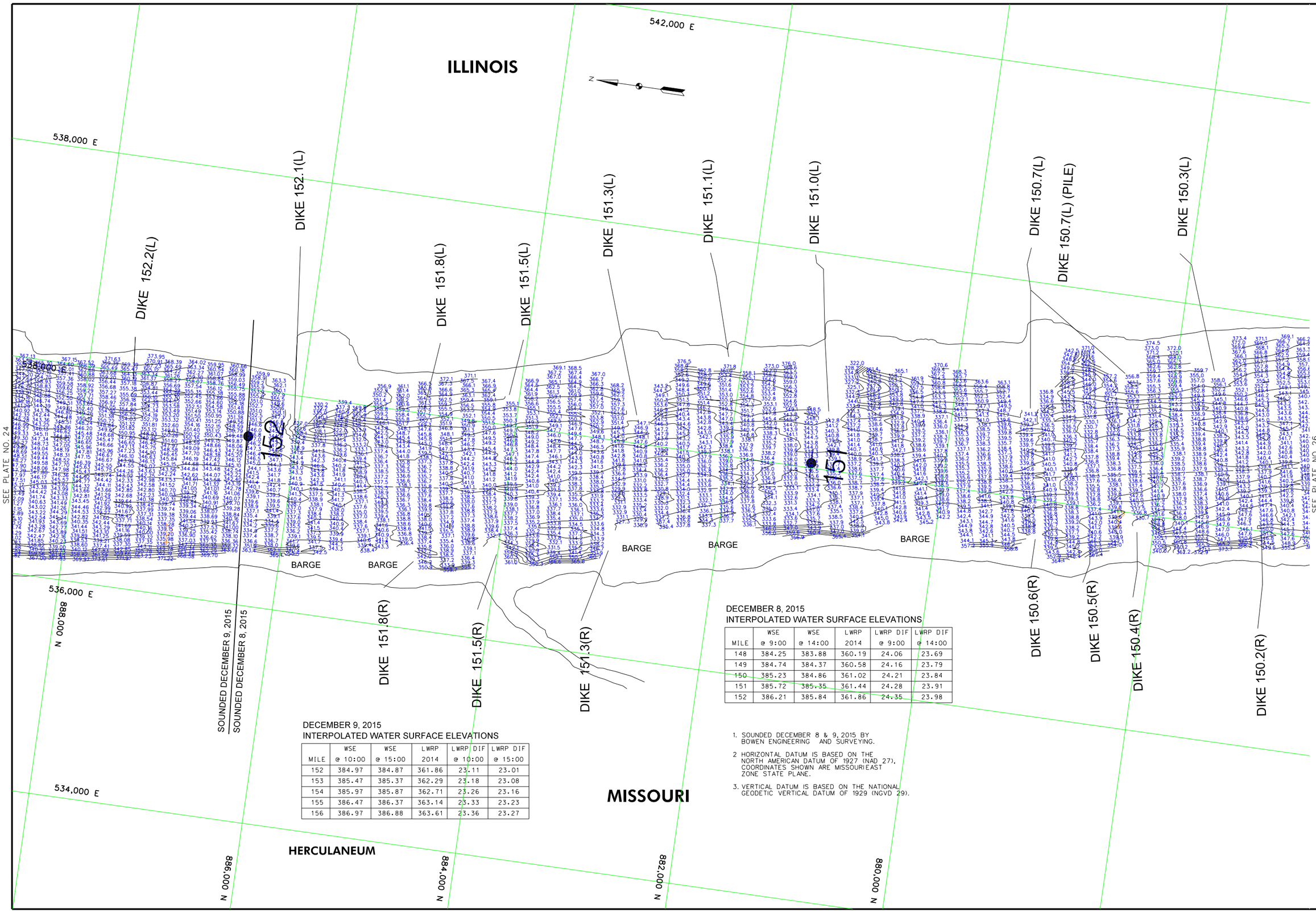
MISSISSIPPI RIVER

240 METERS 0 120
800 FEET 0 400
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SITE SPECIFIC SURVEYS AND ANALYSES AND IS ACCURATE AS OF THE DATE SHOWN. THE GENERAL CONDITIONS EXISTING AT THAT TIME.

HYDROGRAPHIC SURVEYS

RIVER MILES 152.2 – 154.4

PLATE NUMBER
24



DECEMBER 8, 2015
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 9:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 9:00	LWRP DIF @ 14:00
148	384.25	383.88	360.19	24.06	23.69
149	384.74	384.37	360.58	24.16	23.79
150	385.23	384.86	361.02	24.21	23.84
151	385.72	385.35	361.44	24.28	23.91
152	386.21	385.84	361.86	24.35	23.98

DECEMBER 9, 2015
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 15:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 15:00
152	384.97	384.87	361.86	23.11	23.01
153	385.47	385.37	362.29	23.18	23.08
154	385.97	385.87	362.71	23.26	23.16
155	386.47	386.37	363.14	23.33	23.23
156	386.97	386.88	363.61	23.36	23.27

1. SOUNDED DECEMBER 8 & 9, 2015 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	BISHOPS LANDING, MO	CHESTER, IL	BRICKEYS LANDING, MO	ST. LOUIS, MO
ZERO N.G.V.D.	334.11	341.05	357.78	379.94
MILE	100.8	109.9	136.0	179.6
LWRP 2014	335.56	340.65	354.19	376.74
08 DEC 2015	x	x	20.60(9:00) 20.21(14:00)	19.97(9:00) 19.63(14:00)
09 DEC 2015	x	x	19.98(10:00) 19.08(15:00)	19.04(10:00) 18.98(15:00)

U.S. ARMY ENGINEER DIVISION
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

Surveyed by: BOWEN ENGINEERING
Survey Date: DECEMBER 8 & 9, 2015
Drawn by: X
Reviewed by: X
Ckd by: X
SUBMITTED: X
APPROVED: X
File name: 8980101E-TIVE8980
Plot date: 8980101E-TIVE8980

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

240 METERS 120 0 120 240
800 FEET 400 0 400 800

THE INFORMATION REPRESENTED ON THIS MAP REPRESENTS THE RESULTS OF A HYDROGRAPHIC SURVEY PERFORMED ON THE DATES INDICATED AND AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

HYDROGRAPHIC SURVEYS

RIVER MILES 150.2 – 152.2

PLATE NUMBER
25