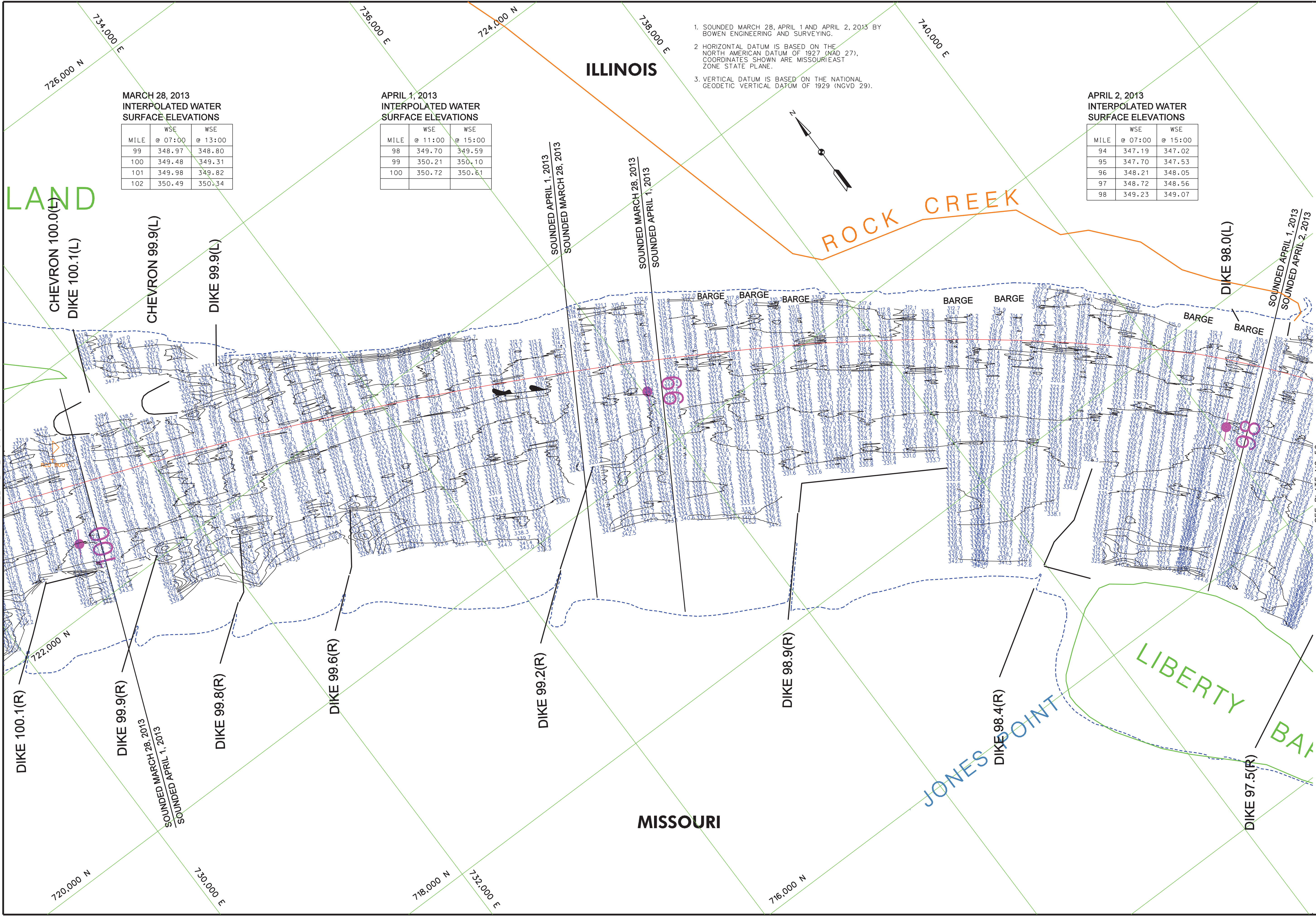




MARCH 28, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 07:00	WSE @ 13:00
99	348.97	348.80
100	349.48	349.31
101	349.98	349.82
102	350.49	350.34

APRIL 1, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 11:00	WSE @ 15:00
98	349.70	349.59
99	350.21	350.10
100	350.72	350.61

APRIL 2, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 07:00	WSE @ 15:00
94	347.19	347.02
95	347.70	347.53
96	348.21	348.05
97	348.72	348.56
98	349.23	349.07

CAGE RECORD

RED ROCK LANDING, MO	BISHOPS LANDING, MO	CHESTER IL	BRICKY'S LANDING, MO
ZERO NGVD	338.92	334.31	337.78
MILE	334.31	330.8	336.0
L.W.B.P.	330.7	325.4	326.2
28 MAR 2013	17.587(00) 17.361(00)	X	13.437(00) 13.343(00)
01 APR 2013	18.601(00) 18.671(00)	X	14.711(00) 14.641(00)
02 APR 2013	18.327(00) 18.151(00)	X	14.277(00) 14.141(00)

ELEVATIONS ARE REFERRED TO NAVD 83 - CONTOURS ARE BELOW 1000.0' LOW WATER REFERENCE PLANE (LWRP) 100.000 (7.5')

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

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
RIVER MILES 98.0 - 100.0

Survey Date: March 28 and April 1 & 2, 2013

Drawn by: X Ckd by: X Reviewed by: X

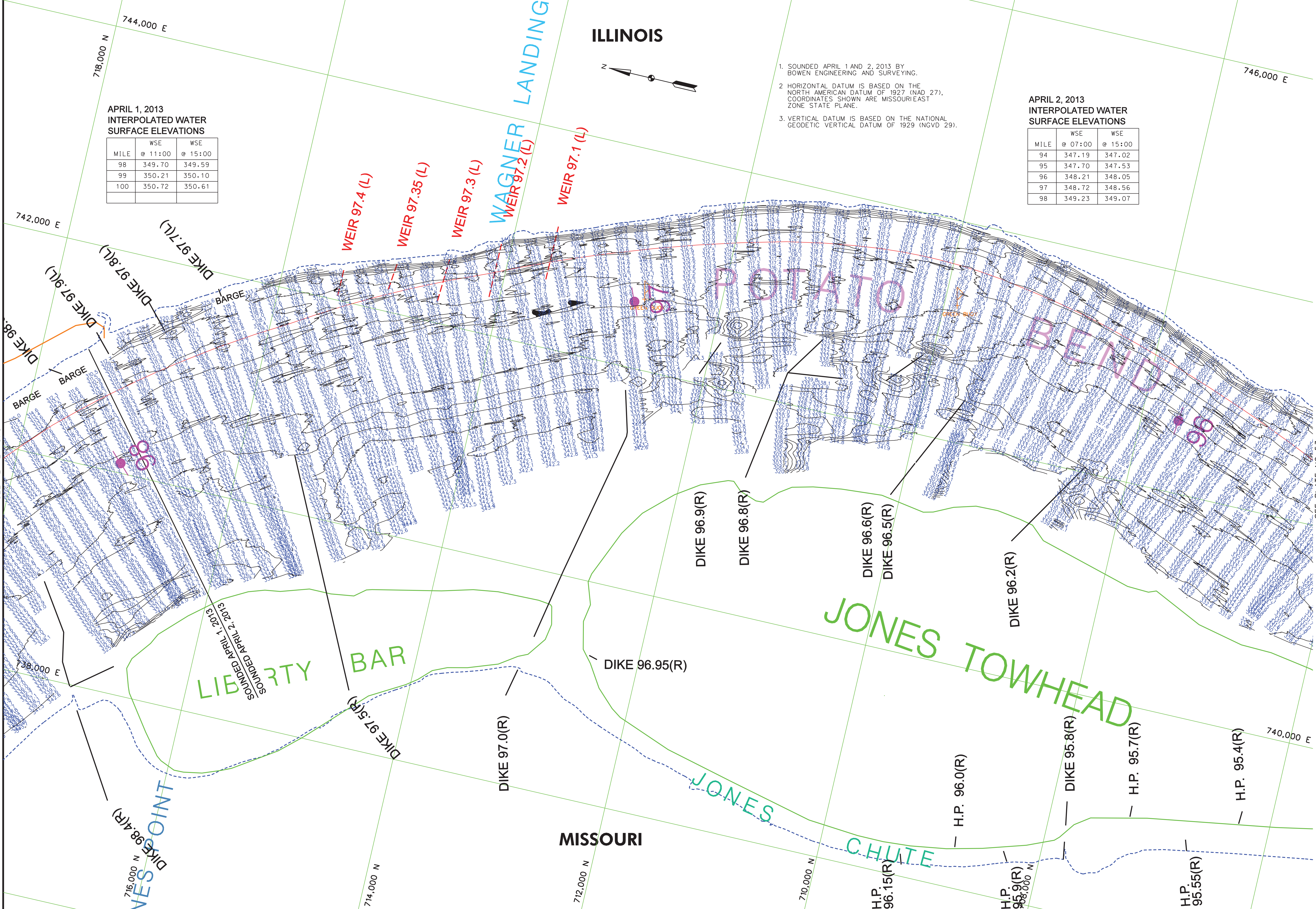
SUBMITTED: X APPROVED: X

Plot date: File name: ##PROJECT/##DATE/##

HYDROGRAPHIC SURVEYS
RIVER MILES 98.0 - 100.0

1"=240 METERS
0 100 240 METERS
0 400 800 FEET

THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL LOCATIONS OF THE DATA.



APRIL 1, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 11:00	WSE @ 15:00
98	349.70	349.59
99	350.21	350.10
100	350.72	350.61

APRIL 2, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 07:00	WSE @ 15:00
94	347.19	347.02
95	347.70	347.53
96	348.21	348.05
97	348.72	348.56
98	349.23	349.07

- 1. SOUNDED APRIL 1 AND 2, 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

CAUSE RECORD

ZERO N.G.V.D.	RED ROCK LANDING, MO	BISHOPS LANDING, MO	CHESTER, IL	BRICKY'S LANDING, MO
MILE	338.92	334.11	341.05	337.78
L.W.R.D.	94	90.8	109.9	136.0
01 APR 2013	18.80(1500) 18.67(1500)	335.4	340.4	356.2
02 APR 2013	18.37(1500) 18.15(1500)	X	14.71(1500) 14.41(1500)	X
		X	14.27(1500) 14.15(1500)	X

ELEVATIONS ARE REFERRED TO N.G.V.D. - CONTOURS ARE BELOW 1006.57' LOW WATER REFERENCE PLANE (L.W.R.P.) 104.000 G.T.S.I.

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

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

HYDROGRAPHIC SURVEYS
RIVER MILES 95.8 - 98.0

Survey Date: April 1 and 2, 2013

Surveyed by: BOWEN ENGINEERING
Drawn by: X
Checked by: X
Reviewed by: X

APPROVED: X

Submitted: X

Plot Date: File Name: ##PROJECT##

SEE PLATE NO. 51

SEE PLATE NO. 53

120 0 100 200 400 800 METERS

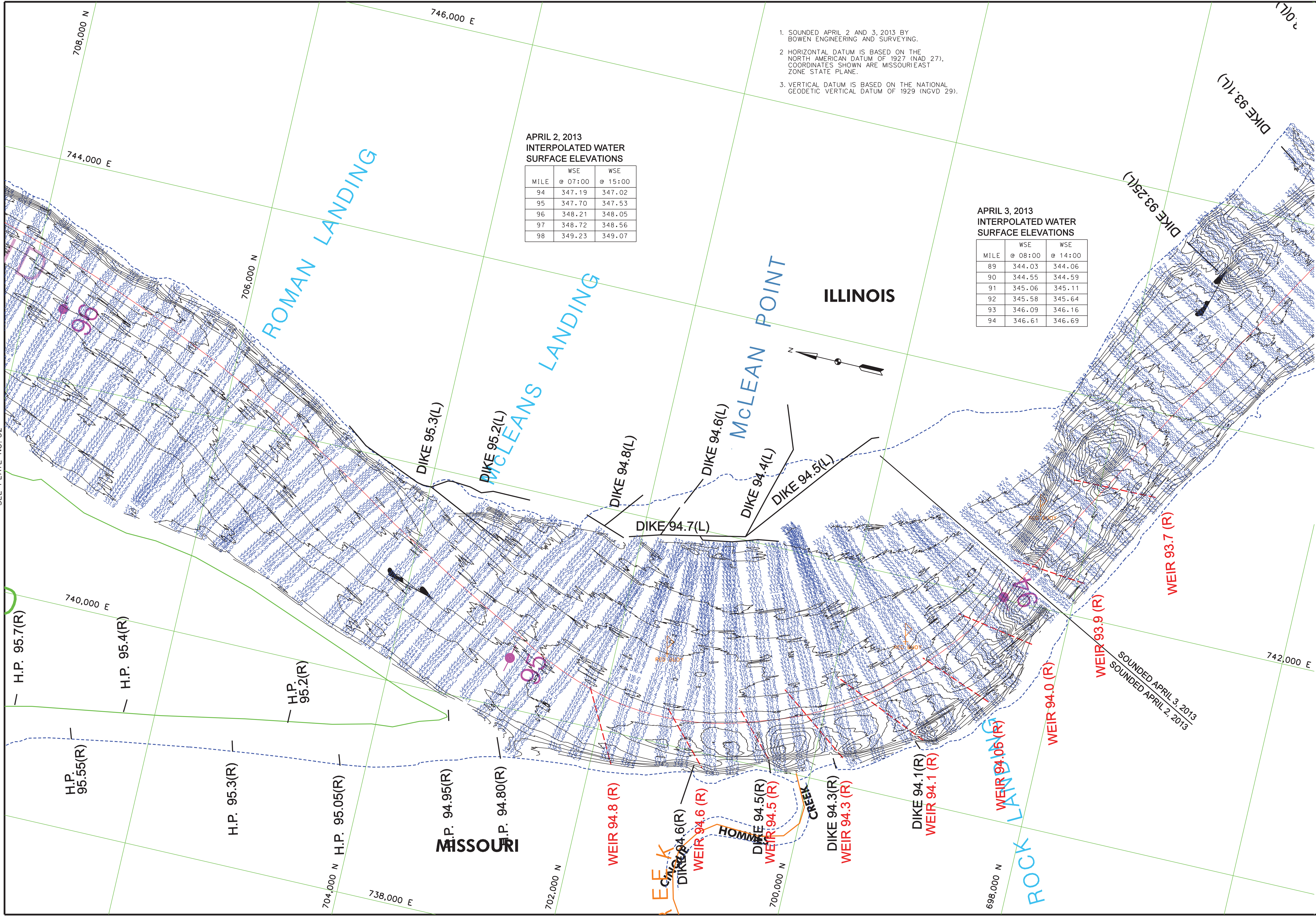
120 0 100 200 400 800 FEET

THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL LOCATIONS OF SURVEYED FEATURES.

PLATE
NUMBER

52

SEE PLATE NO. 52



APRIL 2, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE	
	@ 07:00	@ 15:00
94	347.19	347.02
95	347.70	347.53
96	348.21	348.05
97	348.72	348.56
98	349.23	349.07

APRIL 3, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE	
	@ 08:00	@ 14:00
89	344.03	344.06
90	344.55	344.59
91	345.06	345.11
92	345.58	345.64
93	346.09	346.16
94	346.61	346.69



CAGE RECORD

GRAND TOWER, IL	RED ROCK LANDING, MO	BISHOPS LANDING, MO	CHESTER, IL
ZERO N.G.V.D.	321.03	328.92	334.31
MILE	81.9	100.8	109.9
L.W.R.D.	325.3	330.7	340.4
02 APR 2013	18.957(00) 18.701(00)	18.327(00) 18.515(00)	14.277(00) 14.415(00)
03 APR 2013	18.448(00) 18.414(00)	17.748(00) 17.814(00)	X

ELEVATIONS ARE REFERRED TO N.G.V.D. - CONTOURS ARE BELOW 1006.57' LOW WATER REFERENCE PLANE (L.W.R.P.) 104.000 (7.5')

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

Survey Date: April 2 and 3, 2013

Drawn by: X Ckd by: X Reviewed by: X

SUBMITTED: X APPROVED: X

Plot Date: ##/##/## File Name: ##PROJECTNAME##

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

HYDROGRAPHIC SURVEYS

RIVER MILES 93.5 - 95.8

120 0 100 240 METERS
400 0 400 800 FEET

THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONTOURS OF THE SURVEYED AREA.

PLATE NUMBER

53

SEE PLATE NO. 54



SEE PLATE NO. 53

SEE PLATE NO. 55

1. SOUNDED APRIL 3, 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).

APRIL 3, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE	WSE
	@ 08:00	@ 14:00
89	344.03	344.06
90	344.55	344.59
91	345.06	345.11
92	345.58	345.64
93	346.09	346.16
94	346.61	346.69

US Army Corps
of Engineers
St. Louis District

CAGE RECORD			
GRAND TOWER, IL	RED ROCK LANDING, MO	BISHOPS LANDING, MO	CHESTER, IL
ZERO N.G.V.D.	321.83	338.92	334.31
MILE	81.8	34.2	300.8
L.W.R.D.	325.3	330.7	335.4
03 APR 2013	18.44(8.00)	17.74(8.00)	17.61(8.00)

ELEVATIONS ARE REFERRED TO N.G.V.D. - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE (L.W.R.P.) (14.000 FT.)

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

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

Survey Date: April 3, 2013

Drawn by: X
Checked by: X
Reviewed by: X

SUBMITTED: X
APPROVED: X

Plot Date: ##/##/##
File Name: ##PROJECT/##/##/##

120 400 800 1200

0 100 200 300 400 500 600 700 800 900 1000 1100 1200

0 400 800 1200

0 100 200 300 400 500 600 700 800 900 1000 1100 1200

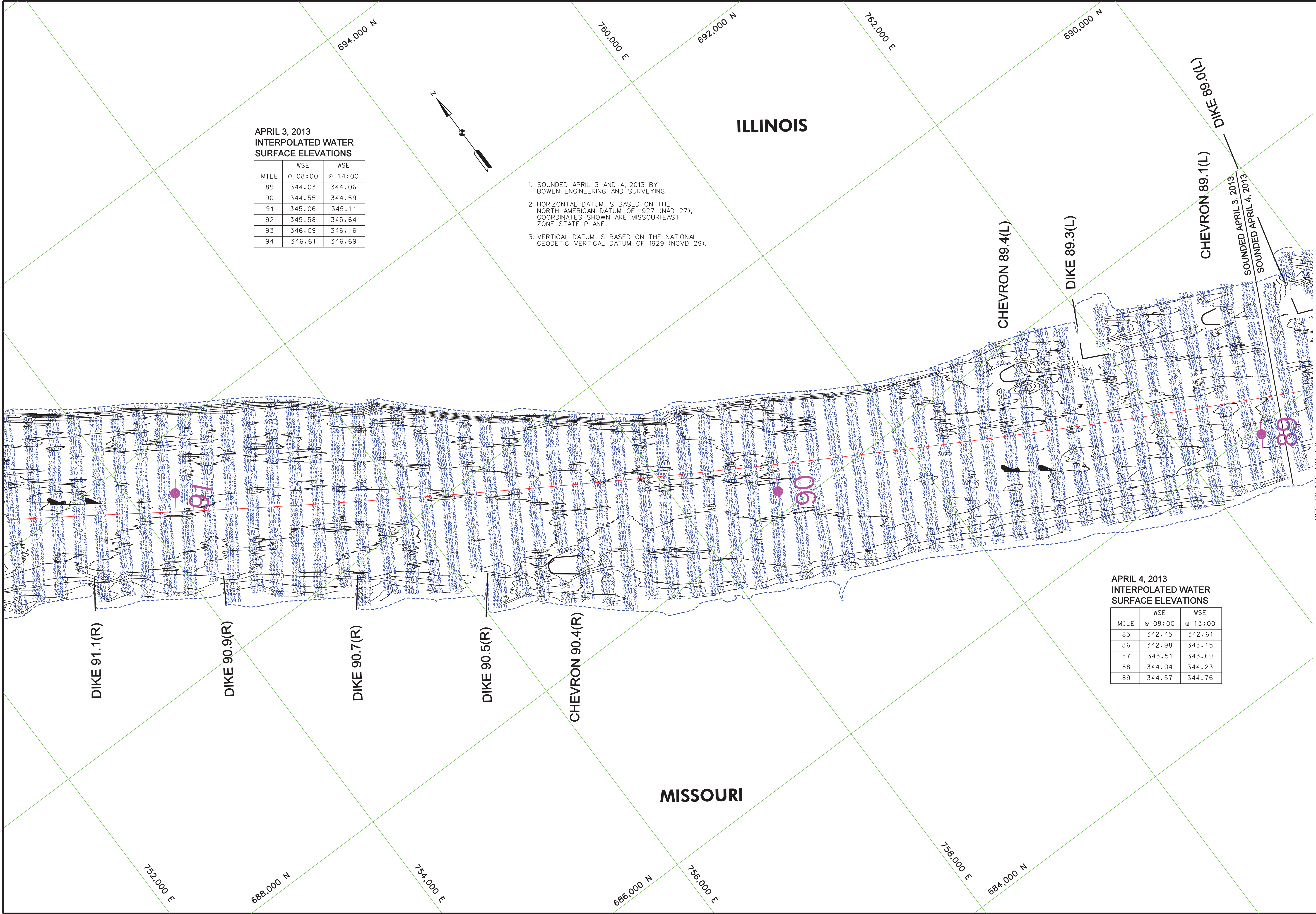
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONTOUR OF THE TERRAIN.

HYDROGRAPHIC SURVEYS

RIVER MILES 91.2 - 93.5

PLATE
NUMBER

54



APRIL 3, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 08:00	WSE @ 14:00
89	344.03	344.06
90	344.55	344.59
91	345.06	345.11
92	345.58	345.64
93	346.09	346.16
94	346.61	346.69

1. SOUNDED APRIL 3 AND 4, 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).

APRIL 4, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

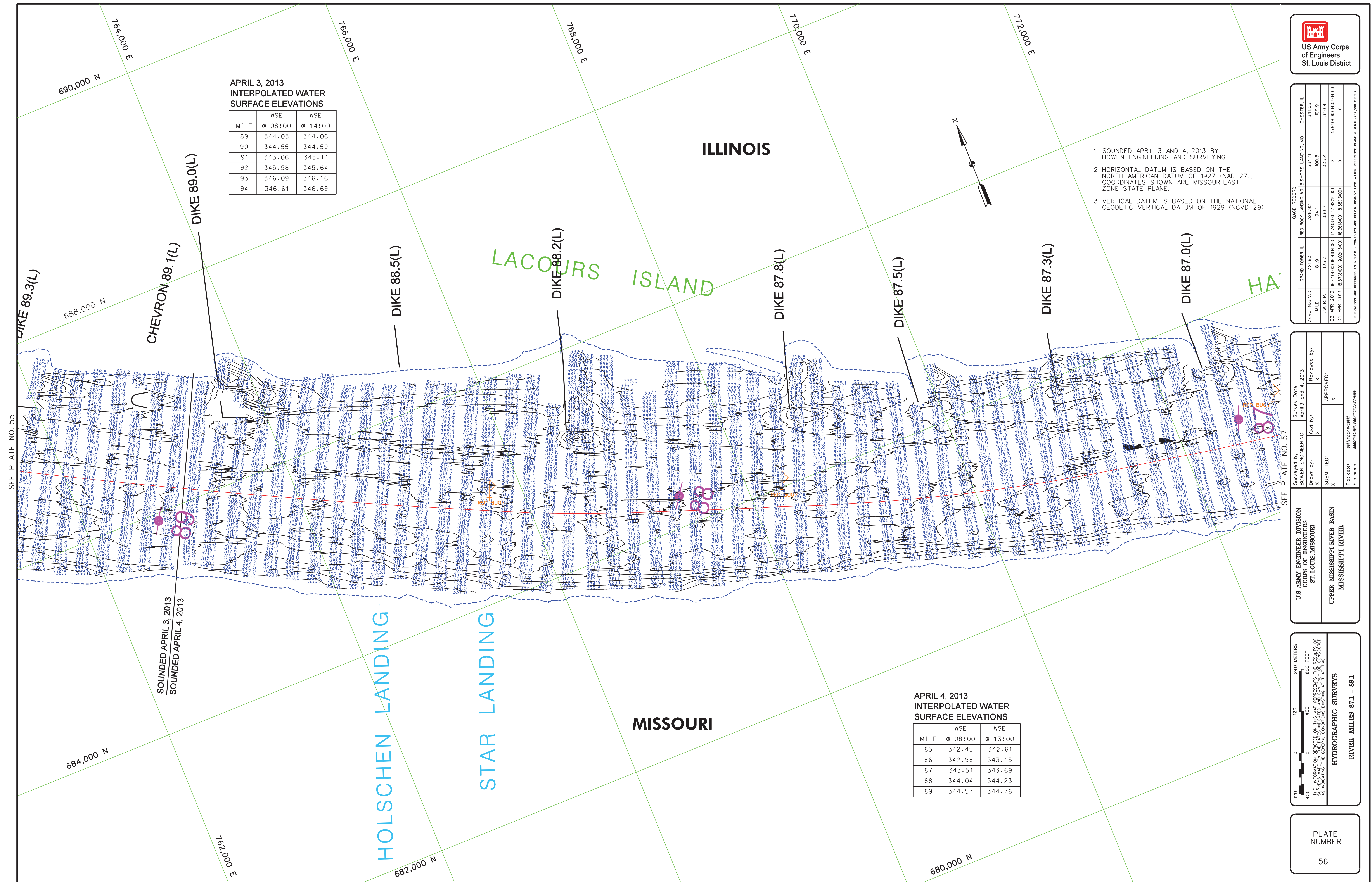
MILE	WSE @ 08:00	WSE @ 13:00
85	342.45	342.61
86	342.98	343.15
87	343.51	343.69
88	344.04	344.23
89	344.57	344.76

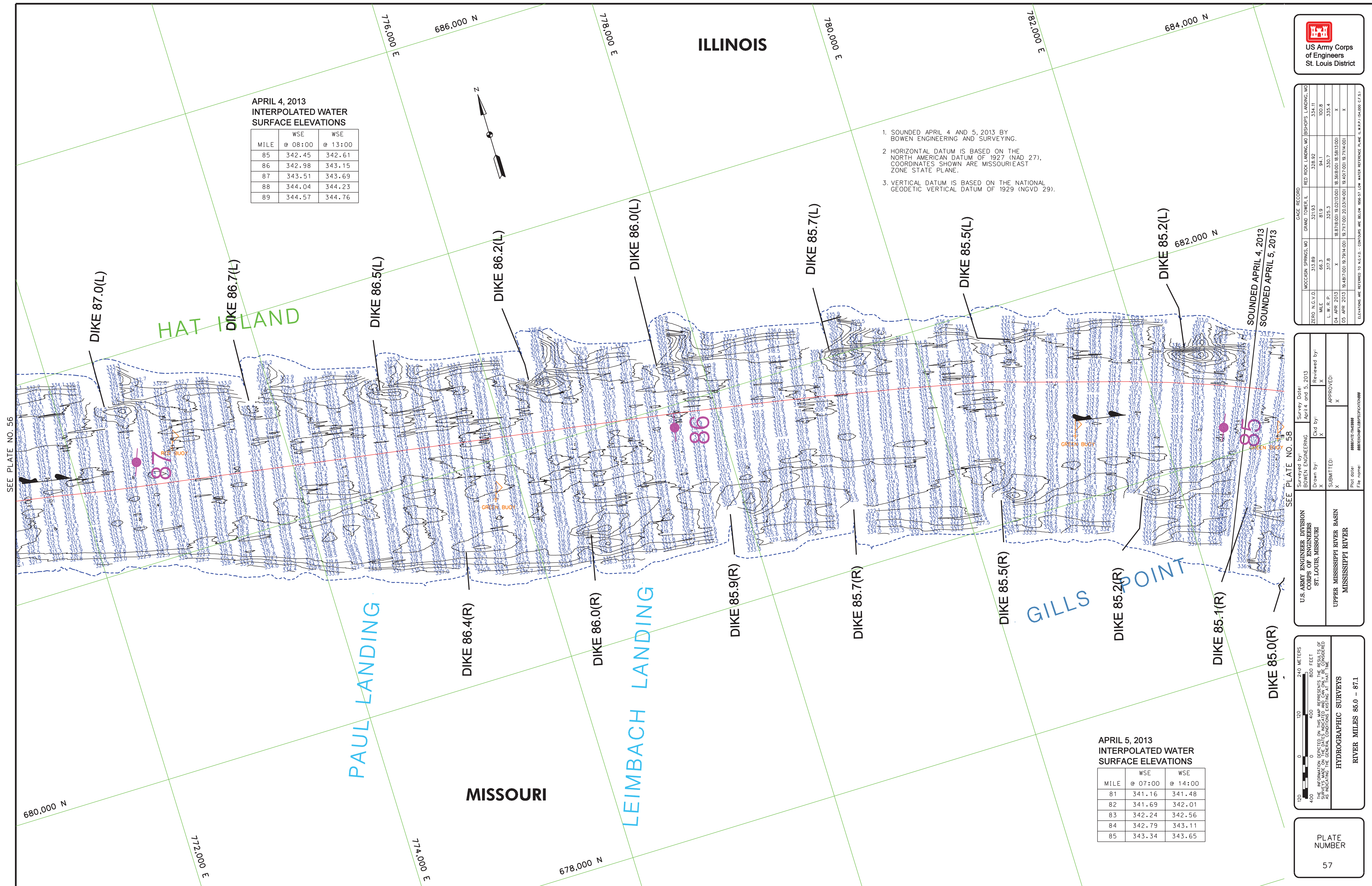
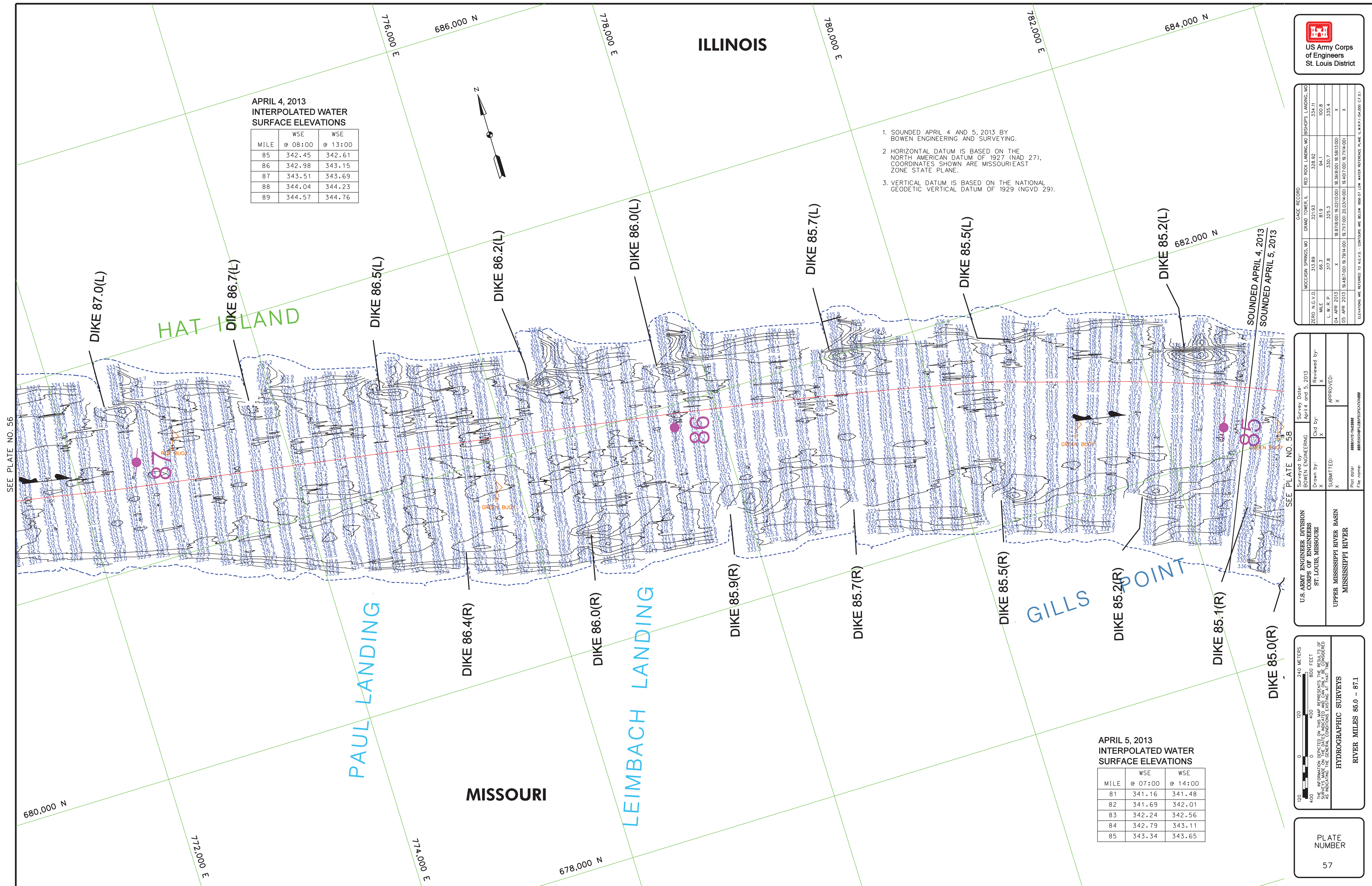


GAGE RECORD			
GRAND TOWER, L.	RED ROCK LANDING, MO	BISHOPS LANDING, MO	CHESTER, IL
ZERO N.G.V.D.	321.03	328.92	334.31
MILE	81.0	304.1	300.8
L.W.R.P.	325.3	330.7	335.4
03 APR 2013	18.44(8:00)	18.41(14:00)	17.74(8:00)
04 APR 2013	18.87(8:00)	19.02(13:00)	18.36(8:00)
ELEVATIONS ARE REFERRED TO N.G.V.D. - CONTOURS ARE BELOW 1956-57 LOW WATER REFERENCE PLANE (L.W.R.P.) (1940-00 OF S.)			X

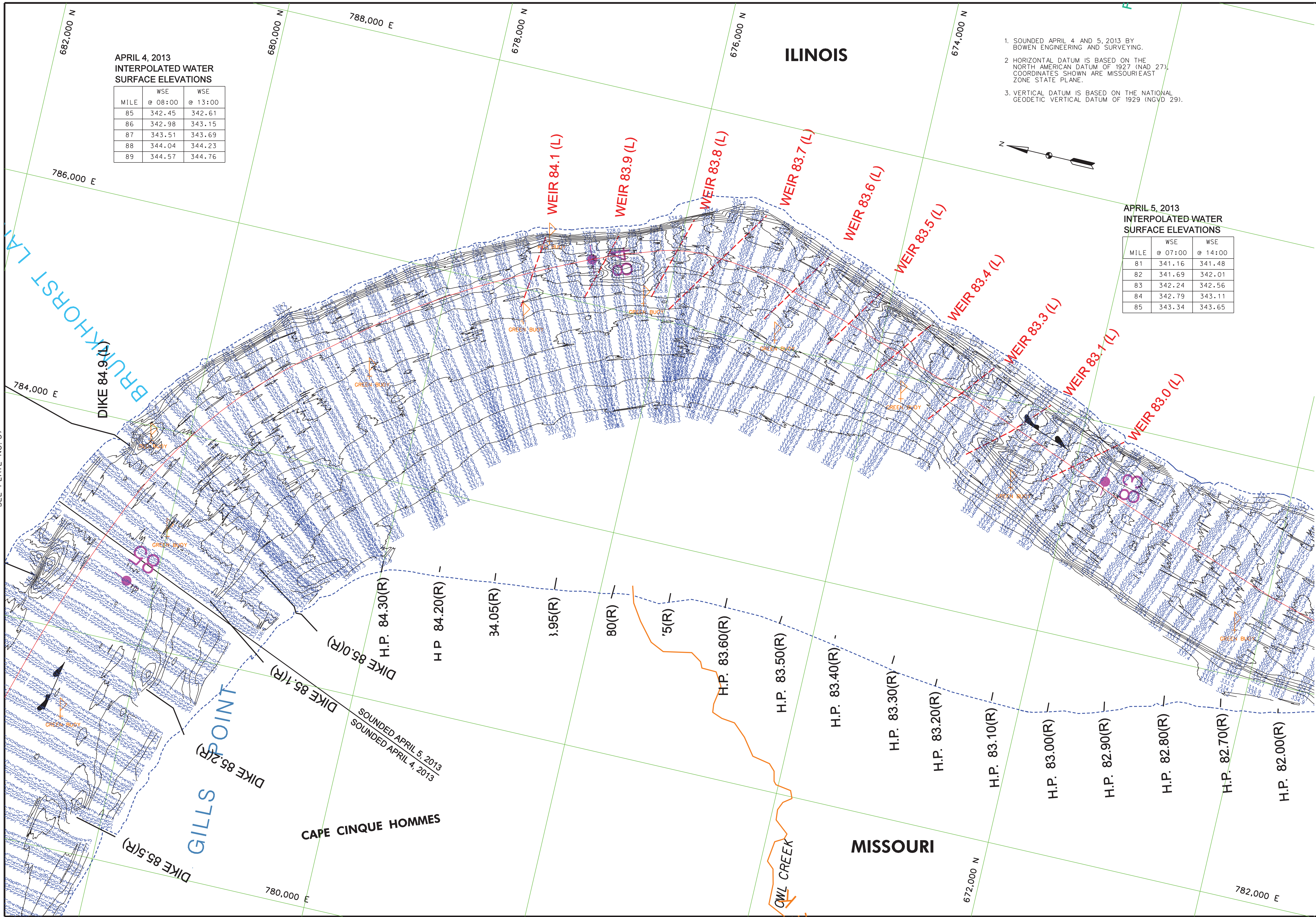
U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Survey Date: April 3 and 4, 2013
Drawn by: X	Ckd by: X
Reviewed by: X	APPROVED: X
UPPER MISSISSIPPI RIVER BASIN MISSISSIPPI RIVER	FILE NAME: ##06017E##

HYDROGRAPHIC SURVEYS RIVER MILES 89.1 - 91.2





SEE PLATE NO. 57



APRIL 4, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE	
	@ 08:00	@ 13:00
85	342.45	342.61
86	342.98	343.15
87	343.51	343.69
88	344.04	344.23
89	344.57	344.76

APRIL 5, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE	
	@ 07:00	@ 14:00
81	341.16	341.48
82	341.69	342.01
83	342.24	342.56
84	342.79	343.11
85	343.34	343.65

1. SOUNDED APRIL 4 AND 5, 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).

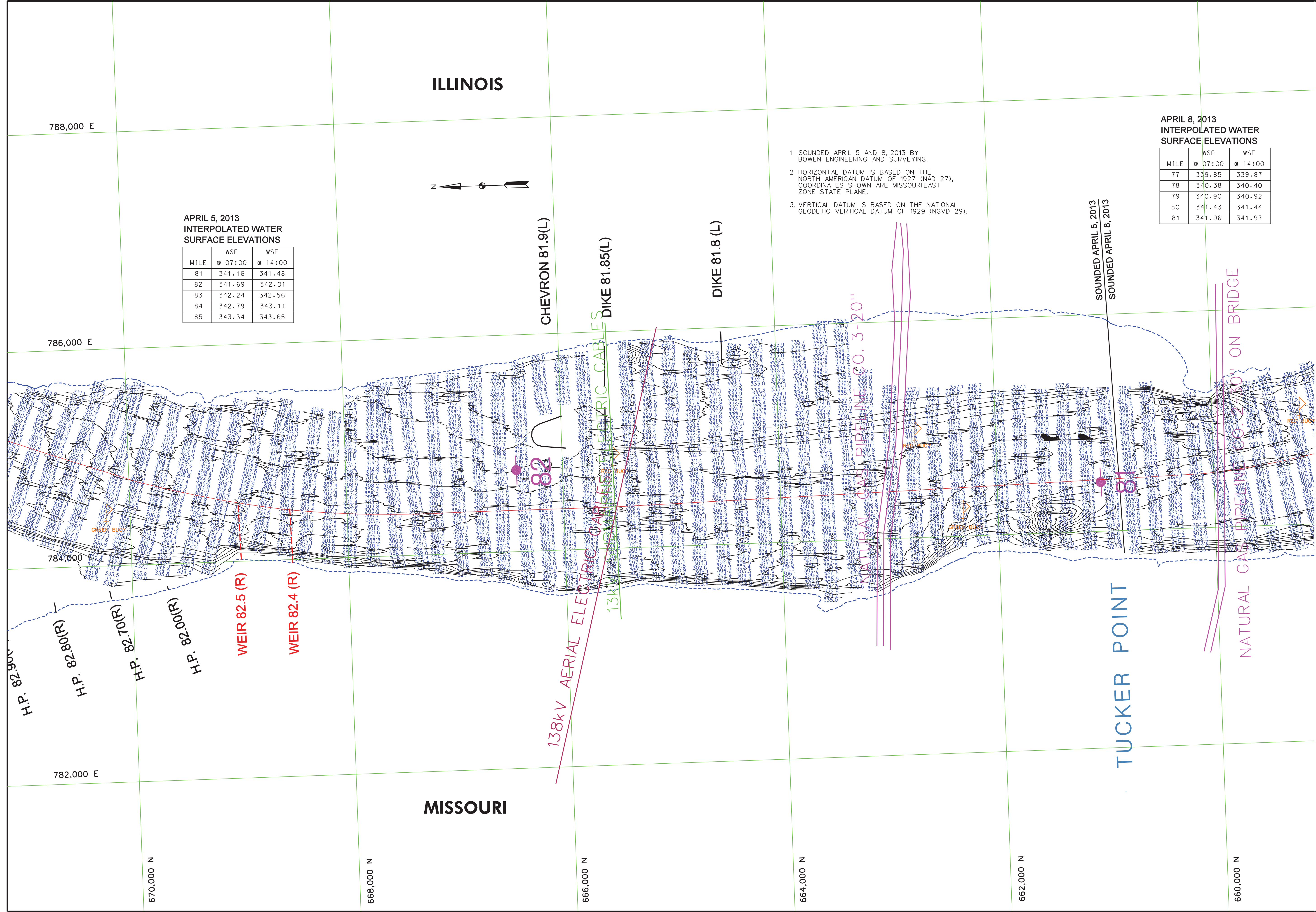


CAGE RECORD		GRAND TOWER L		RED ROCK LANDING MO	
CAPE CINQUE HOMMES MO	304.65	313.50	321.03	328.92	338.92
ZERO N.G.V.D.	304.65	313.50	321.03	328.92	338.92
MILE	32.0	36.3	40.6	44.9	49.2
L.W.R.D.	309.9	317.8	325.7	333.6	341.5
04 APR 2013	X	X	X	X	X
05 APR 2013	X	X	X	X	X

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Surveyed by: BOWEN ENGINEERING		Survey Date: April 4 and 5, 2013	
	Drawn by: X	Ckd by: X	Reviewed by: X	
	SUBMITTED: X		APPROVED: X	
	Plot date: 6/6/2016 10:49:59			
	File name: 66665015E1SPEC10CT10666			
UPPER MISSISSIPPI RIVER BASIN MISSISSIPPI RIVER				

HYDROGRAPHIC SURVEYS	
RIVER MILES 82.7 - 85.0	

PLATE NUMBER
58



APRIL 5, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 07:00	WSE @ 14:00
81	341.16	341.48
82	341.69	342.01
83	342.24	342.56
84	342.79	343.11
85	343.34	343.65

1. SOUNDED APRIL 5 AND 8, 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).

APRIL 8, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

MILE	WSE @ 07:00	WSE @ 14:00
77	339.85	339.87
78	340.38	340.40
79	340.90	340.92
80	341.43	341.44
81	341.96	341.97



CAGE RECORD

CAPE GIRARDEAU, MO	MOCCASIN SPRINGS, MO	GRAND TOWER, IL	RED ROCK LANDING, MO
ZERO N.G.V.D.	304.65	313.50	313.53
MILE	32.5	32.5	32.5
L.W.R. B.	309.9	317.8	325.3
05 APR 2013	x	x	19,487,000 19,714,000 19,407,000 19,714,000
08 APR 2013	x	x	20,327,000 20,327,000 20,327,000 20,327,000

ELEVATIONS ARE REFERRED TO N.G.V.D. - CONTOURS ARE BELOW 1006.57' LOW WATER REFERENCE PLANE (L.W.R.P.) 104,000 (7.5')

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

Survey Date: April 5 and 8, 2013

Drawn by: X Ckd by: X Reviewed by: X

SUBMITTED: X APPROVED: X

Plot Date: ##06/01/16##
File Name: ##060116##

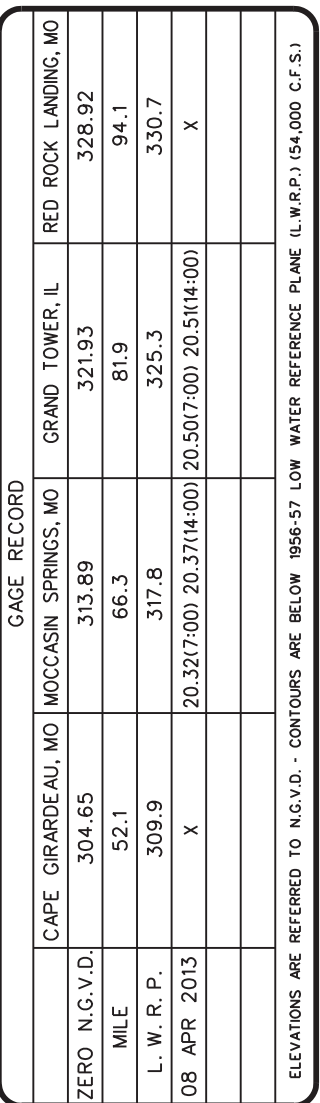
UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

HYDROGRAPHIC SURVEYS

RIVER MILES 80.7 - 82.7

120 400 120 240 METERS
0 400 800 FEET

THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONTOURS OF THE SURVEYED AREA.



APRIL 8, 2013		
INTERPOLATED WATER SURFACE ELEVATIONS		
	WSE	WSE
MILE	@ 07:00	@ 14:00
77	339.85	339.87
78	340.38	340.40
79	340.90	340.92
80	341.43	341.44
81	341.96	341.97

APRIL 8, 2013
INTERPOLATED WATER
SURFACE ELEVATIONS

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Surveyed by: BOWEN ENGINEERING		Survey Date: April 8, 2013	
	Drawn by: X	Ckd by: X	Reviewed by: X	
UPPER MISSISSIPPI RIVER BASIN MISSISSIPPI RIVER	SUBMITTED: X		APPROVED: X	
	Plot date: ##/##/##		File name: ##/##/##/##/##/##/##/##	

120 0 120 240 METERS
400 0 400 800 FEET

THE INFORMATION OBTAINED ON THIS MAP REPRESENTS THE RESULTS OF AERIAL PHOTOGRAPHIC SURVEYS CONDUCTED IN 1967, AND IS NOT TO BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

HYDROGRAPHIC SURVEYS

RIVER MILES 80.7 - 78.6

PLATE
NUMBER

60

