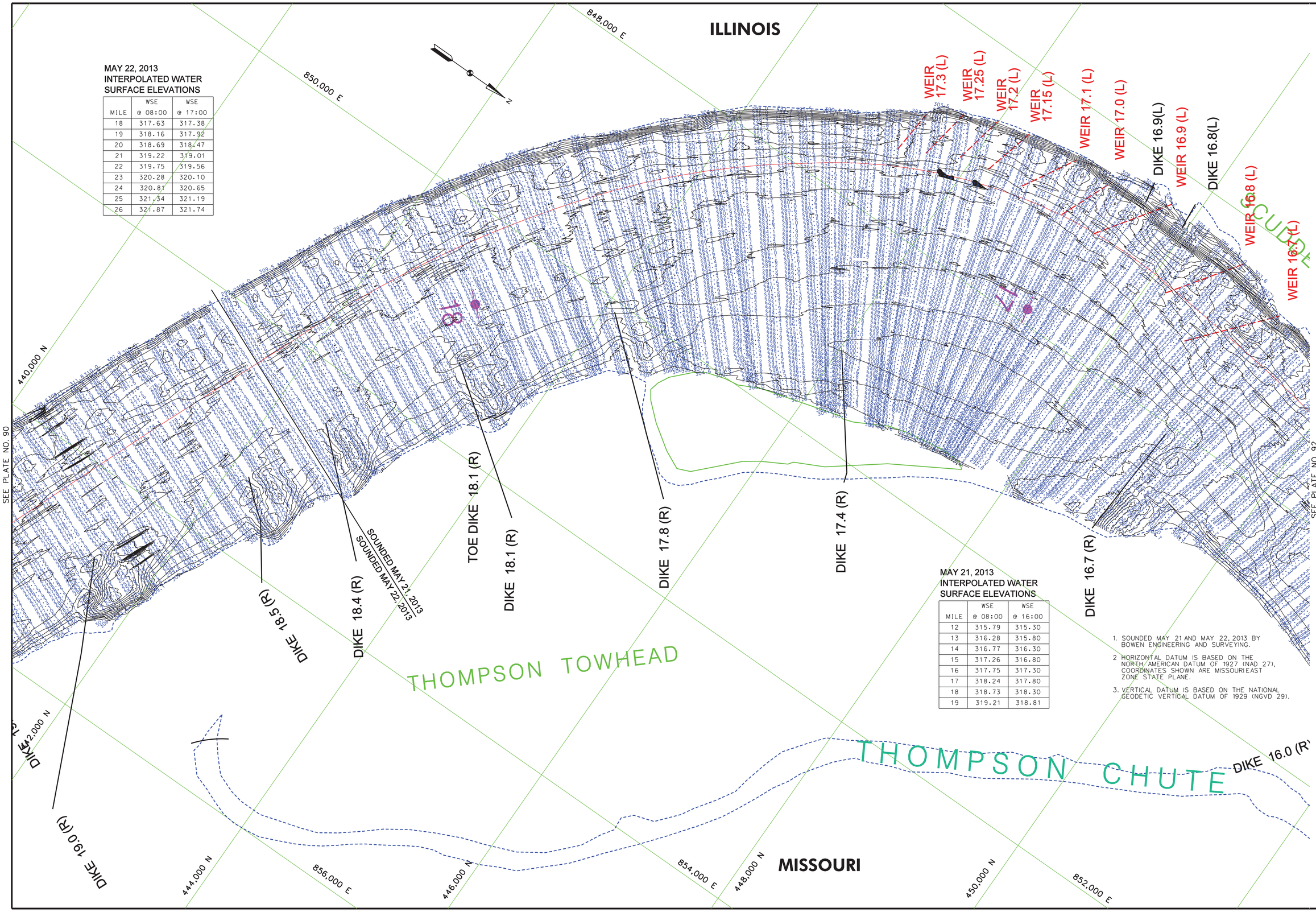


MAY 22, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 17:00
18	317.63	317.38
19	318.16	317.92
20	318.69	318.47
21	319.22	319.01
22	319.75	319.56
23	320.28	320.10
24	320.81	320.65
25	321.34	321.19
26	321.87	321.74

MAY 21, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 16:00
12	315.79	315.30
13	316.28	315.80
14	316.77	316.30
15	317.26	316.80
16	317.75	317.30
17	318.24	317.80
18	318.73	318.30
19	319.21	318.81

1. SOUNDED MAY 21 AND MAY 22, 2013 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			
	BIRD'S POINT	THOMPSON LANDING	PRICE'S LANDING	COMMERCE, MO
ZERO N.G.V.D.	274.53	280.00	299.75	301.83
MILE	2.0	20.2	28.2	39.5
L. W. R. P.	277.9	289.0	293.1	302.1
21 MAY 2013	36.36(8-00) 35.75(16-00)	GAGE NOT WORKING	23.97(8-00) 23.67(16-00)	X
22 MAY 2013	34.84(8-00) 34.30(17-00)	GAGE NOT WORKING	23.28(8-00) 23.19(17-00)	X

ELEVATIONS ARE REFERRED TO N.G.V.D. - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE. (L.W.R.P.) 54,000 C.F.S.

Surveyed by: BOWEN ENGINEERING
Survey Date: May 21 and 22, 2013
Drawn by: X
Ckd by: X
Reviewed by: X
SUBMITTED: X
APPROVED: X
Plot date: ####DATE-TIME####
File name: ####DESIGNFILEBRTPCFICATION####

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

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

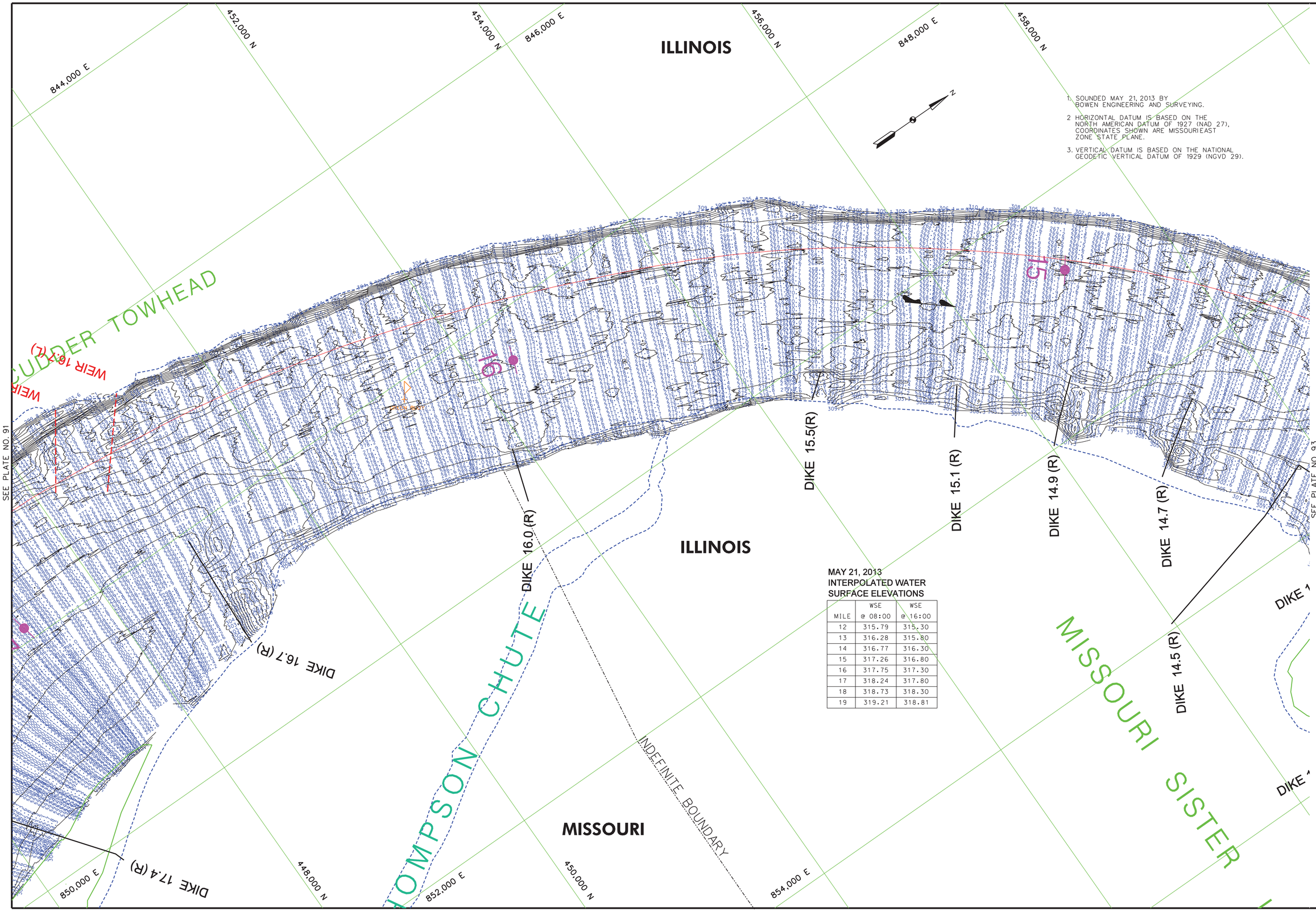
240 METERS 120 0 120 240
800 FEET 400 0 400 800

THE INFORMATION REPORTED 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.

HYDROGRAPHIC SURVEYS

RIVER MILES 16.4 – 18.7

PLATE NUMBER
91



1. SOUNDED MAY 21, 2013 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).

MAY 21, 2013
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 16:00
12	315.79	315.30
13	316.28	315.80
14	316.77	316.30
15	317.26	316.80
16	317.75	317.30
17	318.24	317.80
18	318.73	318.30
19	319.21	318.81

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	BIRD'S POINT	THOMPSON LANDING	PRICE'S LANDING	COMMERCE, MO
ZERO N.G.V.D.	274.53	280.00	299.75	301.83
MILE	2.0	20.2	28.2	39.5
L. W. R. P.	277.9	289.0	293.1	302.1
21 MAY 2013	36.36(8-00) 35.75(18-00)	GAGE NOT WORKING	23.97(18-00) 23.67(18-00)	X

ELEVATIONS ARE REFERRED TO N.G.V.D. - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE (L.W.R.P.) 54,000 C.F.S.

Surveyed by: BOWEN ENGINEERING
Survey Date: May, 21, 2013
Drawn by: X
Ckd by: X
Reviewed by: X
SUBMITTED: X
APPROVED: X
Plot date: ####DATE-TIME####
File name: ####DESIGNFILEBRIEFDESCRIPTION####

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

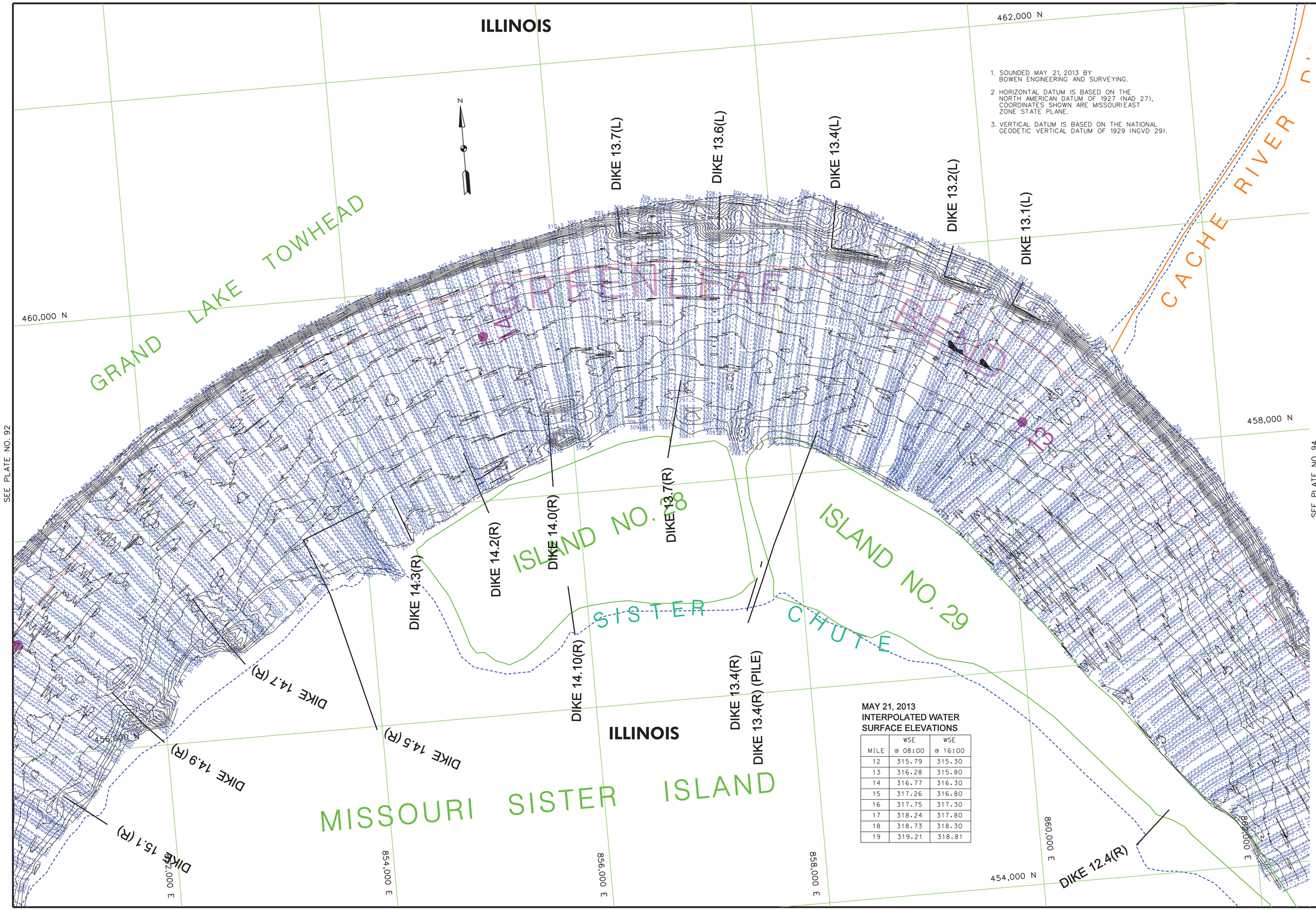
UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

240 METERS
800 FEET
120 0 120 400
0 400

THE INFORMATION 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 14.7 – 16.4

PLATE NUMBER
92



1. SOUNDED MAY 21, 2013 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).

MAY 21, 2013
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 16:00
12	315.79	315.30
13	316.28	315.80
14	316.77	316.30
15	317.26	316.80
16	317.75	317.30
17	318.24	317.80
18	318.73	318.30
19	319.21	318.81

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	BIRD'S POINT	THOMPSON LANDING	PRICE'S LANDING	COMMERCE, MO
ZERO N.G.V.D.	274.53	280.00	299.75	301.83
MILE	2.0	20.2	28.2	39.5
L. W. R. P.	277.9	289.0	293.1	302.1
21 MAY 2013	36.36(8:00) 35.75(16:00)	GAGE NOT WORKING	23.97(8:00) 23.67(16:00)	X

ELEVATIONS ARE REFERED TO N.G.V.D. - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE (L.W.R.P.) 54.000 C.F.S.

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

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

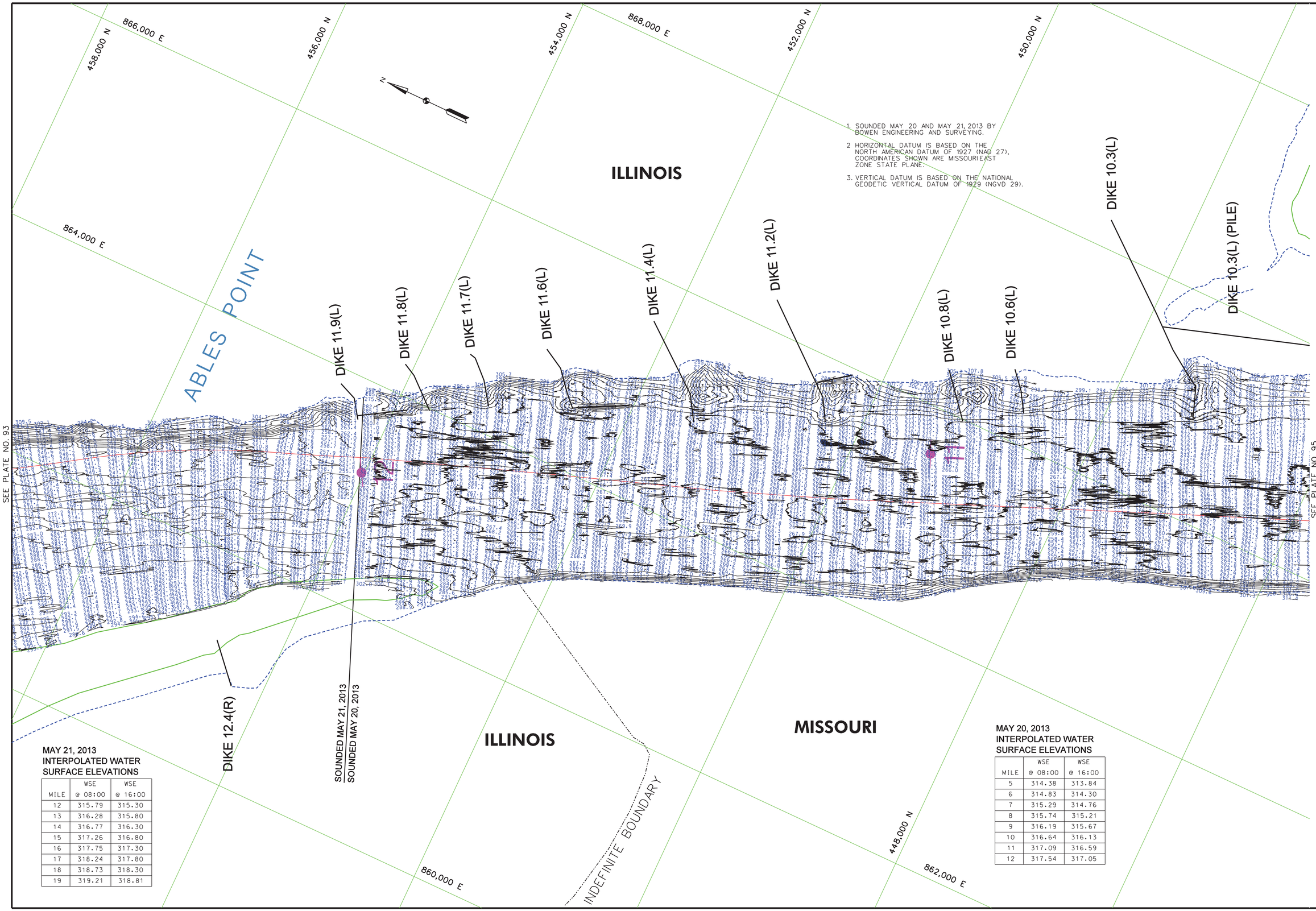
Surveyed by: BOWEN ENGINEERING
Survey Date: May 21, 2013
Drawn by: X
Ckd by: X
Reviewed by: X
SUBMITTED: X
APPROVED: X
Plot date: ####DATE-TIME####
File name: ####DESIGNFILEREPORTLOCATION####

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 PRESENTED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

HYDROGRAPHIC SURVEYS
RIVER MILES 12.5 – 14.7

PLATE NUMBER
93



1. SOUNDED MAY 20 AND MAY 21, 2013 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).

MAY 21, 2013
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 16:00
12	315.79	315.30
13	316.28	315.80
14	316.77	316.30
15	317.26	316.80
16	317.75	317.30
17	318.24	317.80
18	318.73	318.30
19	319.21	318.81

MAY 20, 2013
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 16:00
5	314.38	313.84
6	314.83	314.30
7	315.29	314.76
8	315.74	315.21
9	316.19	315.67
10	316.64	316.13
11	317.09	316.59
12	317.54	317.05

US Army Corps of Engineers
St. Louis District

GAGE RECORD

	BIRD'S POINT	THOMPSON LANDING	PRICE'S LANDING	COMMERCE, MO
ZERO N.G.V.D.	274.53	280.00	299.75	301.83
MILE	2.0	20.2	28.2	39.5
L. W. R. P.	277.9	289.0	293.1	302.1
20 MAY 2013	38.50(8:00) 37.93(16:00)	GAGE NOT WORKING	25.10(8:00) 24.74(16:00)	X
21 MAY 2013	36.36(8:00) 35.75(16:00)	GAGE NOT WORKING	23.97(8:00) 23.67(16:00)	X

ELEVATIONS ARE REFERRED TO N.G.V.D. - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE (L.W.R.P.) 54,000 C.F.S.

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

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

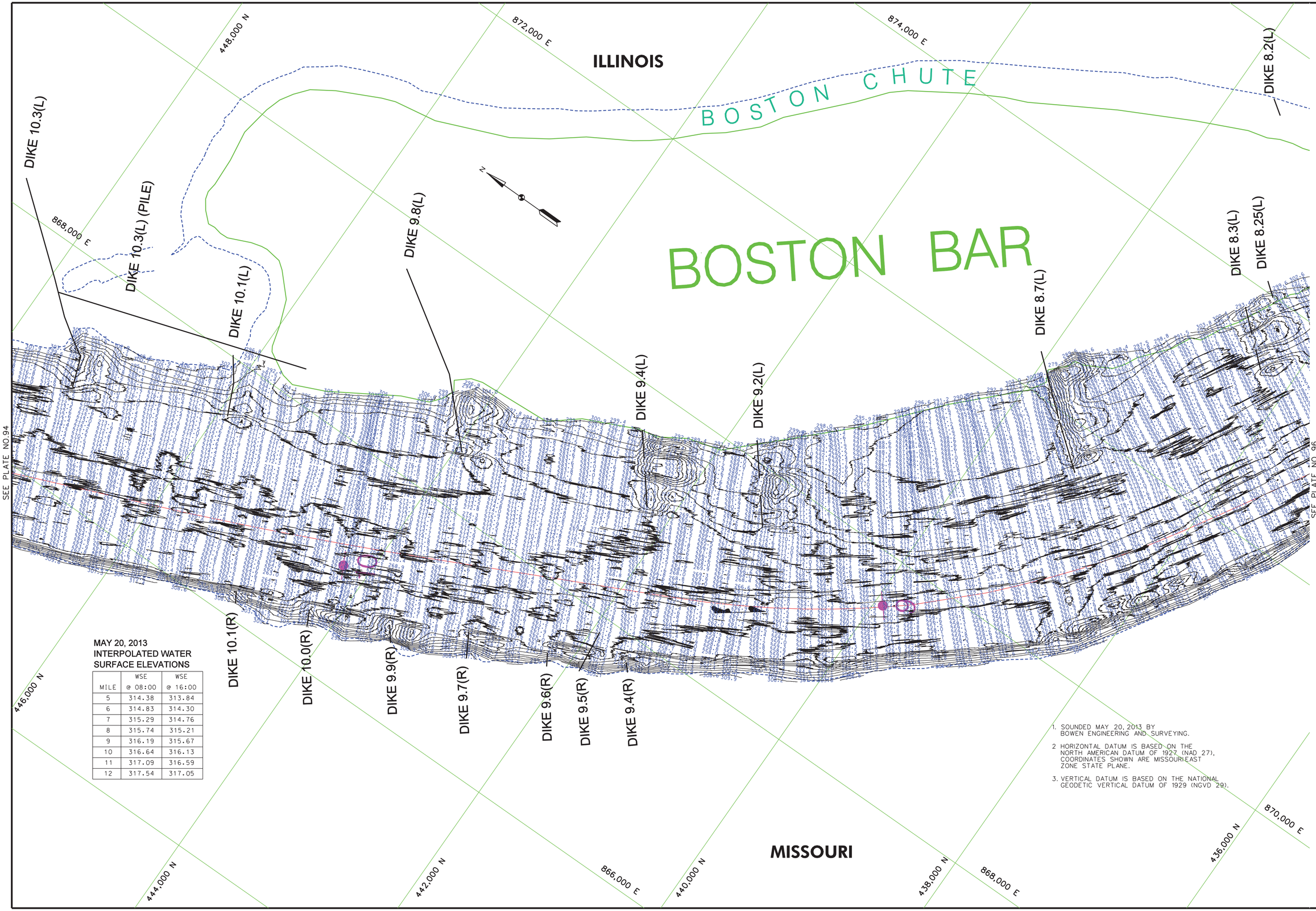
Surveyed by: BOWEN ENGINEERING
Drawn by: X
SUBMITTED: X
Checked by: X
APPROVED: X
Survey Date: May 20 and 21, 2013
Reviewed by: X
Plot date: ##########
File name: ##########

240 METERS 120 0 120 400
800 FEET 400 0 400

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 10.5 – 12.5

PLATE NUMBER
94



MAY 20, 2013
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 16:00
5	314.38	313.84
6	314.83	314.30
7	315.29	314.76
8	315.74	315.21
9	316.19	315.67
10	316.64	316.13
11	317.09	316.59
12	317.54	317.05

1. SOUNDED MAY 20, 2013 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

	BIRD'S POINT	THOMPSON LANDING	PRICE'S LANDING	COMMERCE, MO
ZERO N.G.V.D.	274.53	280.00	299.75	301.83
MILE	2.0	20.2	28.2	39.5
L. W. R. P.	277.9	289.0	293.1	302.1
20 MAY 2013	38.50(8:00) 37.93(16:00)	GAGE NOT WORKING	25.10(8:00) 24.74(16:00)	X

ELEVATIONS ARE REFERED TO N.G.V.D. - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE (L.W.R.P.) 154,000 C.F.S.

Surveyed by: BOWEN ENGINEERING
Survey Date: May 20, 2013
Drawn by: X
Ckd by: X
Reviewed by: X
SUBMITTED: X
APPROVED: X
Plot date: ####DATE-TIME####
File name: ####DESIGNFILEDESCRIPTION####

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

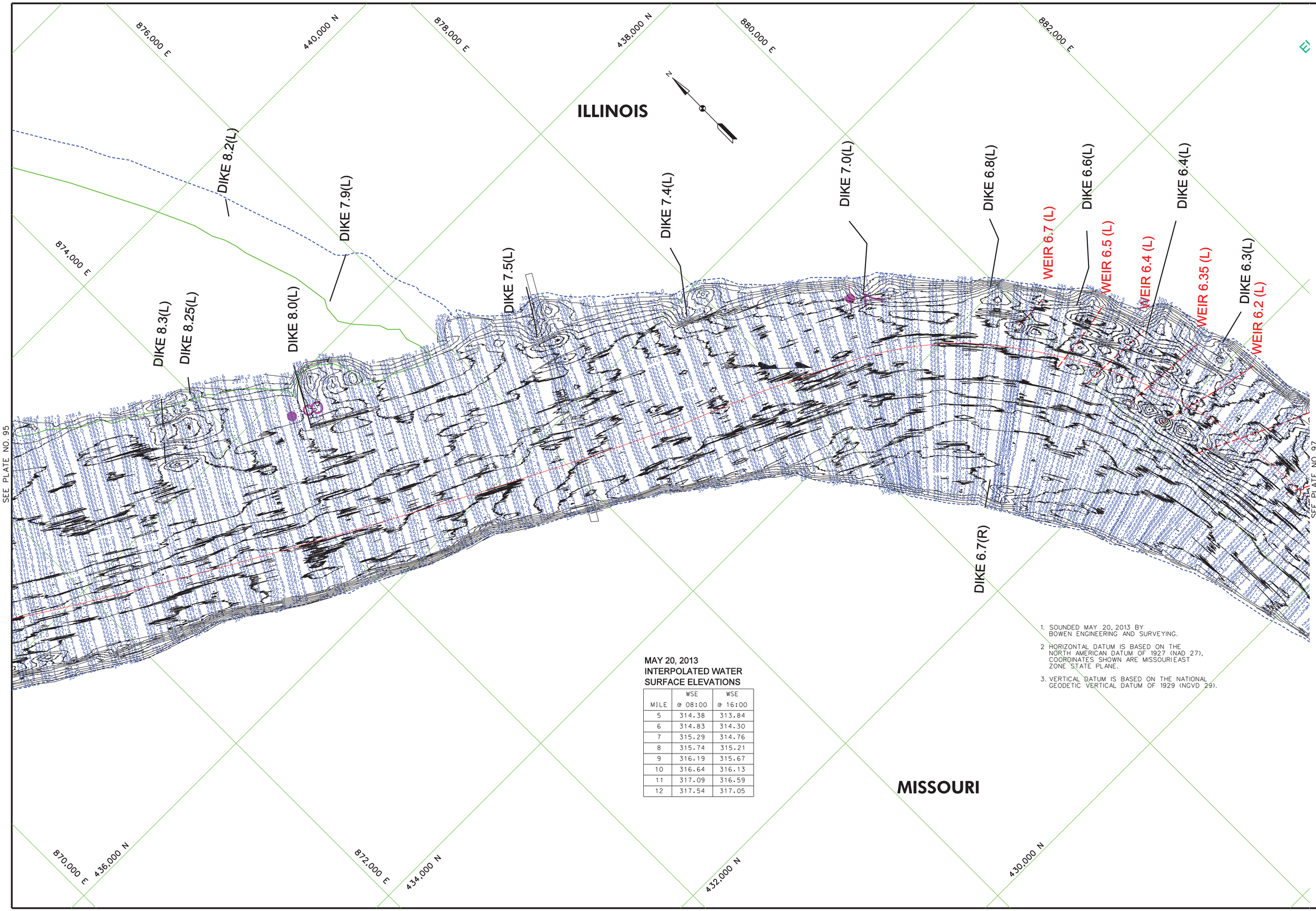
UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

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

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

HYDROGRAPHIC SURVEYS
RIVER MILES 8.3 – 10.5

PLATE NUMBER
95



MAY 20, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 16:00
5	314.38	313.84
6	314.83	314.30
7	315.29	314.76
8	315.74	315.21
9	316.19	315.67
10	316.64	316.13
11	317.09	316.59
12	317.54	317.05

1. SOUNDED MAY 20, 2013 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

	BIRD'S POINT	THOMPSON LANDING	PRICE'S LANDING	COMMERCE, MO
ZERO N.G.V.D.	274.53	280.00	299.75	301.83
MILE	2.0	20.2	28.2	39.5
L. W. R. P.	277.9	289.0	293.1	302.1
20 MAY 2013	38.50(8:00) 37.93(16:00)	GAGE NOT WORKING	25.10(8:00) 24.74(16:00)	X

ELEVATIONS ARE REFERRED TO N.G.V.D. - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE (L.W.R.P.) 154,000 C.F.S.

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

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

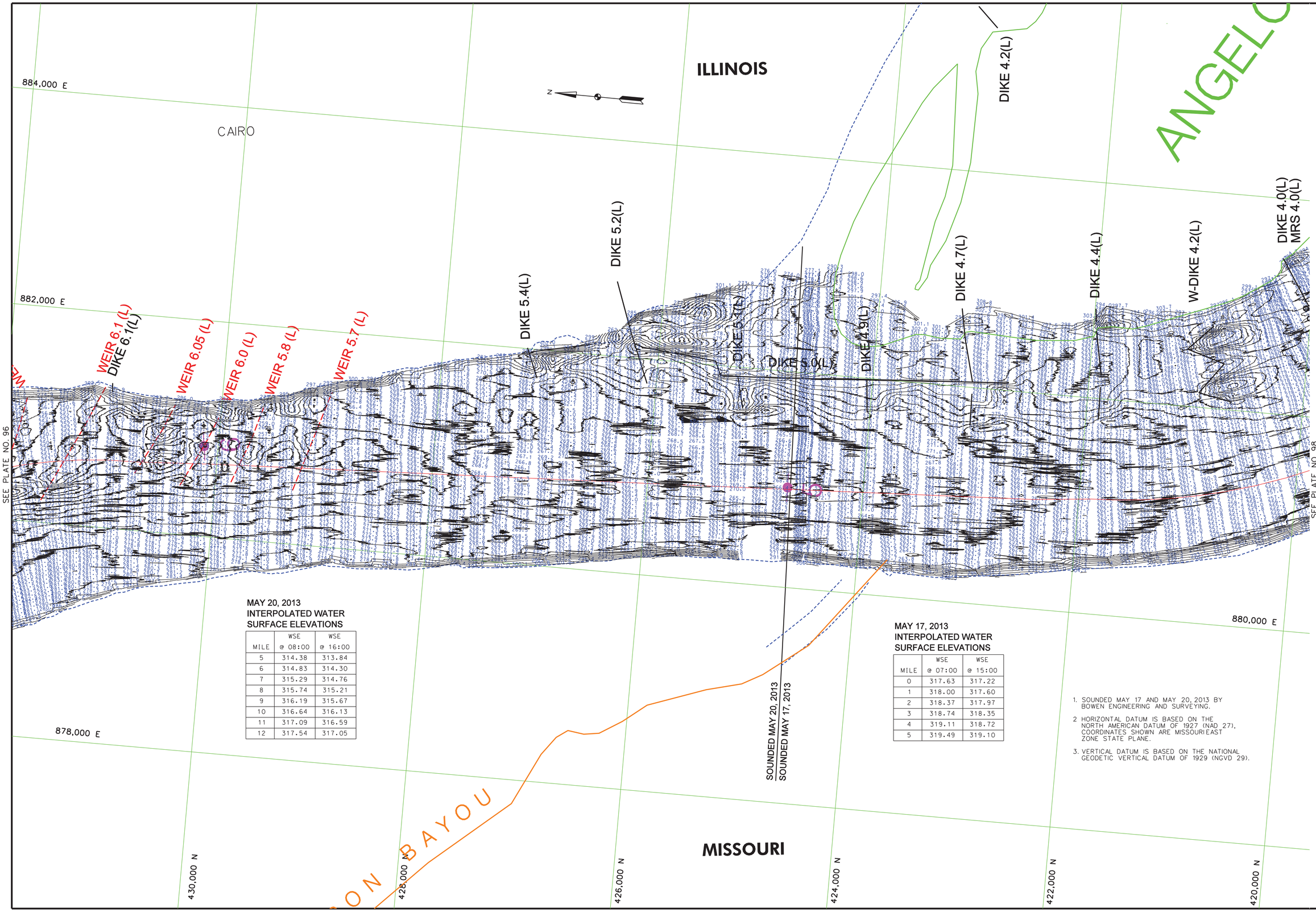
Surveyed by: BOWEN ENGINEERING
Survey Date: May 20, 2013
Drawn by: X
Ckd by: X
Reviewed by: X
SUBMITTED: X
APPROVED: X
Plot date: ####DATE-TIME####
File name: ####DESIGNFILEDESCRIPTION####

120 400 0 0 120 240 METERS
400 800 FEET

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 6.2 – 8.3

PLATE NUMBER
96



MAY 20, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 16:00
5	314.38	313.84
6	314.83	314.30
7	315.29	314.76
8	315.74	315.21
9	316.19	315.67
10	316.64	316.13
11	317.09	316.59
12	317.54	317.05

MAY 17, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 07:00	WSE @ 15:00
0	317.63	317.22
1	318.00	317.60
2	318.37	317.97
3	318.74	318.35
4	319.11	318.72
5	319.49	319.10

1. SOUNDED MAY 17 AND MAY 20, 2013 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

	BIRD'S POINT	THOMPSON LANDING	PRICE'S LANDING	COMMERCE, MO
ZERO N.G.V.D.	274.53	280.00	299.75	301.83
MILE	2.0	20.2	28.2	39.5
L. W. R. P.	277.9	289.0	293.1	302.1
17 MAY 2013	43.84(7:00)	43.44(15:00)	GAGE NOT WORKING	28.36(7:00) 28.09(15:00)
20 MAY 2013	38.50(8:00)	37.93(16:00)	GAGE NOT WORKING	25.10(8:00) 24.74(16:00)

ELEVATIONS ARE REFERRED TO N.G.V.D. - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE. (L.W.R.P.) 54,000 C.F.S.

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

Surveyed by: BOWEN ENGINEERING
Drawn by: X
SUBMITTED: X
Ck'd by: X
Reviewed by: X
APPROVED: X
Survey Date: May 17 and 20, 2013
Plot date: ####DATE/TIME####
File name: ####DESIGNFILEBASEDESCRIPTION####

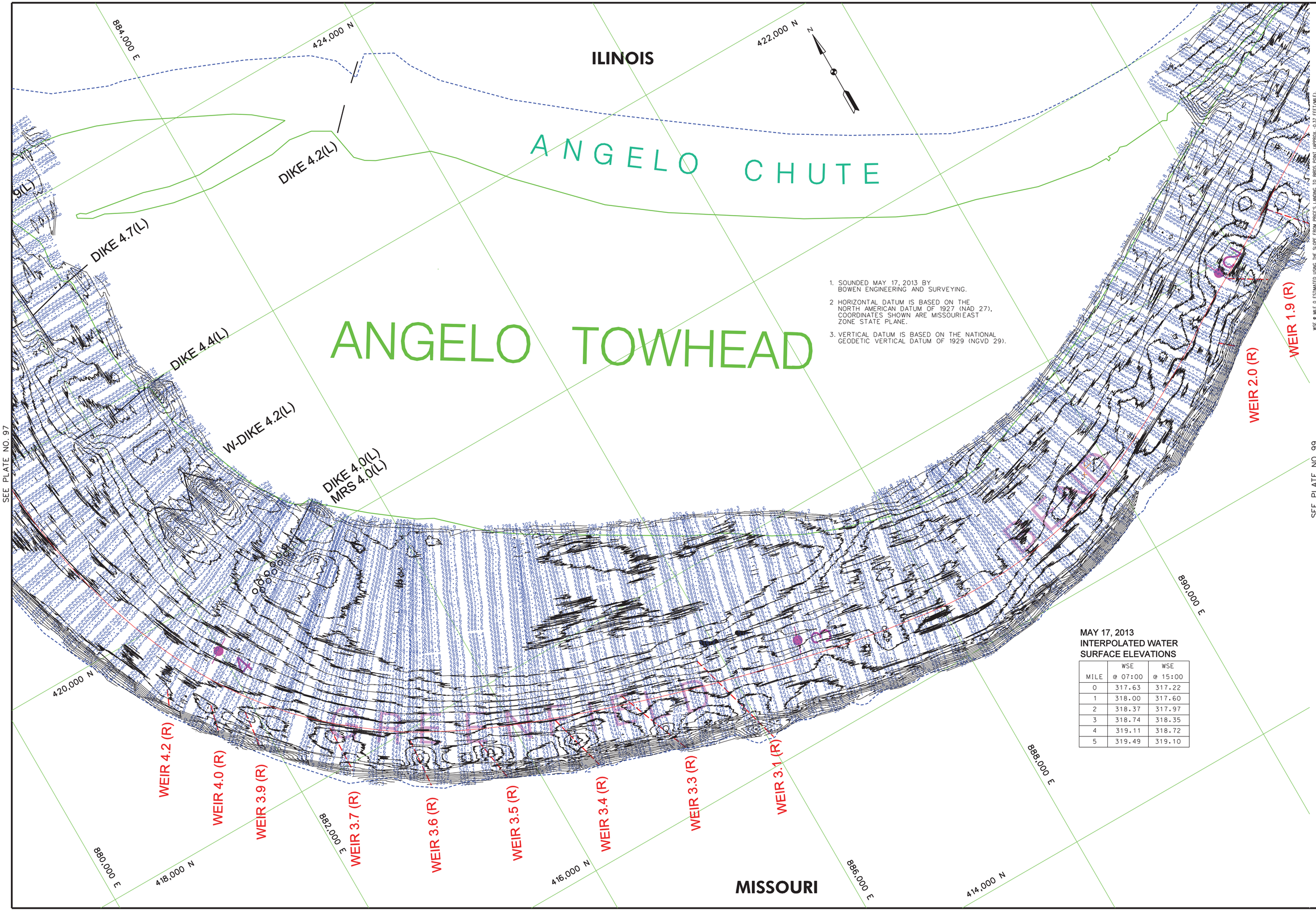
UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

HYDROGRAPHIC SURVEYS
RIVER MILES 4.2 – 6.2

120 400 0 0 120 240 METERS
400 800 FEET

THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SITE SPECIFIC HYDROGRAPHIC SURVEYS AND MAY NOT BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

PLATE NUMBER
97



1. SOUNDED MAY 17, 2013 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).

MAY 17, 2013
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 07:00	WSE @ 15:00
0	317.63	317.22
1	318.00	317.60
2	318.37	317.97
3	318.74	318.35
4	319.11	318.72
5	319.49	319.10

US Army Corps of Engineers
St. Louis District

WSE @ MILE 0 ESTIMATED USING THE SLOPE FROM PRICE'S LANDING TO BIRDS POINT (APPROX. -0.37 FEET/MILE).

GAGE RECORD

	OHIO RIVER (EST)	BIRD'S POINT	THOMPSON LANDING	PRICE'S LANDING
ZERO N.G.V.D.	0	274.53	280.00	299.75
MILE	0.0	2.0	20.2	28.2
L. W. R. P.	276.80	277.9	289.0	293.1
17 MAY 2013	317.63(7:00) 43.44(15:00)	43.84(7:00) 43.44(15:00)	GAGE NOT WORKING	28.36(7:00) 28.09(15:00)

ELEVATIONS ARE REFERED TO N.G.V.D. - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE (L.W.R.P.) 154,000 C.F.S.

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

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

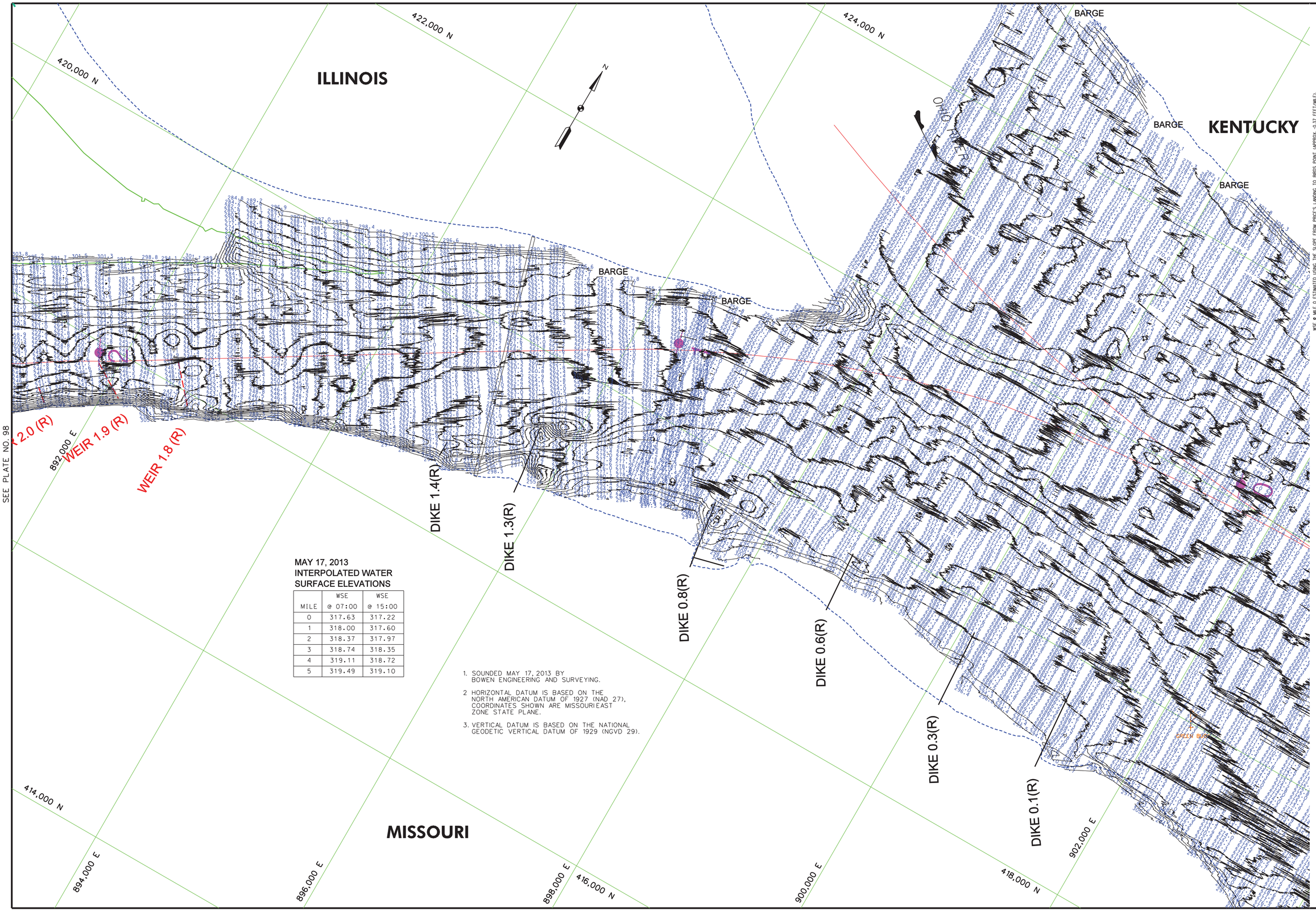
Surveyed by: BOWEN ENGINEERING
Survey Date: May 17, 2013
Drawn by: X
Ckd by: X
Reviewed by: X
SUBMITTED: X
APPROVED: X
Plot date: ####DATE-TIME####
File name: ####REGIONPATH\FILENAME\FIGURE\PRECISION####

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

THE INFORMATION REPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE(S) SHOWN AND MAY NOT BE ACCURATE AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

HYDROGRAPHIC SURVEYS
RIVER MILES 2.0 – 4.2

PLATE NUMBER
98



MAY 17, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 07:00	WSE @ 15:00
0	317.63	317.22
1	318.00	317.60
2	318.37	317.97
3	318.74	318.35
4	319.11	318.72
5	319.49	319.10

1. SOUNDED MAY 17, 2013 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

WSE @ MILE 0 ESTIMATED USING THE SLOPE FROM PRICE'S LANDING TO BIRDS POINT (APPROX. -0.37 FEET/MILE).

GAGE RECORD

	OHIO RIVER (EST)	BIRD'S POINT	THOMPSON LANDING	PRICE'S LANDING
ZERO N.G.V.D.	0	274.53	280.00	299.75
MILE	0.0	2.0	20.2	28.2
L. W. R. P.	276.80	277.9	289.0	293.1
17 MAY 2013	317.63(7:00) 317.22(15:00)	43.84(7:00) 43.44(15:00)	GAGE NOT WORKING	28.36(7:00) 28.09(15:00)

ELEVATIONS ARE REFERED TO N.G.V.D. - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE (L.W.R.P.) 154.000 C.F.S.

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

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

Surveyed by: BOWEN ENGINEERING
Survey Date: May 17, 2013
Drawn by: X
Ckd by: X
Reviewed by: X
SUBMITTED: X
APPROVED: X
Plot date: ####DATE-TIME####
File name: ####DESIGNFILEBASEPICPICATION####

0 120 240 METERS
0 400 800 FEET

THE INFORMATION REPORTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE INDICATED. THE CONTOURS SHOWN ARE AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

HYDROGRAPHIC SURVEYS
RIVER MILES 0 – 2.0

PLATE NUMBER
99