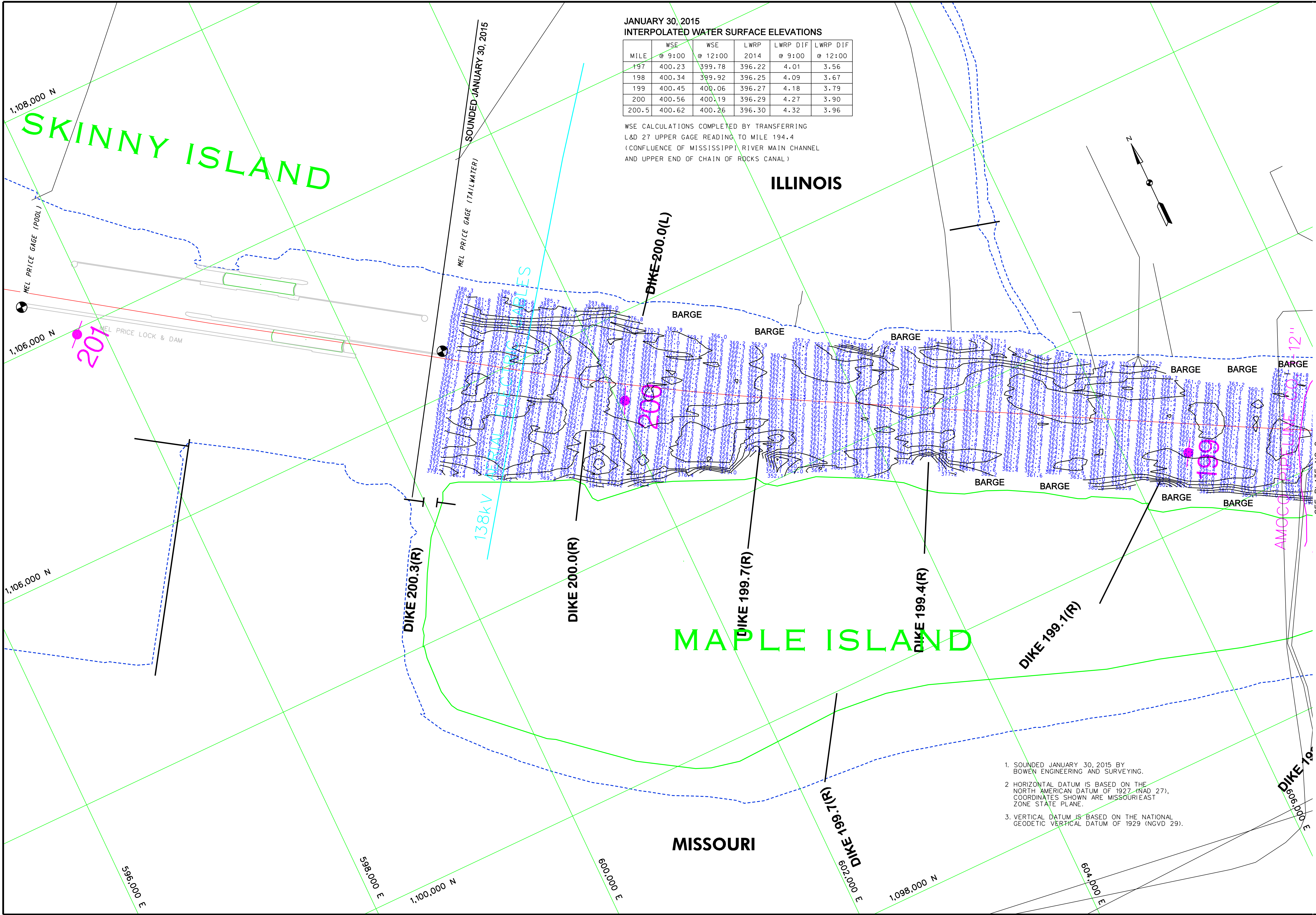




JANUARY 30, 2015
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 9:00	WSE @ 12:00	LWRP 2014	LWRP DIF @ 9:00	LWRP DIF @ 12:00
197	400.23	399.78	396.22	4.01	3.56
198	400.34	399.92	396.25	4.09	3.67
199	400.45	400.06	396.27	4.18	3.79
200	400.56	400.19	396.29	4.27	3.90
200.5	400.62	400.26	396.30	4.32	3.96

WSE CALCULATIONS COMPLETED BY TRANSFERRING
L&D 27 UPPER GAGE READING TO MILE 194.4
(CONFLUENCE OF MISSISSIPPI RIVER MAIN CHANNEL
AND UPPER END OF CHAIN OF ROCKS CANAL)



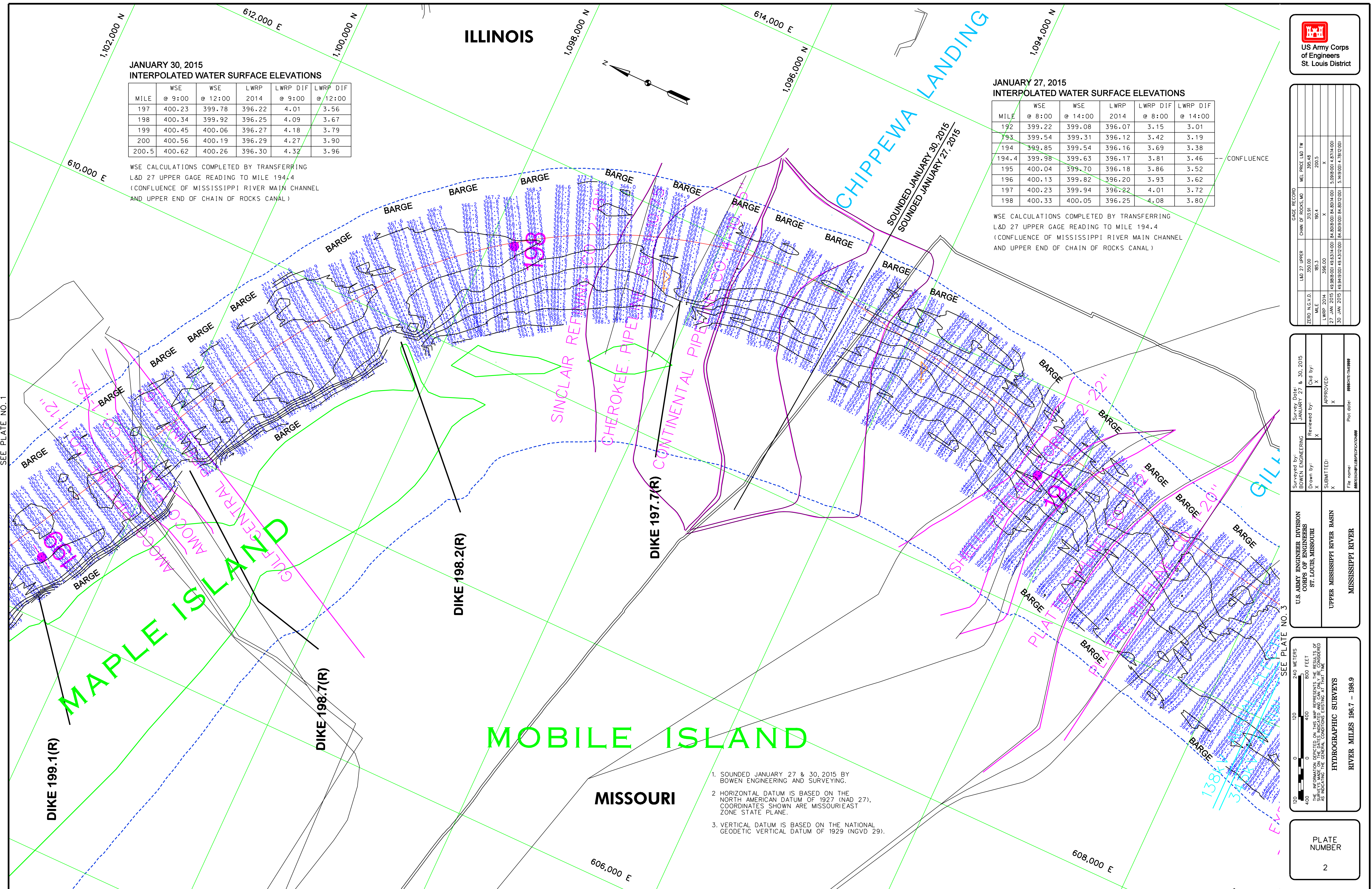
GAGE RECORD					
L&D 27 UPPER	CHAIN OF ROCKS, MO	MEL PRICE L&D TW			
350.00	333.91	395.48			
385.3	380.4	200.5			
398.00	X	X			
49.94(9/00) 19.43(12/00)	64.80(9/00) 84.80(12/00)	5.14(9/00) 4.78(12/00)			
30 JAN 2015					

Survey Data		Survey Date	
Bowen Engineering		January 30, 2015	
Drawn by:	X	Reviewed by:	X
Submitted:	X	Approved:	X
U.S. Army Engineer Division Corps of Engineers St. Louis, Missouri		Upper Mississippi River Basin Mississippi River	

HYDROGRAPHIC SURVEYS	
RIVER MILES 198.9 - 200.6	

PLATE NUMBER
1

1. SOUNDED JANUARY 30, 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).



GAGE RECORD		CHAN OF ROCKS, MO	MET. PRICE	LEAD	TW
ZERO	N.C.V.D.	550.00			
MALE		185.3			395.48
UNEXP. 2014		193.4			200.5
27 JUN 2015	49.896/200	63.5/14	84.80/6/20	84.80/14/20	5.09/86.0/27.8/14/20
30 JAN 2015	49.84/12500	49.43/12	84.80/6/20	84.80/12/20	5.14/99.0/27.78/12/20

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Survey Date: JANUARY 27 & 30, 2015	
	BOWEN ENGINEERING	
	Drawn by:	Ckd by:
	X	X
UPPER MISSISSIPPI RIVER BASIN	SUBMITTED:	
	X	
	APPROVED:	
	X	
File name: #MISSISSIPPIFILE#SPECIFICATION#		Plot date: #DATE#04/06/09#
MISSISSIPPI RIVER		

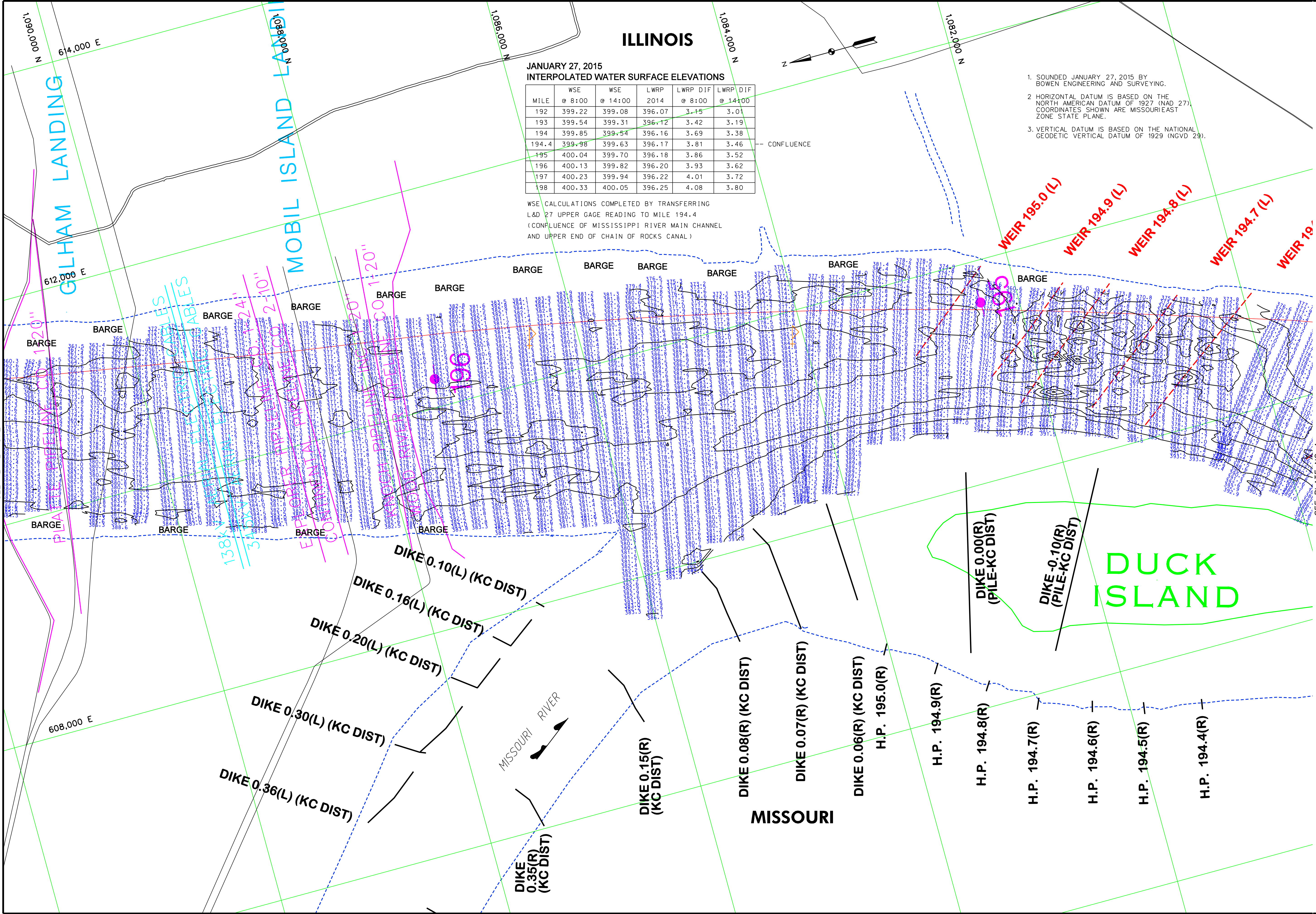
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.

HYDROGRAPHIC SURVEYS

RIVER MILES 196.7 - 198.9

PLATE
NUMBER

2



ILLINOIS

JANUARY 27, 2015
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 8:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 14:00
192	399.22	399.08	396.07	3.15	3.01
193	399.54	399.31	396.12	3.42	3.19
194	399.85	399.54	396.16	3.69	3.38
194.4	399.98	399.63	396.17	3.81	3.46
195	400.04	399.70	396.18	3.86	3.52
196	400.13	399.82	396.20	3.93	3.62
197	400.23	399.94	396.22	4.01	3.72
198	400.33	400.05	396.25	4.08	3.80

WSE CALCULATIONS COMPLETED BY TRANSFERRING
L&D 27 UPPER GAGE READING TO MILE 194.4
(CONFLUENCE OF MISSISSIPPI RIVER MAIN CHANNEL
AND UPPER END OF CHAIN OF ROCKS CANAL)

1. SOUNDED JANUARY 27, 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

DATE	1/27/2015	SCALE	AS SHOWN
DRAWN BY	BOB BOWEN	CHECKED BY	BOB BOWEN
DATE	1/27/2015	SCALE	AS SHOWN
DRAWN BY	BOB BOWEN	CHECKED BY	BOB BOWEN
DATE	1/27/2015	SCALE	AS SHOWN
DRAWN BY	BOB BOWEN	CHECKED BY	BOB BOWEN

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

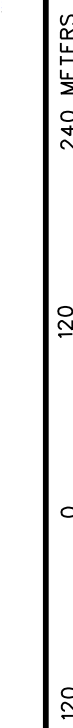
UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

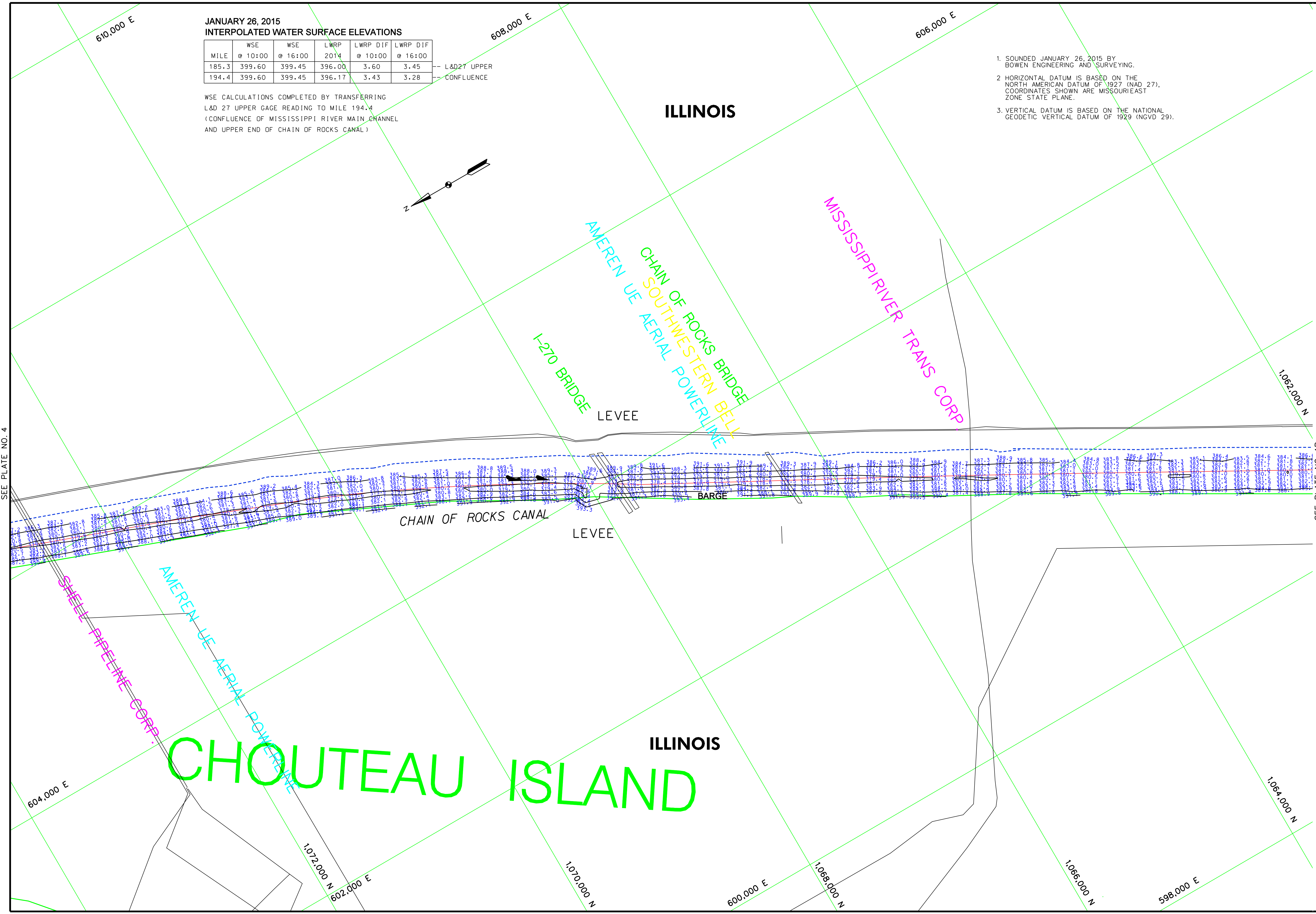
1" = 240 METERS
1" = 800 FEET

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 FEATURES SHOWN.

HYDROGRAPHIC SURVEYS
RIVER MILES 194.5 - 196.7

PLATE
NUMBER
3





JANUARY 26, 2015
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 10:00	WSE @ 16:00	LWRP 2014	LWRP DIF @ 10:00	LWRP DIF @ 16:00	
185.3	399.60	399.45	396.00	3.60	3.45	-- L&D 27 UPPER
194.4	399.60	399.45	396.17	3.43	3.28	-- CONFLUENCE

WSE CALCULATIONS COMPLETED BY TRANSFERRING L&D 27 UPPER GAGE READING TO MILE 194.4 (CONFLUENCE OF MISSISSIPPI RIVER MAIN CHANNEL AND UPPER END OF CHAIN OF ROCKS CANAL)

1. SOUNDED JANUARY 26, 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

LEAD 27 UPPER	350.00	385.3	398.00	49.60(0.00) 49.42(16.00)	84.70(0.00) 84.70(16.00)	4.53(0.00) 4.80(16.00)	
CHAIN OF ROCKS MO	313.91	360.4					
ME PRICE L&D TW			395.48	200.5			

ZERO N.G.V.D. MILE 194.4
LWRP 2014
26 JAN 2015

Survey Date: JANUARY 26, 2015	Reviewed by: [Signature]	Checked by: [Signature]
Drawn by: [Signature]	Submitted: [Signature]	Approved: [Signature]
File Name: ##PROJECT##		Plot Date: ##DATE##

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

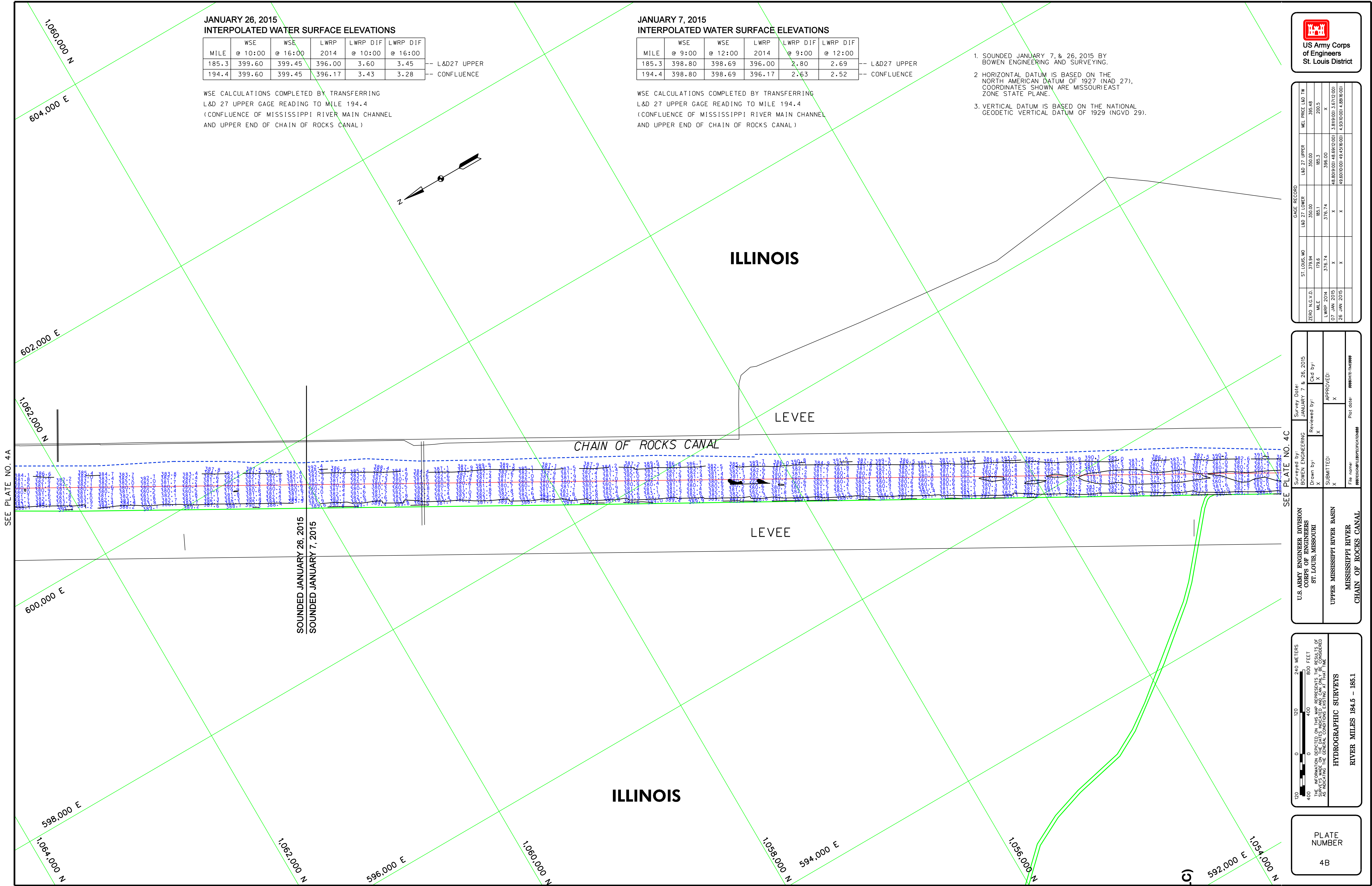
UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHAIN OF ROCKS CANAL

HYDROGRAPHIC SURVEYS
RIVER MILES 184.5 - 186.1

PLATE NUMBER
4A

SEE PLATE NO. 4

SEE PLATE NO. 4B





GAGE RECORD						
	ST. LOUIS, MO	14.0 2° LOWER	14.0 2° UPPER	MEI. PRICE 1.80	1W	
NEERO N.C.V.D.	379.94	350.00	350.00	395.48		
WLRP 2014	176.74	185.1	185.1	200.5		
19 DEC 2014	376.74	376.74	396.00		X	
27 JAN 2015	813.99 8.14(13.00)	39.15(9.00)	39.91(3.00)		X	
	X		48.20(5.00)	46.66(12.00)		3.81(9.00) 3.57(12.00)

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Surveyed by: BOWEN ENGINEERING DEC. 29, 2014 & JAN. 7, 2015	Survey Date: DEC. 29, 2014 & JAN. 7, 2015
UPPER MISSISSIPPI RIVER BASIN MISSISSIPPI RIVER	Drawn by: X	Reviewed by: X
	Submitted: X	Approved: X

120 0 120 240 METERS

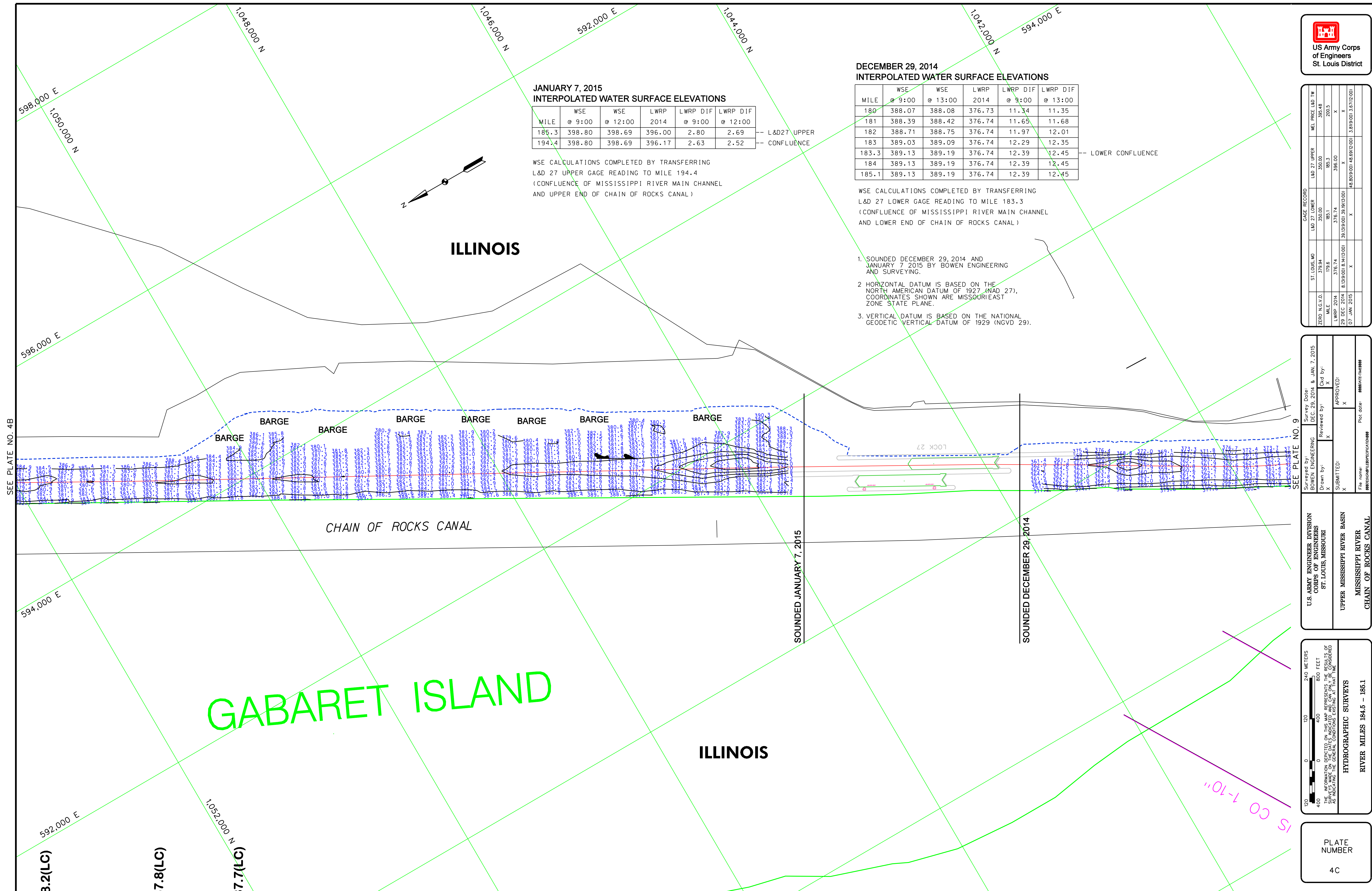
400 0 800 FEET

INFORMATION DERIVED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS CONDUCTED BY THE U.S. ARMY CORPS OF ENGINEERS AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME

HYDROGRAPHIC SURVEYS

PLATE
NUMBER

4C





	GAGE RECORD					
	ST. LOUIS, MO	L&O 27 LOWER	L&O 27 UPPER	CHAIN OF ROCKS, MO		
ZERO N.C.V.D.	379.94	350.00	350.00	313.91		
MILE	179.6	185.1	185.3	190.4		
LWRH 2014	376.74		396.00		X	
27 JAN 2015	X	X	49,561 (\$ 4,514-20)	\$4,701 (\$ 4,214-20)		
27 JAN 2015	X	X	49,986 (\$ 4,514-20)	\$4,608 (\$ 4,404-00)		

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Survived by: BOWEN ENGINEERING		Survey, Date: JANUARY 26 & 27, 2015	
	Drawn by: X	Reviewed by: X	Ckd by: X	
UPPER MISSISSIPPI RIVER BASIN	SUBMITTED: X		APPROVED: X	
MISSISSIPPI RIVER			File name: MISSISSIPPIRIVER.DWG	Plot date: 01/26/2015 10:44:00

120 0 120 240 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 CONDITIONS EXISTING AT THAT TIME.

HYDROGRAPHIC SURVEYS

RIVER MILES 190.7 – 192.6

PLATE
NUMBER

5

CHOUTEAU ISLAND

JANUARY 27, 2015					
INTERPOLATED WATER SURFACE ELEVATIONS					
MILE	WSE @ 8:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 8:00	LWRP DIF @ 14:00
192	399.22	399.08	396.07	3.15	3.01
193	399.54	399.31	396.12	3.42	3.19
194	399.85	399.54	396.16	3.69	3.38
194.4	399.98	399.63	396.17	3.81	3.46
195	400.04	399.70	396.18	3.86	3.52
196	400.13	399.82	396.20	3.93	3.62
197	400.23	399.94	396.22	4.01	3.72
198	400.33	400.05	396.25	4.08	3.80

WSE CALCULATIONS COMPLETED BY TRANSFERRING
LSD 27 UPPER GAGE READING TO MILE 194.4
(CONFLUENCE OF MISSISSIPPI RIVER MAIN CHANNEL
AND UPPER END OF CHAIN OF ROCKS CANAL)

JANUARY 26, 2015
INTERPOLATED WATER SURFACE ELEVATIONS

	WSE	WSE	LWRP	LWRP DIF	LWRP DIF
MILE	@ 10:00	@ 16:00	2014	@ 10:00	@ 16:00
190.4	398.61	398.61	396.00	2.61	2.61
191	398.76	398.74	396.03	2.73	2.71
192	399.01	398.95	396.07	2.94	2.88
193	399.25	399.16	396.12	3.13	3.04

WSE CALCULATIONS COMPLETED BY TRANSFERRING
L&D 27 UPPER GAGE READING TO MILE 194.4
(CONFLUENCE OF MISSISSIPPI RIVER MAIN CHANNEL
AND UPPER END OF CHAIN OF ROCKS CANAL)

1. SOUNDED JANUARY 26 & 27, 2015 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).

DIKE 191.2(L)

DIKE 190.9(L)

DIKE 190.8(L)

DIKE 192.4(R)

MISSOURI

WILSON ISLAND

~~PEU~~

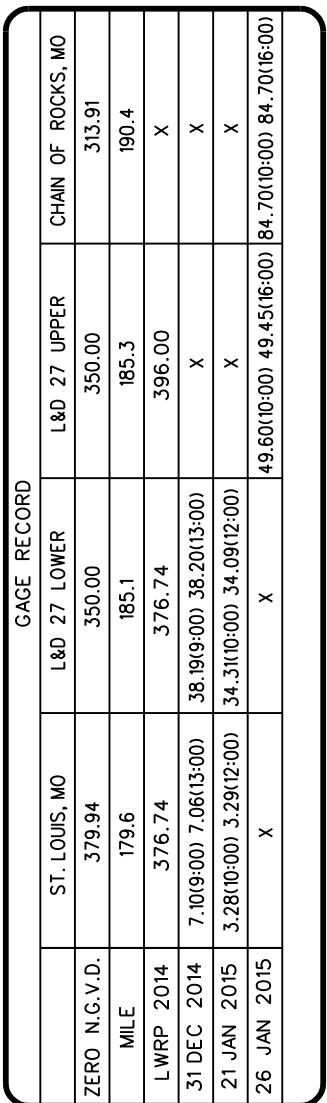
1,068,000 N

120 0 120 240 METERS
400 0 400 800 FEET

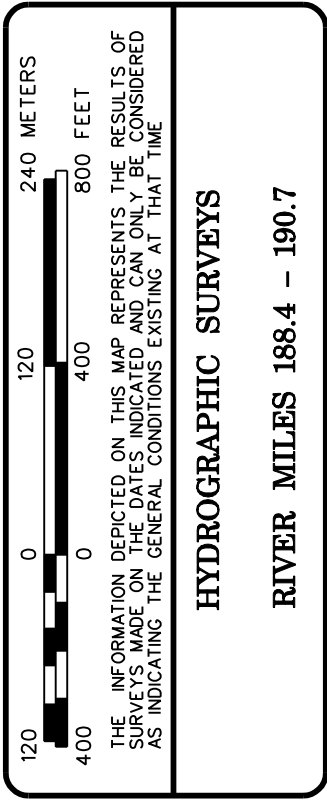
THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS CLOSE TO THE GENERAL INDICATIONS OF POSITION.

PLATE
NUMBER

7



U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Surveyed by: BOWEN ENGINEERING		Survey Date: DEC. 31, 2014, JAN. 21 & 26, 2015
	Drawn by: X	Reviewed by: X	Ckd by: X
UPPER MISSISSIPPI RIVER BASIN MISSISSIPPI RIVER	SUBMITTED: X		APPROVED: X
	File name: #MS050NMR15R02CA01000000		Plot date: ###DATE=MM/YY###



SEE PLATE NO. 6



US Army Corps
of Engineers
St. Louis District

1. SOUNDED DECEMBER 31, 2014 &
JANUARY 21, 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).

GAGE RECORD					
ST. LOUIS MO	L&D 27 LOWER	CHAIN OF ROCKS LOWER			
ZERO N.G.V.D.	379.94	350.00	388.5	393.91	
MILE	378.74	386.5	378.74	386.4	
LWRP 2014	378.74	386.5	378.74	386.4	
31 DEC 2014	7.109/9007.10613/500	38.989/9007.10613/500	80.581/9007.10613/500	80.581/9007.10613/500	
21 JAN 2015	3.281/9007.12912/500	34.311/9007.12912/500	76.76	ESTIMATED	

SEE PLATE NO. 8

Surveyed by:
BOWEN ENGINEERING

Drawn by:
X

Reviewed by:
X

Survey Date:
DEC 31, 2014 & JAN 21, 2015

Ckd by:
X

APPROVED:
X

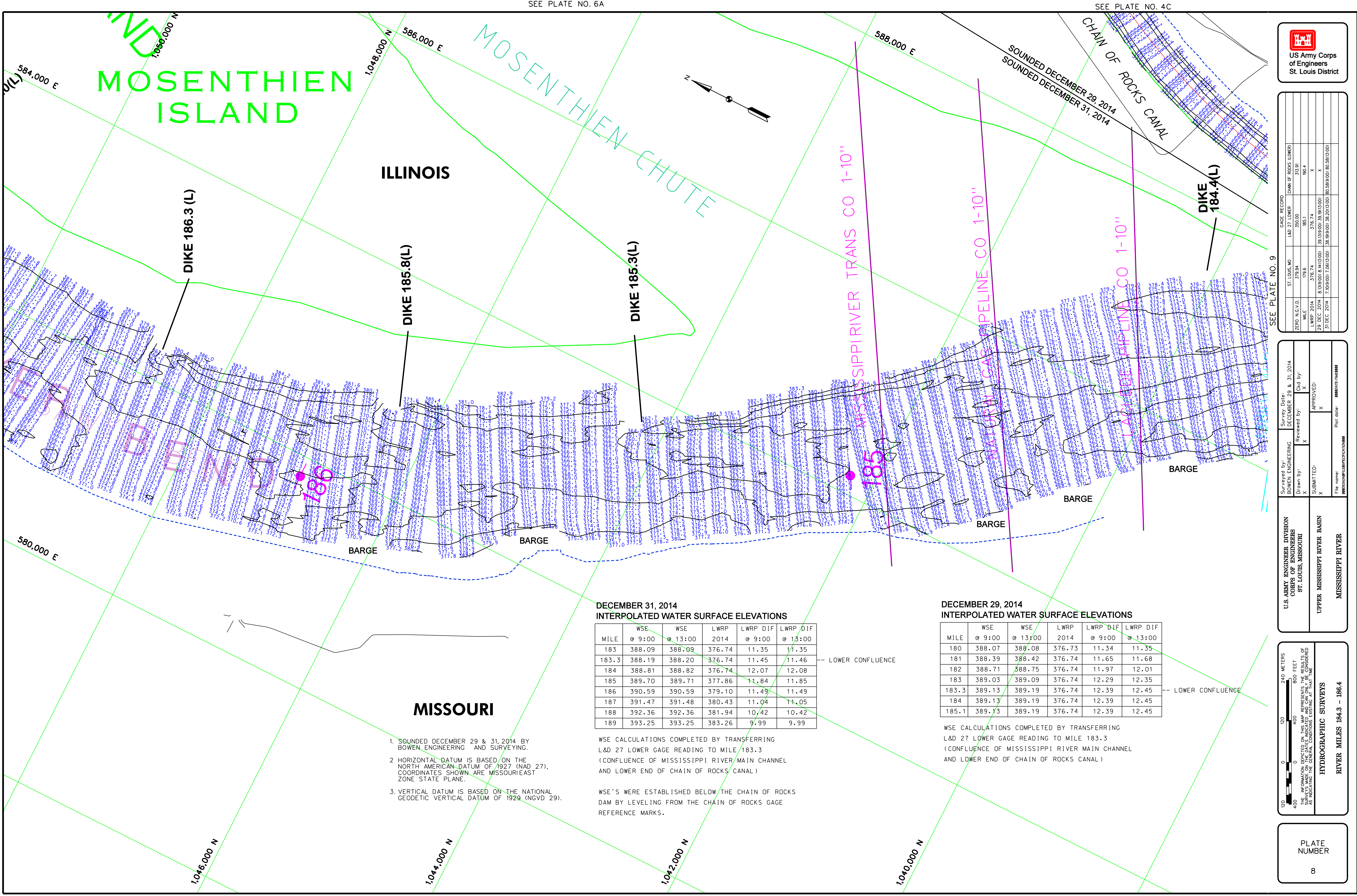
File name:
##DESIGN##/##OPERATION##

Plot Date:
##DATE##/##TIME##

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

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

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SEE PLATE NO. 7

SEE PLATE NO. 6A

SEE PLATE NO. 4C



GAGE RECORD				
ST. LOUIS MO	L&D 27 LOWER	CHAIN OF ROCKS LOWER	ST. LOUIS MO	L&D 27 LOWER
ZERO N.G.V.D.	379.24	350.00	379.24	350.00
DATE	DATE	DATE	DATE	DATE
29 DEC 2014	8:35:00	8:41:00	30 DEC 2014	8:51:00
31 DEC 2014	7:00:00	7:06:00	31 DEC 2014	8:51:00

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI		Survey Date: DECEMBER 29 & 31, 2014	
UPPER MISSISSIPPI RIVER BASIN	Drawn by: X	Reviewed by: X	Ckd by: X
	SUBMITTED: X		APPROVED: X
	File name: ##PROJECT## ##DESIGN/AMPLIFICATION### Plot date: ##DATE/NAME###		

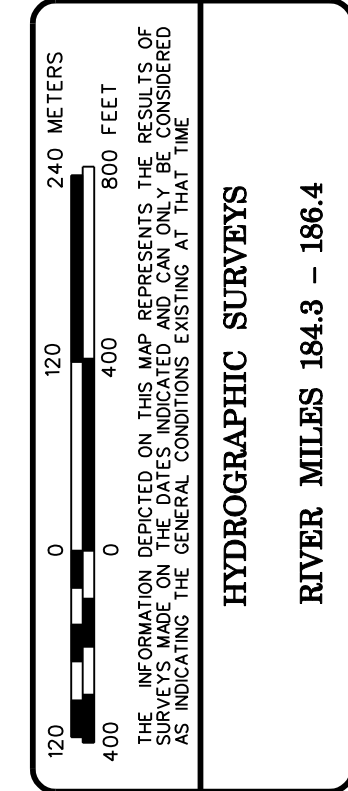


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8

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MISSOURI

1. SOUNDED DECEMBER 29 & 31, 2014 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).

DECEMBER 31, 2014
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 9:00	WSE @ 13:00	LWRP 2014	LWRP DIF @ 9:00	LWRP DIF @ 13:00
183	388.09	388.09	376.74	11.35	11.35
183.3	388.19	388.20	376.74	11.45	11.46
184	388.81	388.82	376.74	12.07	12.08
185	389.70	389.71	377.86	11.84	11.85
186	390.59	390.59	379.10	11.49	11.49
187	391.47	391.48	380.43	11.04	11.05
188	392.36	392.36	381.94	10.42	10.42
189	393.25	393.25	383.26	9.99	9.99

WSE CALCULATIONS COMPLETED BY TRANSFERRING L&D 27 LOWER GAGE READING TO MILE 183.3 (CONFLUENCE OF MISSISSIPPI RIVER MAIN CHANNEL AND LOWER END OF CHAIN OF ROCKS CANAL)

WSE'S WERE ESTABLISHED BELOW THE CHAIN OF ROCKS DAM BY LEVELING FROM THE CHAIN OF ROCKS GAGE REFERENCE MARKS.

DECEMBER 29, 2014
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 9:00	WSE @ 13:00	LWRP 2014	LWRP DIF @ 9:00	LWRP DIF @ 13:00
180	388.07	388.08	376.73	11.34	11.35
181	388.39	388.42	376.74	11.65	11.68
182	388.71	388.75	376.74	11.97	12.01
183	389.03	389.09	376.74	12.29	12.35
183.3	389.13	389.19	376.74	12.39	12.45
184	389.13	389.19	376.74	12.39	12.45
185.1	389.13	389.19	376.74	12.39	12.45

WSE CALCULATIONS COMPLETED BY TRANSFERRING L&D 27 LOWER GAGE READING TO MILE 183.3 (CONFLUENCE OF MISSISSIPPI RIVER MAIN CHANNEL AND LOWER END OF CHAIN OF ROCKS CANAL)



GAGE RECORD		CHAM OF ROCKS (LOWER)	
		LEAD	27. LOWER
ZERO	N.G.V.D.	379.94	355.00
	MALE	179.6	180.4
LOW	2014	185.01	190.4
29 DEC	2014	8.319/200.8	8.411/200.8
31 DEC	2014	7.019/200.7	7.061/200.7
		38.99/200.7	38.20/200.7
		80.58/9.00	80.58/13.00

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Surveyed by:	Survey Date:	
	BOWEN ENGINEERING	DECEMBER 29 & 31, 2014	
	Drawn by:	Reviewed by:	Ckd by:
	X	X	X
UPPER MISSISSIPPI RIVER BASIN	SUBMITTED:	APPROVED:	
	X	X	
MISSISSIPPI RIVER		File name:	Proj. date:
		#MISSISSIPPIPERFECTION####	####DATE####

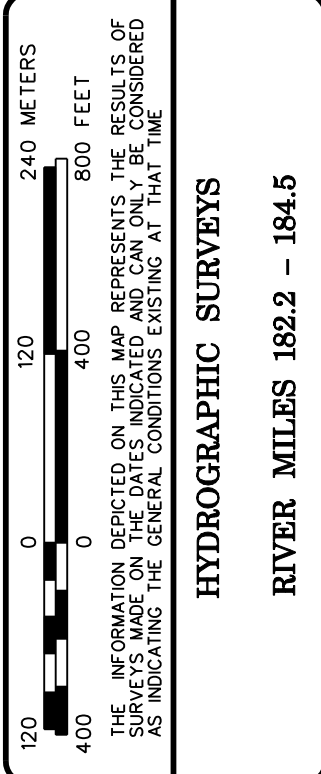
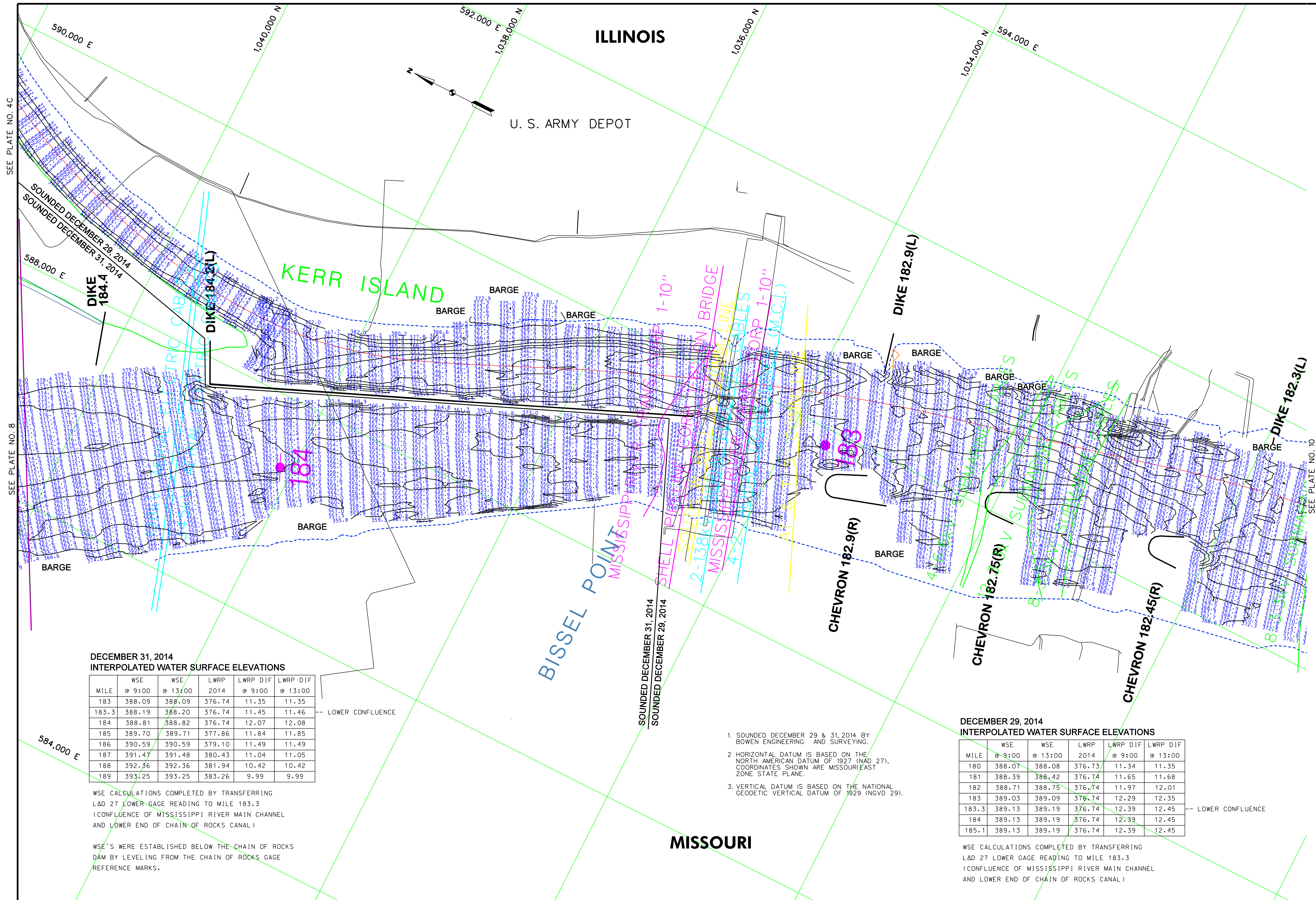
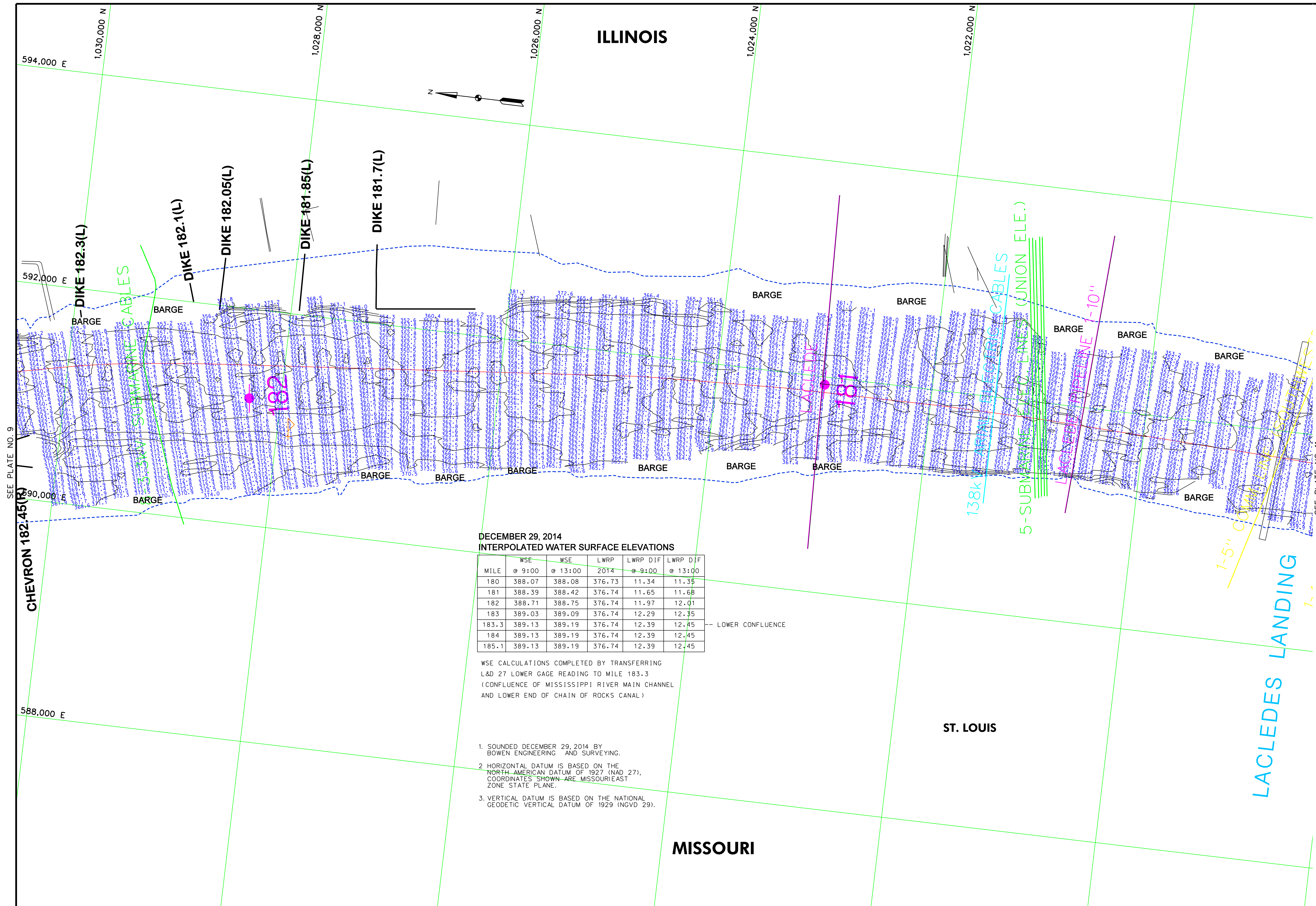
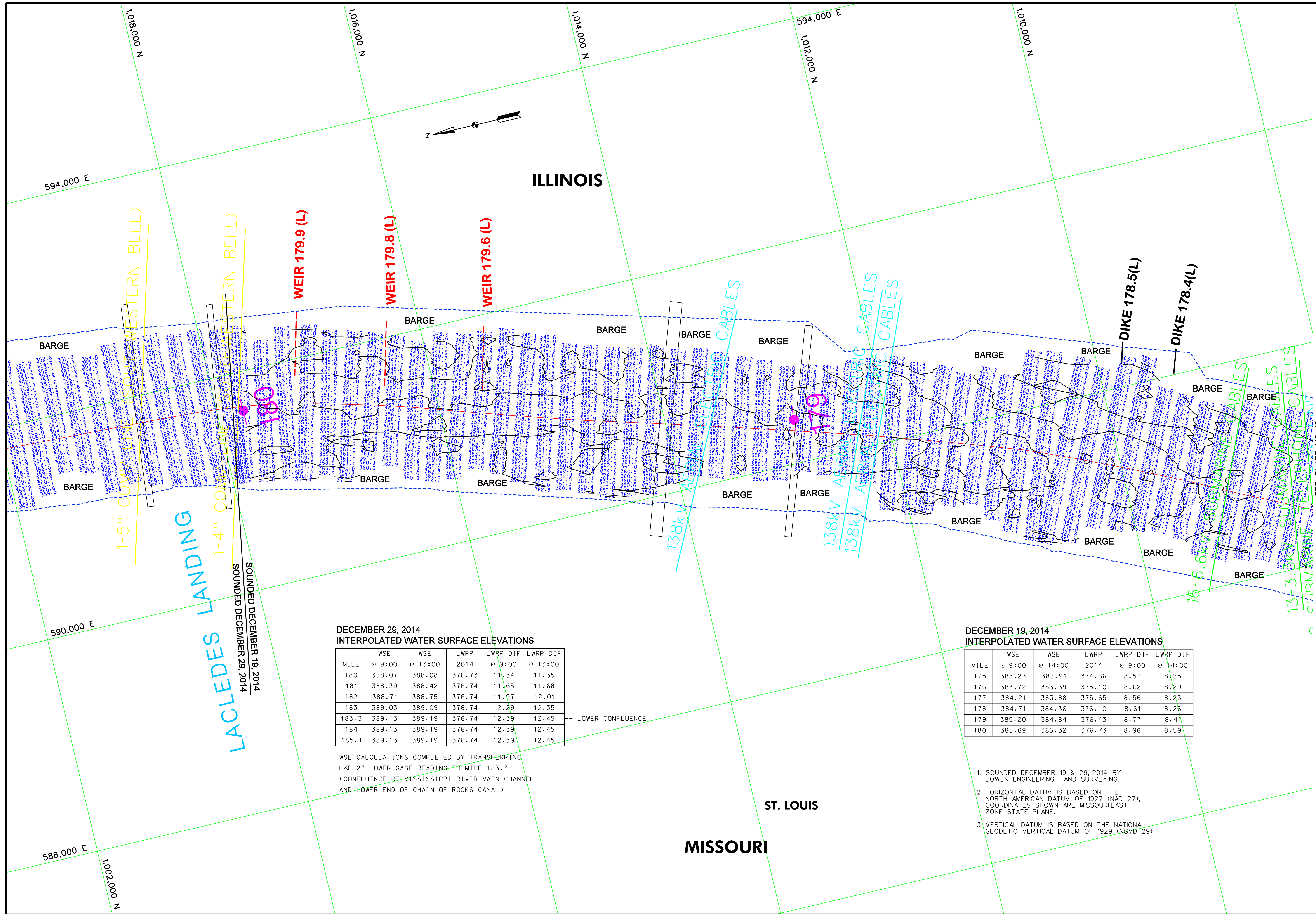


PLATE
NUMBER

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DECEMBER 29, 2014
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 9:00	WSE @ 13:00	LWRP 2014	LWRP DIF @ 9:00	LWRP DIF @ 13:00
180	388.07	388.08	376.73	11.34	11.35
181	388.39	388.42	376.74	11.65	11.68
182	388.71	388.75	376.74	11.97	12.01
183	389.03	389.09	376.74	12.29	12.35
183.3	389.13	389.19	376.74	12.39	12.45
184	389.13	389.19	376.74	12.39	12.45
185.1	389.13	389.19	376.74	12.39	12.45

WSE CALCULATIONS COMPLETED BY TRANSFERRING
L&D 27 LOWER GAGE READING TO MILE 183.3
(CONFLUENCE OF MISSISSIPPI RIVER MAIN CHANNEL
AND LOWER END OF CHAIN OF ROCKS CANAL)

--- LOWER CONFLUENCE

DECEMBER 19, 2014
INTERPOLATED WATER SURFACE ELEVATIONS

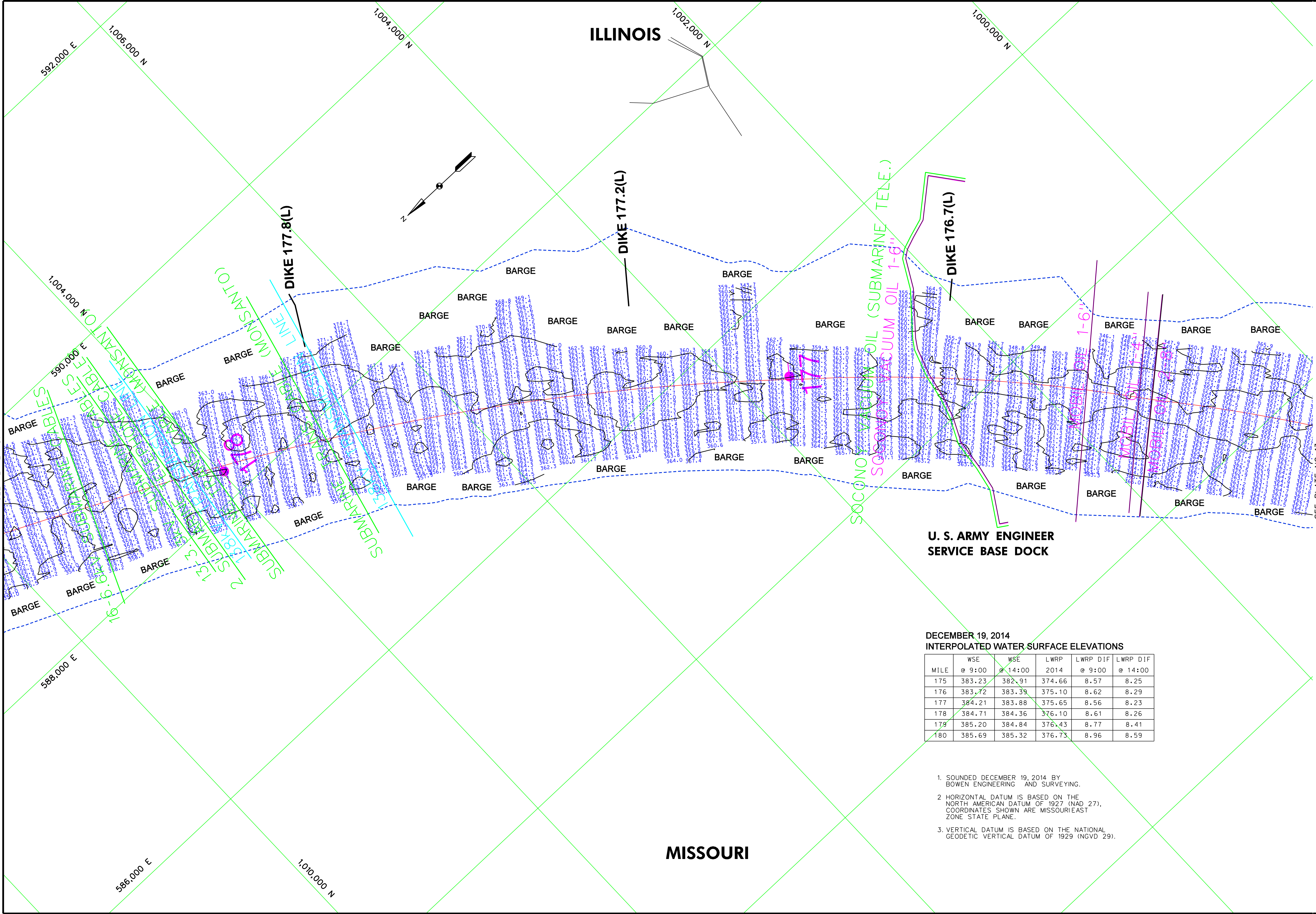
MILE	WSE @ 9:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 9:00	LWRP DIF @ 14:00
175	383.23	382.91	374.66	8.57	8.25
176	383.72	383.39	375.10	8.62	8.29
177	384.21	383.88	375.65	8.56	8.23
178	384.71	384.36	376.10	8.61	8.26
179	385.20	384.84	376.43	8.77	8.41
180	385.69	385.32	376.73	8.96	8.59

1. SOUNDED DECEMBER 19 & 29, 2014 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).

BRIGGS LANDING	JEFFERSON BARRACKS	ST. LOUIS MO	L&D 27 LOWER
357.79	377.69	379.94	350.00
358.0	388.7	379.8	385.0
359.19	389.99	376.74	376.74
6.25(9.00) 6.36(14.00)	UNRECOVERABLE	5.75(9.00) 5.38(14.00)	35.66(9.00) 36.46(14.00)
29 DEC 2014	X	UNRECOVERABLE	35.13(9.00) 35.97(13.00)

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	Survey Date: DECEMBER 19 & 29, 2014
Drawn by: X	Reviewed by: X
Submitted: X	Approved: X
UPPER MISSISSIPPI RIVER BASIN	Plot Date: ##/##/##
MISSISSIPPI RIVER	##/##/##

HYDROGRAPHIC SURVEYS	RIVER MILES 178.2 -180.3
120 400 800 1200 1600 2000 2400 METERS	0 400 800 1200 1600 2000 2400 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.	



DECEMBER 19, 2014
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 9:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 9:00	LWRP DIF @ 14:00
175	383.23	382.91	374.66	8.57	8.25
176	383.72	383.39	375.10	8.62	8.29
177	384.21	383.88	375.65	8.56	8.23
178	384.71	384.36	376.10	8.61	8.26
179	385.20	384.84	376.43	8.77	8.41
180	385.69	385.32	376.73	8.96	8.59

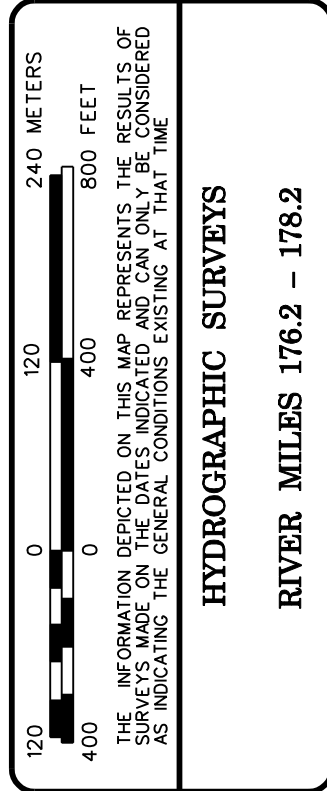
1. SOUNDED DECEMBER 19, 2014 BY BOWEN ENGINEERING AND SURVEYING.
2. HORIZONTAL DATUM IS BASED ON THE NORTH AMERICAN DATUM OF 1927 (NAD 27). COORDINATES SHOWN ARE MISSOURI EAST ZONE STATE PLANE.
3. VERTICAL DATUM IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

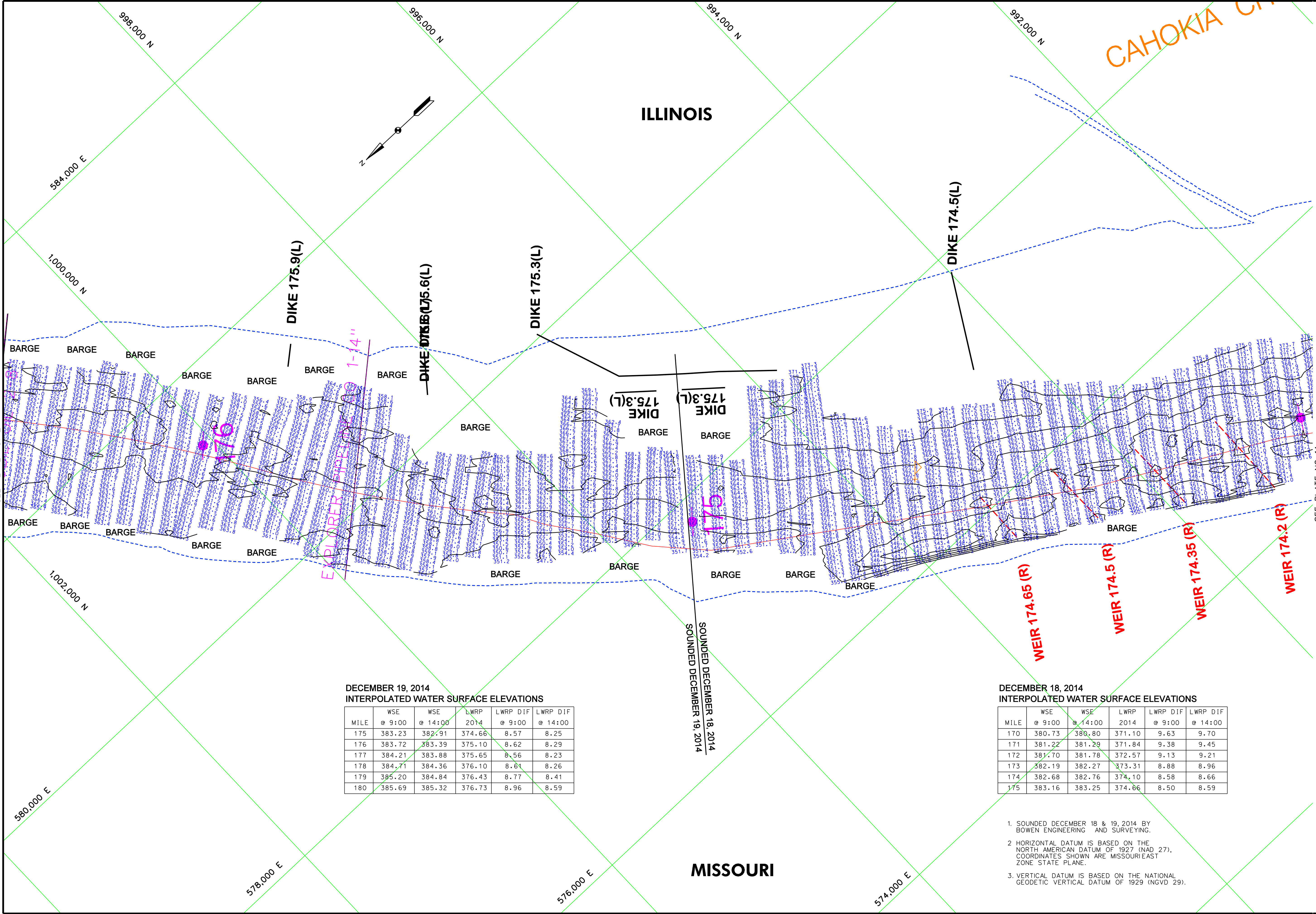


BRIGGS LANDING	JEFFERSON BARBERS	ST. LOUIS MO	LUD 27 LOWER
357.79	377.69	379.94	350.00
358.0	388.7	379.8	385.0
354.19	389.99	376.74	376.74
6,259,900 6,381,140.00	UNRECOVERABLE	5,759,900 5,381,140.00	56,669,000 56,481,140.00

Surveyed by: BOWEN ENGINEERING	Survey Date: DECEMBER 19, 2014
Drawn by: X	Reviewed by: X
Submitted: X	Approved: X
File Name: ##PROJECT##	Plot Date: ##DATE##

U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS ST. LOUIS, MISSOURI	UPPER MISSISSIPPI RIVER BASIN	MISSISSIPPI RIVER
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DECEMBER 19, 2014
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 9:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 9:00	LWRP DIF @ 14:00
175	383.23	382.91	374.66	8.57	8.25
176	383.72	383.39	375.10	8.62	8.29
177	384.21	383.88	375.65	8.56	8.23
178	384.71	384.36	376.10	8.61	8.26
179	385.20	384.84	376.43	8.77	8.41
180	385.69	385.32	376.73	8.96	8.59

DECEMBER 18, 2014
INTERPOLATED WATER SURFACE ELEVATIONS

MILE	WSE @ 9:00	WSE @ 14:00	LWRP 2014	LWRP DIF @ 9:00	LWRP DIF @ 14:00
170	380.73	380.80	371.10	9.63	9.70
171	381.22	381.29	371.84	9.38	9.45
172	381.70	381.78	372.57	9.13	9.21
173	382.19	382.27	373.31	8.88	8.96
174	382.68	382.76	374.10	8.58	8.66
175	383.16	383.25	374.66	8.50	8.59

1. SOUNDED DECEMBER 18 & 19, 2014 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

CAGE RECORD	BISHOPS LANDING, MO	CHESTER, IL	BRICKY'S LANDING, MO	ST. LOUIS, MO
ZERO NGVD	334.11	341.05	357.78	379.84
MILES	300.8	309.9	335.0	370.6
LWRP 2014	335.56	340.85	354.19	376.74
18 DEC 2014	X	X	X	5.65(9.00) 3.76(4.00)
19 DEC 2014	X	X	X	6.25(9.00) 5.38(4.00)

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

UPPER MISSISSIPPI RIVER BASIN

MISSISSIPPI RIVER

Surveyed by: BOWEN ENGINEERING
Reviewed by: X
Drawn by: X
Submitted: X
Approved: X
File name: #PROJECT#
Plot date: ##DATE/TIME###

SEE PLATE NO. 12

SEE PLATE NO. 14

120 400 800 1200 METERS

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.

HYDROGRAPHIC SURVEYS

RIVER MILES 174.1 - 176.2

PLATE NUMBER

13