SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

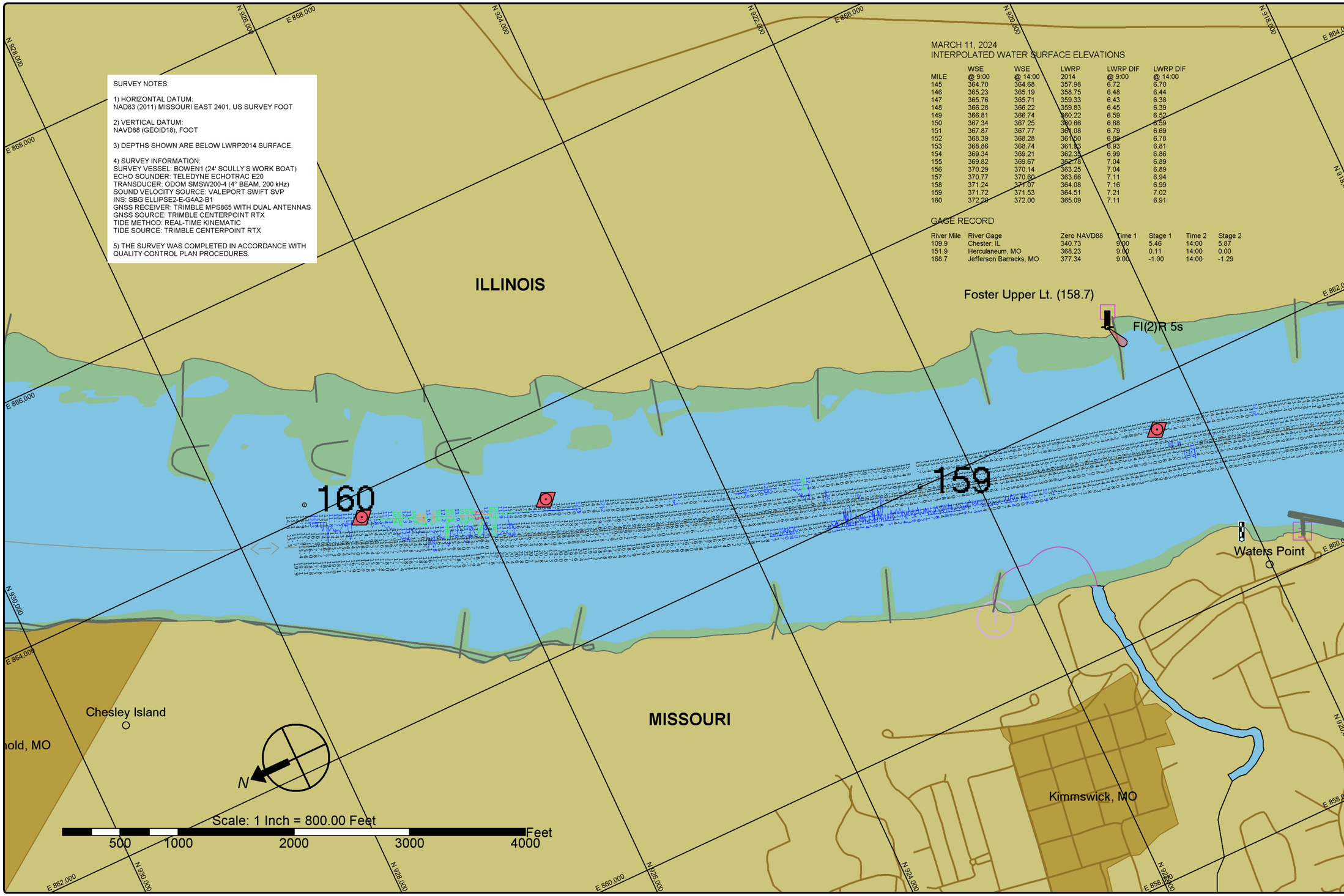
5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

| MILE | WSE @ 9:00 | WSE @ 14:00 | LWRP 2014 | LWRP DIF @ 9:00 | LWRP DIF @ 14:00 |
|---|---|---|---|---|---|
| 145 | 364.70 | 364.68 | 357.98 | 6.72 | 6.70 |
| 146 | 365.23 | 365.19 | 358.75 | 6.48 | 6.44 |
| 147 | 365.76 | 365.71 | 359.33 | 6.43 | 6.38 |
| 148 | 366.28 | 366.22 | 359.83 | 6.45 | 6.39 |
| 149 | 366.81 | 366.74 | 360.22 | 6.59 | 6.52 |
| 150 | 367.34 | 367.25 | 360.66 | 6.68 | 6.59 |
| 151 | 367.87 | 367.77 | 361.08 | 6.79 | 6.69 |
| 152 | 368.39 | 368.28 | 361.50 | 6.89 | 6.78 |
| 153 | 368.86 | 368.74 | 361.93 | 6.93 | 6.81 |
| 154 | 369.34 | 369.21 | 362.35 | 6.99 | 6.86 |
| 155 | 369.82 | 369.67 | 362.78 | 7.04 | 6.89 |
| 156 | 370.29 | 370.14 | 363.25 | 7.04 | 6.89 |
| 157 | 370.77 | 370.60 | 363.66 | 7.11 | 6.94 |
| 158 | 371.24 | 371.07 | 364.08 | 7.16 | 6.99 |
| 159 | 371.72 | 371.53 | 364.51 | 7.21 | 7.02 |
| 160 | 372.20 | 372.00 | 365.09 | 7.11 | 6.91 |

GAGE RECORD

| River Mile | River Gage | Zero NAVD88 | Time 1 | Stage 1 | Time 2 | Stage 2 |
|---|---|---|---|---|---|---|
| 109.9 | Chester, IL | 340.73 | 9:00 | 5.46 | 14:00 | 5.87 |
| 151.9 | Herculaneum, MO | 368.23 | 9:00 | 0.11 | 14:00 | 0.00 |
| 168.7 | Jefferson Barracks, MO | 377.34 | 9:00 | -1.00 | 14:00 | -1.29 |




St. Louis District

DATES OF SURVEY:
MARCH 11, 2024

FILE NO.: 160_135C1124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 158.3 - 160.3

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

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TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
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INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

| MILE | WSE @ 9:00 | WSE @ 14:00 | LWRP 2014 | LWRP DIF @ 9:00 | LWRP DIF @ 14:00 |
|---|---|---|---|---|---|
| 145 | 364.70 | 364.68 | 357.98 | 6.72 | 6.70 |
| 146 | 365.23 | 365.19 | 358.75 | 6.48 | 6.44 |
| 147 | 365.76 | 365.71 | 359.33 | 6.43 | 6.38 |
| 148 | 366.28 | 366.22 | 359.83 | 6.45 | 6.39 |
| 149 | 366.81 | 366.74 | 360.22 | 6.59 | 6.52 |
| 150 | 367.34 | 367.25 | 360.66 | 6.68 | 6.59 |
| 151 | 367.87 | 367.77 | 361.08 | 6.79 | 6.69 |
| 152 | 368.39 | 368.28 | 361.50 | 6.89 | 6.78 |
| 153 | 368.86 | 368.74 | 361.93 | 6.93 | 6.81 |
| 154 | 369.34 | 369.21 | 362.35 | 6.99 | 6.86 |
| 155 | 369.82 | 369.67 | 362.78 | 7.04 | 6.89 |
| 156 | 370.29 | 370.14 | 363.25 | 7.04 | 6.89 |
| 157 | 370.77 | 370.60 | 363.66 | 7.11 | 6.94 |
| 158 | 371.24 | 371.07 | 364.08 | 7.16 | 6.99 |
| 159 | 371.72 | 371.53 | 364.51 | 7.21 | 7.02 |
| 160 | 372.20 | 372.00 | 365.09 | 7.11 | 6.91 |

GAGE RECORD

| River Mile | River Gage | Zero NAVD88 | Time 1 | Stage 1 | Time 2 | Stage 2 |
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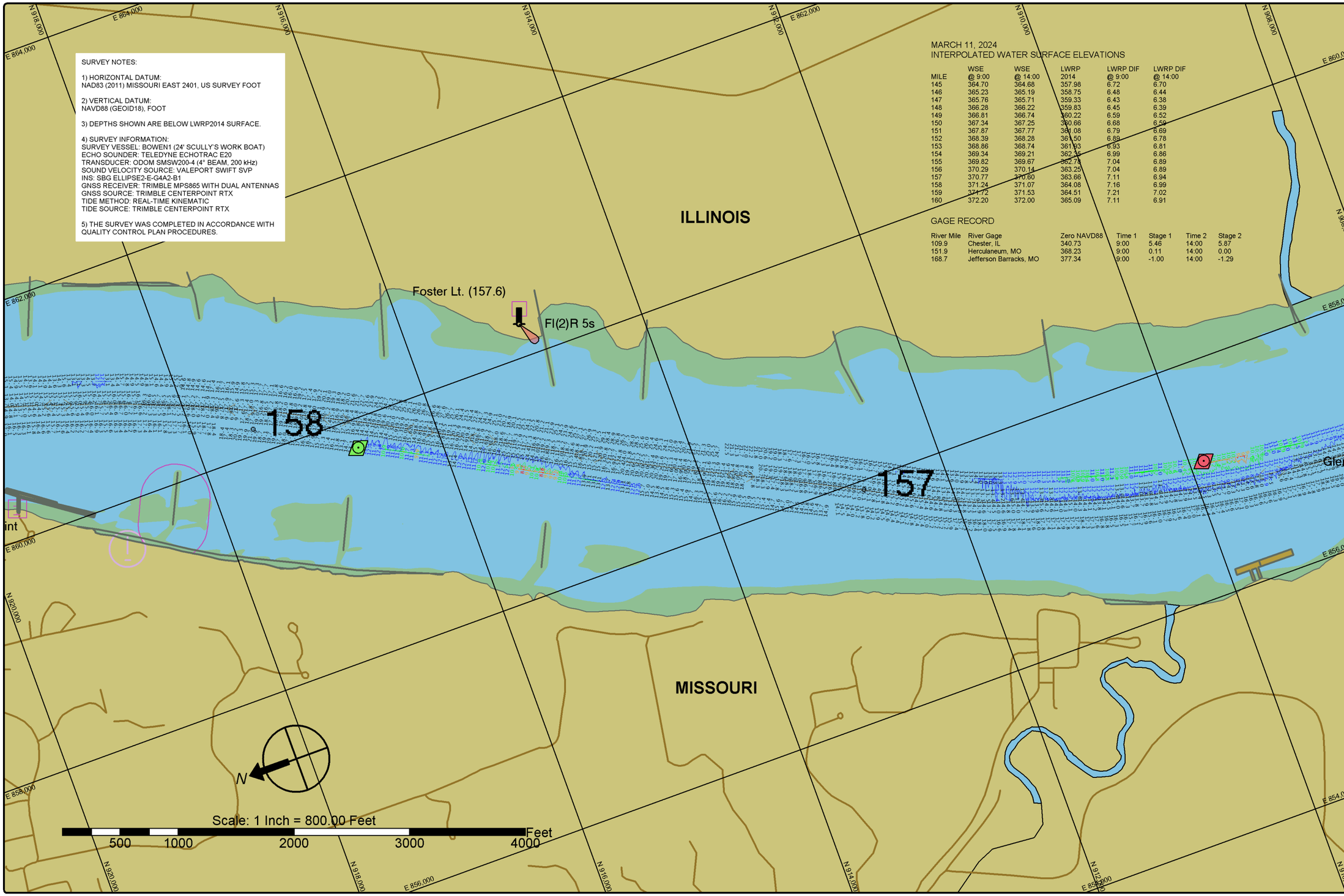


St. Louis District

DATES OF SURVEY:
MARCH 11, 2024

FILE NO.: 160_135C1124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 156.2 - 158.3

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

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INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

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MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

| MILE | WSE @ 9:00 | WSE @ 14:00 | LWRP 2014 | LWRP DIF @ 9:00 | LWRP DIF @ 14:00 |
|---|---|---|---|---|---|
| 145 | 364.70 | 364.68 | 357.98 | 6.72 | 6.70 |
| 146 | 365.23 | 365.19 | 358.75 | 6.48 | 6.44 |
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| 148 | 366.28 | 366.22 | 359.83 | 6.45 | 6.39 |
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| 154 | 369.34 | 369.21 | 362.35 | 6.99 | 6.86 |
| 155 | 369.82 | 369.67 | 362.78 | 7.04 | 6.89 |
| 156 | 370.29 | 370.14 | 363.25 | 7.04 | 6.89 |
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| 159 | 371.72 | 371.53 | 364.51 | 7.21 | 7.02 |
| 160 | 372.20 | 372.00 | 365.09 | 7.11 | 6.91 |

GAGE RECORD

| River Mile | River Gage | Zero NAVD88 | Time 1 | Stage 1 | Time 2 | Stage 2 |
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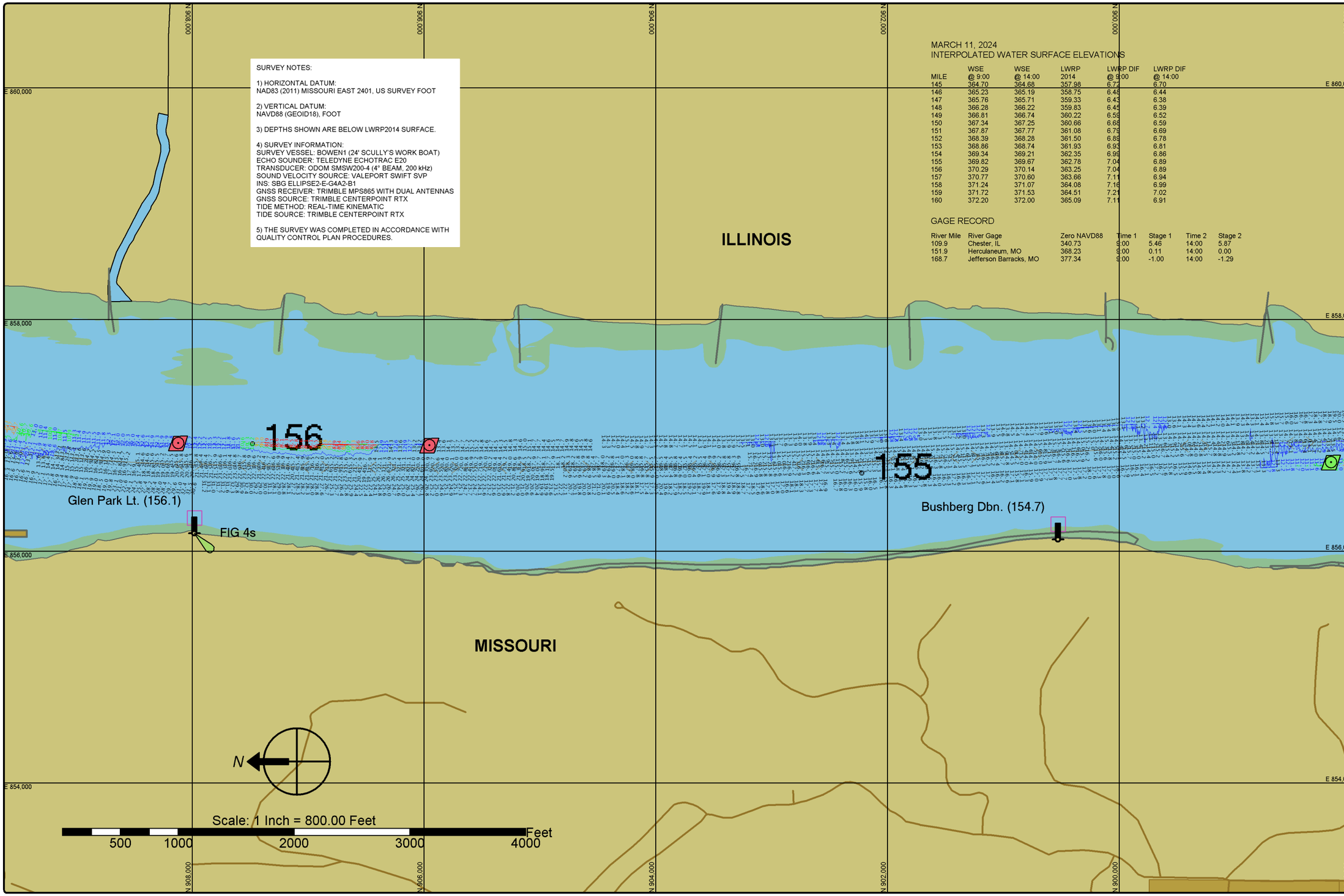


St. Louis District

DATES OF SURVEY:
MARCH 11, 2024

FILE NO.: 160_135C1124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER

CHANNEL PATROL
RIVER MILES 154.2 - 156.2

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
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INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

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MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

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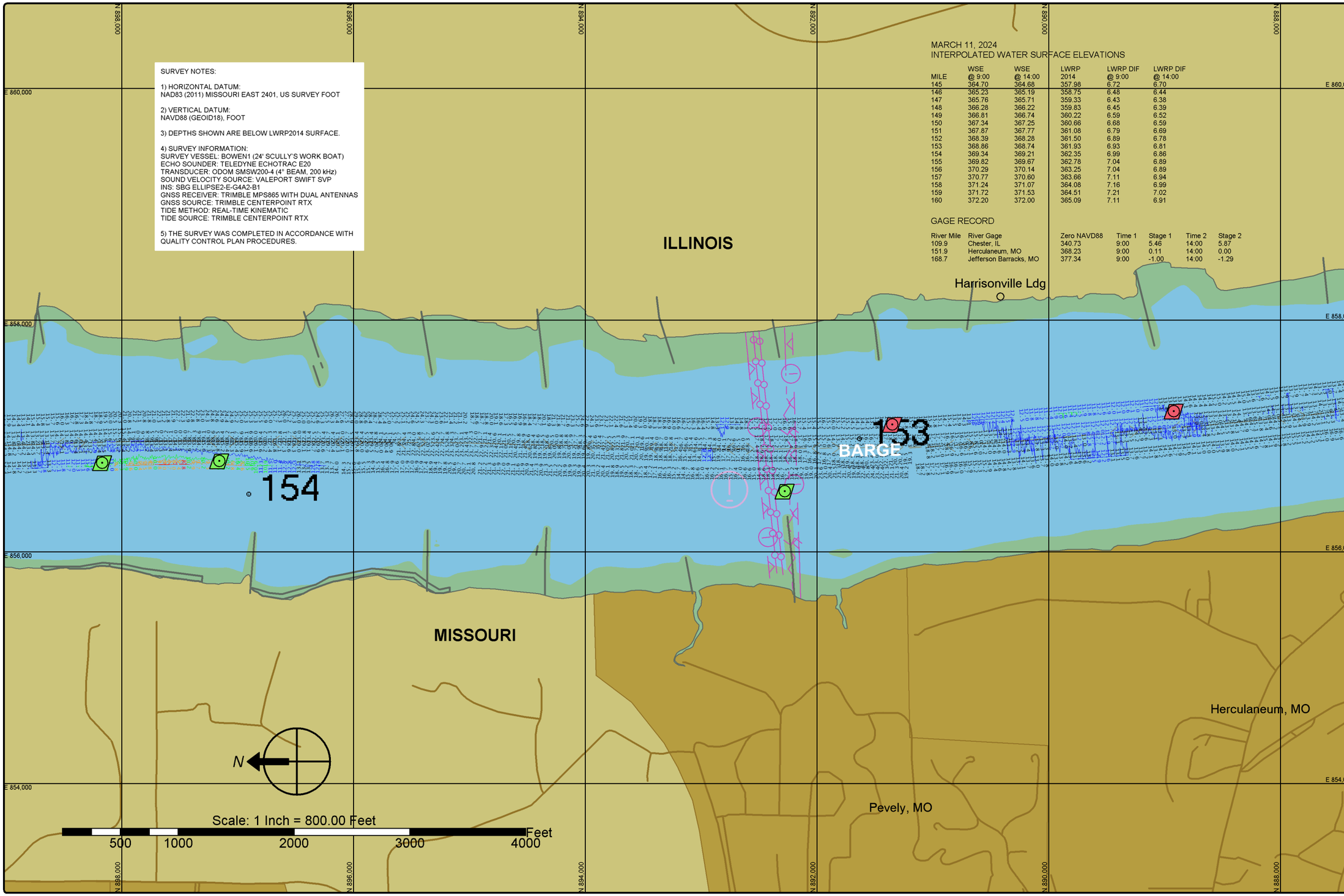


St. Louis District

DATES OF SURVEY:
MARCH 11, 2024

FILE NO.: 160_135C1124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 152.2 - 154.2

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

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TIDE METHOD: REAL-TIME KINEMATIC
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MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

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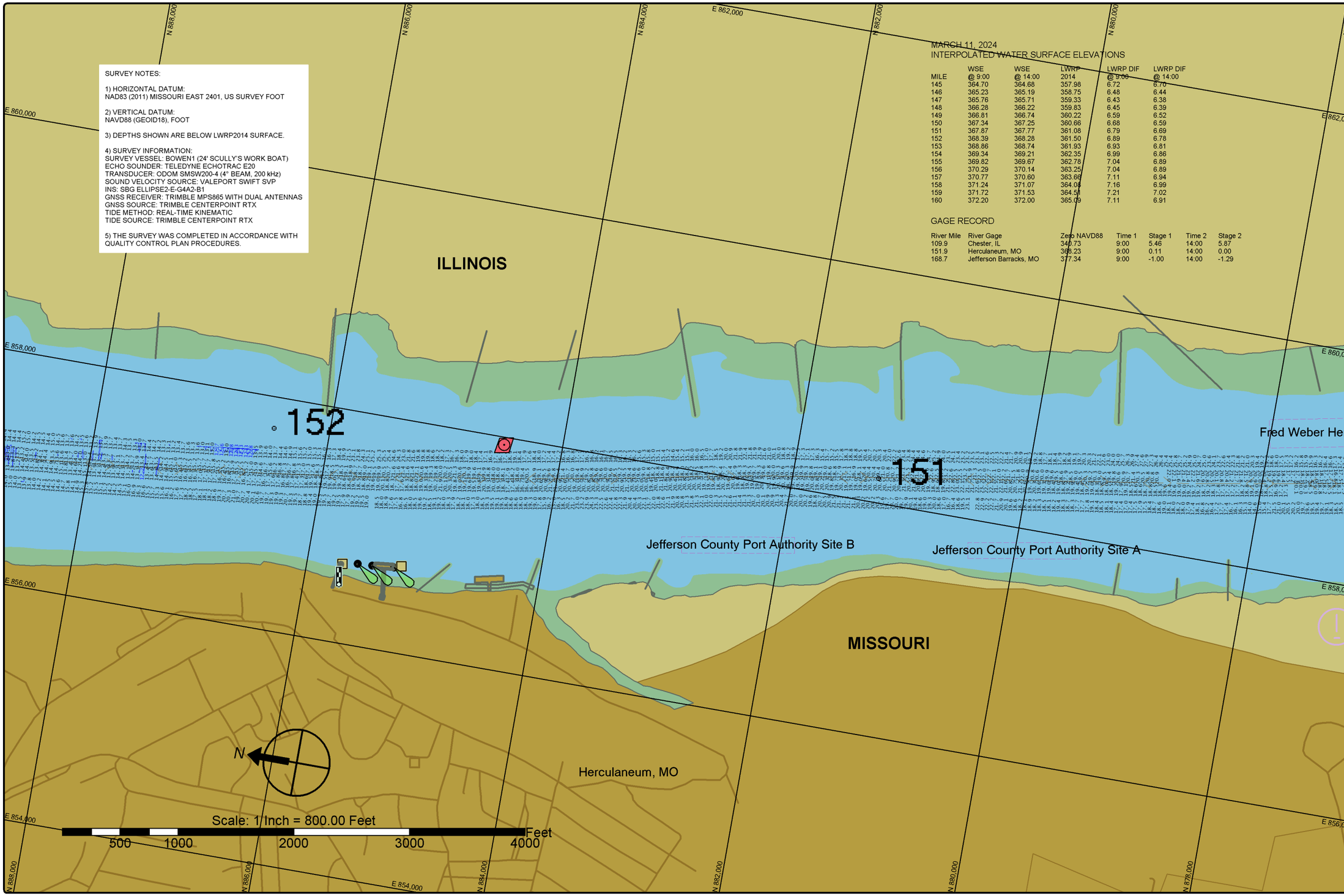


St. Louis District

DATES OF SURVEY:
MARCH 11, 2024

FILE NO.: 160_135C1124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEDIAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 150.2 - 152.2

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
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MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

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GAGE RECORD

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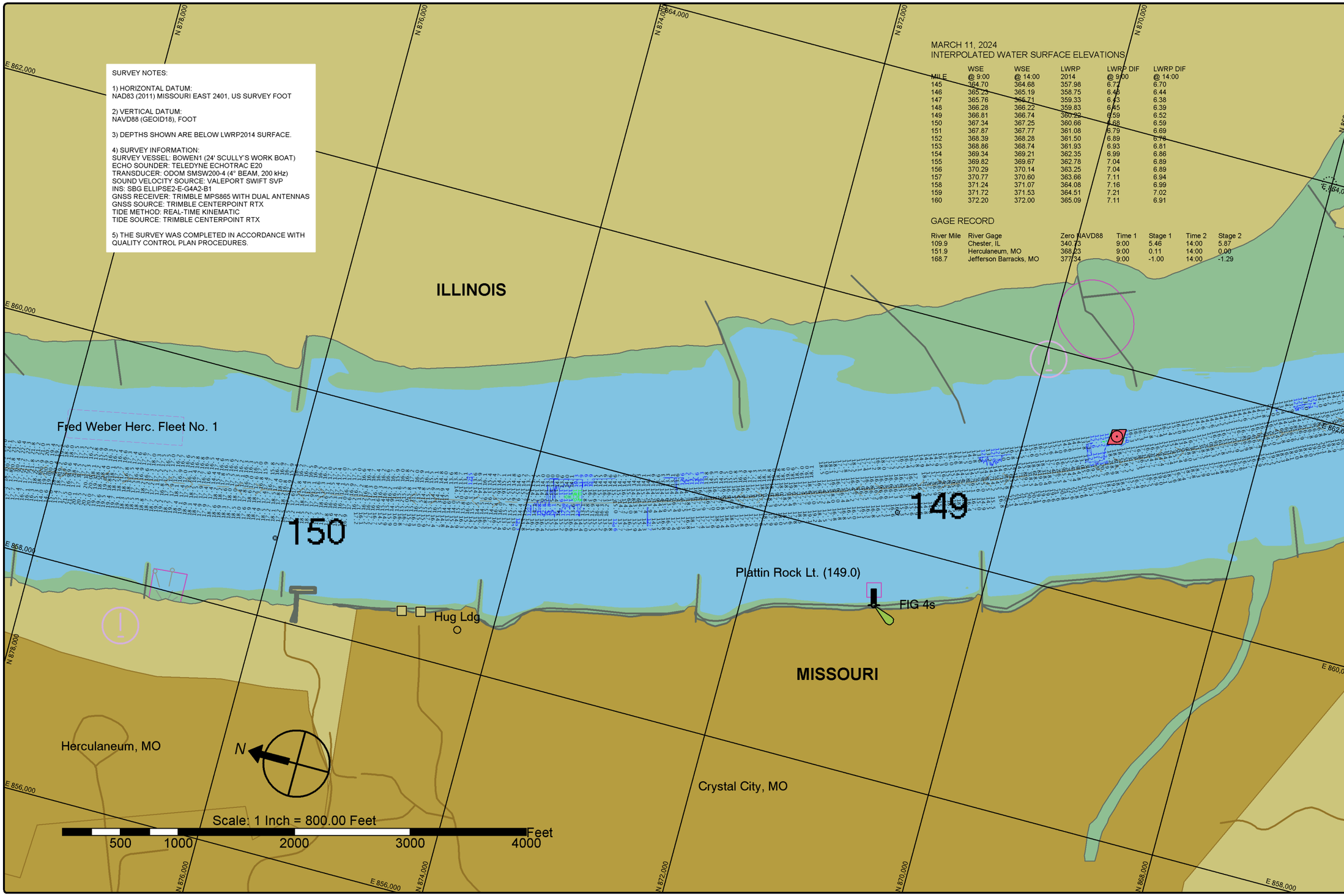


St. Louis District

DATES OF SURVEY:
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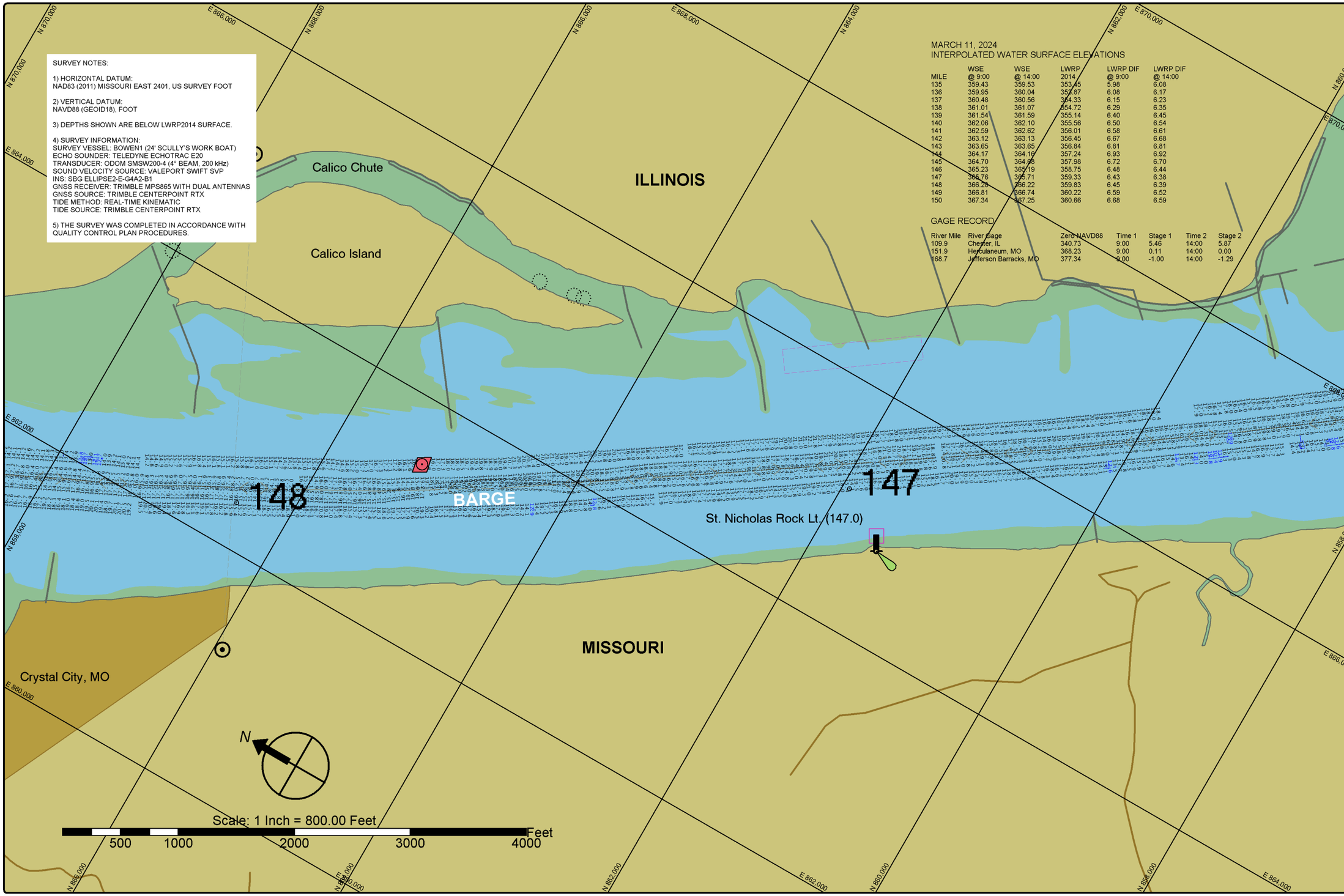
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 148.3 - 150.3

SHEET NO.
1 OF 1




SURVEY NOTES:

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3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

| MILE | WSE @ 9:00 | WSE @ 14:00 | LWRP 2014 | LWRP DIF @ 9:00 | LWRP DIF @ 14:00 |
|---|---|---|---|---|---|
| 135 | 359.43 | 359.53 | 353.45 | 5.98 | 6.08 |
| 136 | 359.95 | 360.04 | 353.87 | 6.08 | 6.17 |
| 137 | 360.48 | 360.56 | 354.33 | 6.15 | 6.23 |
| 138 | 361.01 | 361.07 | 354.72 | 6.29 | 6.35 |
| 139 | 361.54 | 361.59 | 355.14 | 6.40 | 6.45 |
| 140 | 362.06 | 362.10 | 355.56 | 6.50 | 6.54 |
| 141 | 362.59 | 362.62 | 356.01 | 6.58 | 6.61 |
| 142 | 363.12 | 363.13 | 356.45 | 6.67 | 6.68 |
| 143 | 363.65 | 363.65 | 356.84 | 6.81 | 6.81 |
| 144 | 364.17 | 364.16 | 357.24 | 6.93 | 6.92 |
| 145 | 364.70 | 364.66 | 357.98 | 6.72 | 6.70 |
| 146 | 365.23 | 365.19 | 358.75 | 6.48 | 6.44 |
| 147 | 366.76 | 365.71 | 359.33 | 6.43 | 6.38 |
| 148 | 366.26 | 366.22 | 359.83 | 6.45 | 6.39 |
| 149 | 366.81 | 366.74 | 360.22 | 6.59 | 6.52 |
| 150 | 367.34 | 367.25 | 360.66 | 6.68 | 6.59 |

GAGE RECORD

| River Mile | River Gage | Zero NAVD88 | Time 1 | Stage 1 | Time 2 | Stage 2 |
|---|---|---|---|---|---|---|
| 109.9 | Chester, IL | 340.73 | 9:00 | 5.46 | 14:00 | 5.87 |
| 151.9 | Herculaneum, MO | 368.23 | 9:00 | 0.11 | 14:00 | 0.00 |
| 168.7 | Jefferson Barracks, MO | 377.34 | 9:00 | -1.00 | 14:00 | -1.29 |

St. Louis District

DATES OF SURVEY:
MARCH 11, 2024

FILE NO.: 160_135C1124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 146.2 - 148.3

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

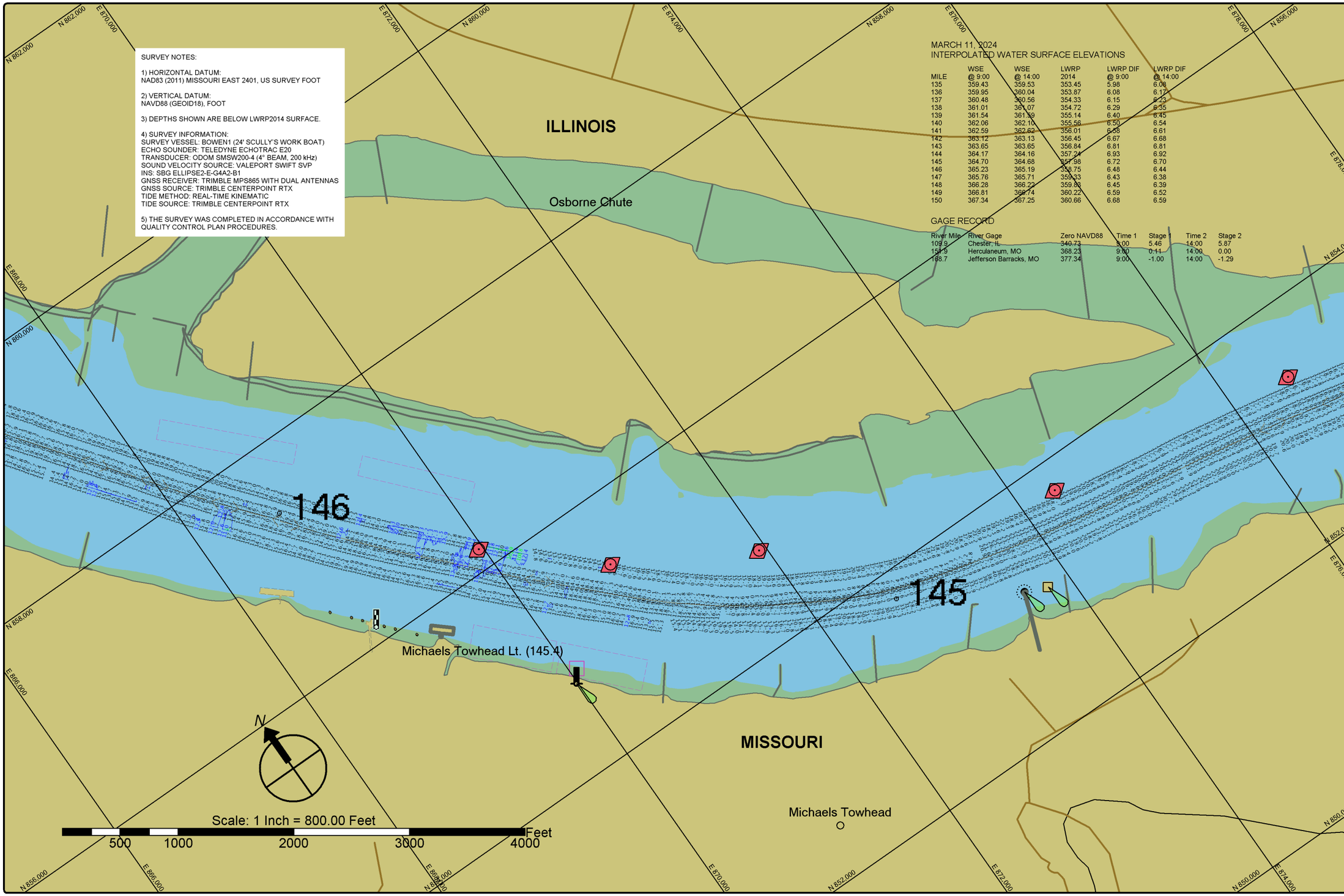
5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

| MILE | WSE @ 9:00 | WSE @ 14:00 | LWRP 2014 | LWRP DIF @ 9:00 | LWRP DIF @ 14:00 |
|---|---|---|---|---|---|
| 135 | 359.43 | 359.53 | 353.45 | 5.98 | 6.08 |
| 136 | 359.95 | 360.04 | 353.87 | 6.08 | 6.17 |
| 137 | 360.48 | 360.56 | 354.33 | 6.15 | 6.23 |
| 138 | 361.01 | 361.07 | 354.72 | 6.29 | 6.35 |
| 139 | 361.54 | 361.59 | 355.14 | 6.40 | 6.45 |
| 140 | 362.06 | 362.10 | 355.56 | 6.50 | 6.54 |
| 141 | 362.59 | 362.62 | 356.01 | 6.58 | 6.61 |
| 142 | 363.12 | 363.13 | 356.45 | 6.67 | 6.68 |
| 143 | 363.65 | 363.65 | 356.84 | 6.81 | 6.81 |
| 144 | 364.17 | 364.16 | 357.24 | 6.93 | 6.92 |
| 145 | 364.70 | 364.68 | 357.98 | 6.72 | 6.70 |
| 146 | 365.23 | 365.19 | 358.75 | 6.48 | 6.44 |
| 147 | 365.76 | 365.71 | 359.33 | 6.43 | 6.38 |
| 148 | 366.28 | 366.22 | 359.83 | 6.45 | 6.39 |
| 149 | 366.81 | 366.74 | 360.22 | 6.59 | 6.52 |
| 150 | 367.34 | 367.25 | 360.66 | 6.68 | 6.59 |

GAGE RECORD

| River Mile | River Gage | Zero NAVD88 | Time 1 | Stage 1 | Time 2 | Stage 2 |
|---|---|---|---|---|---|---|
| 109.9 | Chester, IL | 340.73 | 9:00 | 5.46 | 14:00 | 5.87 |
| 151.9 | Herculaneum, MO | 368.23 | 9:00 | 0.11 | 14:00 | 0.00 |
| 188.7 | Jefferson Barracks, MO | 377.34 | 9:00 | -1.00 | 14:00 | -1.29 |




St. Louis District

DATES OF SURVEY:
MARCH 11, 2024

FILE NO.: 160_135C1124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 144.2 - 146.2

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

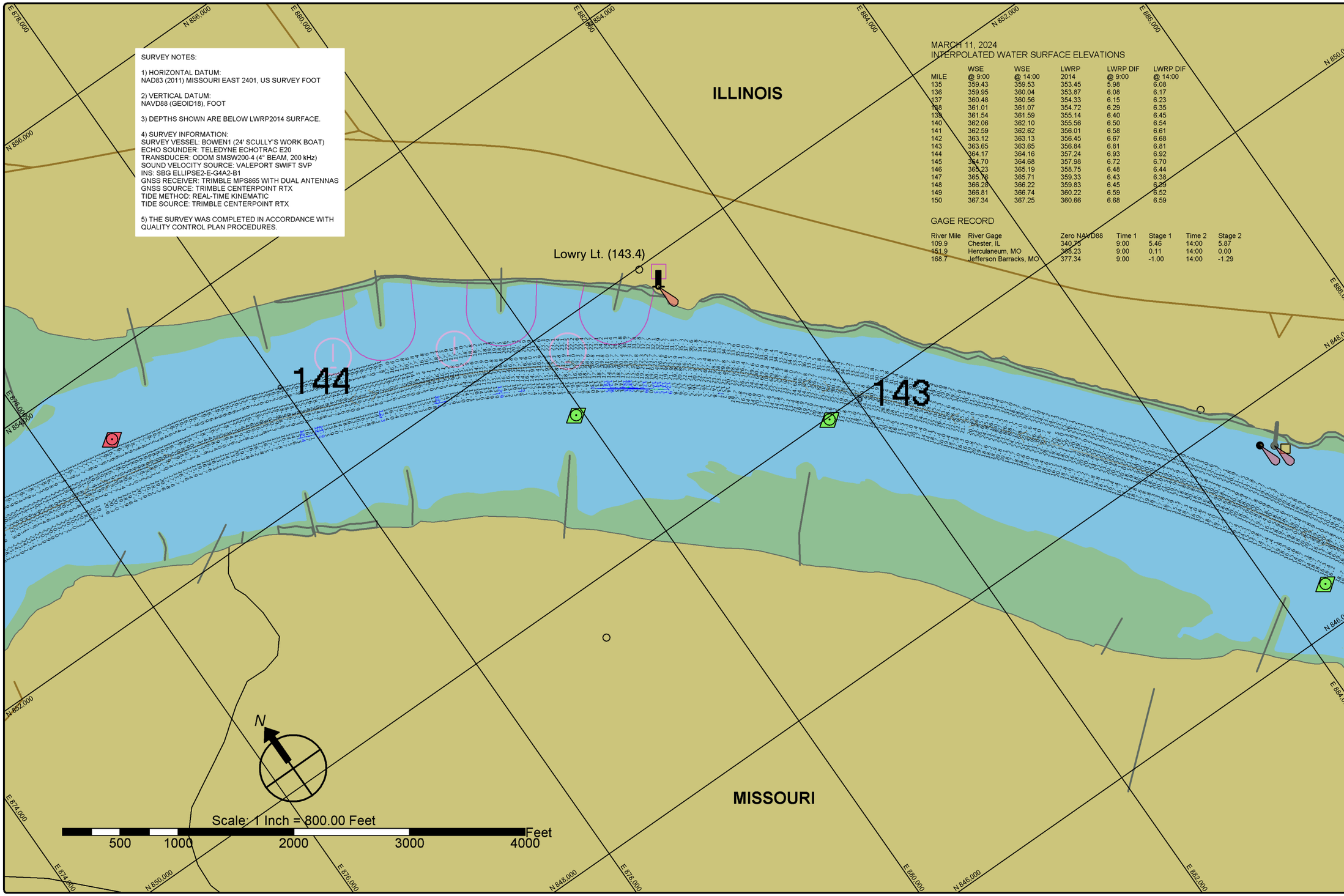
5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

| MILE | WSE @ 9:00 | WSE @ 14:00 | LWRP 2014 | LWRP DIF @ 9:00 | LWRP DIF @ 14:00 |
|---|---|---|---|---|---|
| 135 | 359.43 | 359.53 | 353.45 | 5.98 | 6.08 |
| 136 | 359.95 | 360.04 | 353.87 | 6.08 | 6.17 |
| 137 | 360.48 | 360.56 | 354.33 | 6.15 | 6.23 |
| 138 | 361.01 | 361.07 | 354.72 | 6.29 | 6.35 |
| 139 | 361.54 | 361.59 | 355.14 | 6.40 | 6.45 |
| 140 | 362.06 | 362.10 | 355.56 | 6.50 | 6.54 |
| 141 | 362.59 | 362.62 | 356.01 | 6.58 | 6.61 |
| 142 | 363.12 | 363.13 | 356.45 | 6.67 | 6.68 |
| 143 | 363.65 | 363.65 | 356.84 | 6.81 | 6.81 |
| 144 | 364.17 | 364.16 | 357.24 | 6.93 | 6.92 |
| 145 | 364.70 | 364.68 | 357.98 | 6.72 | 6.70 |
| 146 | 365.23 | 365.19 | 358.75 | 6.48 | 6.44 |
| 147 | 365.76 | 365.71 | 359.33 | 6.43 | 6.38 |
| 148 | 366.28 | 366.22 | 359.83 | 6.45 | 6.39 |
| 149 | 366.81 | 366.74 | 360.22 | 6.59 | 6.52 |
| 150 | 367.34 | 367.25 | 360.66 | 6.68 | 6.59 |

GAGE RECORD

| River Mile | River Gage | Zero NAVD88 | Time 1 | Stage 1 | Time 2 | Stage 2 |
|---|---|---|---|---|---|---|
| 109.9 | Chester, IL | 340.73 | 9:00 | 5.46 | 14:00 | 5.87 |
| 151.9 | Herculaneum, MO | 365.23 | 9:00 | 0.11 | 14:00 | 0.00 |
| 168.7 | Jefferson Barracks, MO | 377.34 | 9:00 | -1.00 | 14:00 | -1.29 |




St. Louis District

DATES OF SURVEY:
MARCH 11, 2024

FILE NO.: 160_135C1124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEDIAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 142.2 - 144.2

SHEET NO.
1 OF 1

SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

| MILE | WSE @ 9:00 | WSE @ 14:00 | LWRP 2014 | LWRP DIF @ 9:00 | LWRP DIF @ 14:00 |
|---|---|---|---|---|---|
| 135 | 359.43 | 359.53 | 353.45 | 5.98 | 6.08 |
| 136 | 359.95 | 360.04 | 353.87 | 6.08 | 6.17 |
| 137 | 360.48 | 360.56 | 354.33 | 6.15 | 6.23 |
| 138 | 361.01 | 361.07 | 354.72 | 6.29 | 6.35 |
| 139 | 361.54 | 361.59 | 355.14 | 6.40 | 6.45 |
| 140 | 362.06 | 362.10 | 355.56 | 6.50 | 6.54 |
| 141 | 362.59 | 362.62 | 356.01 | 6.58 | 6.61 |
| 142 | 363.12 | 363.13 | 356.45 | 6.67 | 6.68 |
| 143 | 363.65 | 363.65 | 356.84 | 6.81 | 6.81 |
| 144 | 364.17 | 364.16 | 357.24 | 6.93 | 6.92 |
| 145 | 364.70 | 364.68 | 357.98 | 6.72 | 6.70 |
| 146 | 365.23 | 365.19 | 358.75 | 6.48 | 6.44 |
| 147 | 365.76 | 365.71 | 359.33 | 6.43 | 6.38 |
| 148 | 366.28 | 366.22 | 359.83 | 6.45 | 6.39 |
| 149 | 366.81 | 366.74 | 360.22 | 6.59 | 6.52 |
| 150 | 367.34 | 367.25 | 360.66 | 6.68 | 6.59 |

GAGE RECORD

| River Mile | River Gage | Zero NAVD88 | Time 1 | Stage 1 | Time 2 | Stage 2 |
|---|---|---|---|---|---|---|
| 109.9 | Chester, IL | 340.73 | 9:00 | 5.46 | 14:00 | 5.87 |
| 151.9 | Herculaneum, MO | 368.23 | 9:00 | 0.11 | 14:00 | 0.00 |
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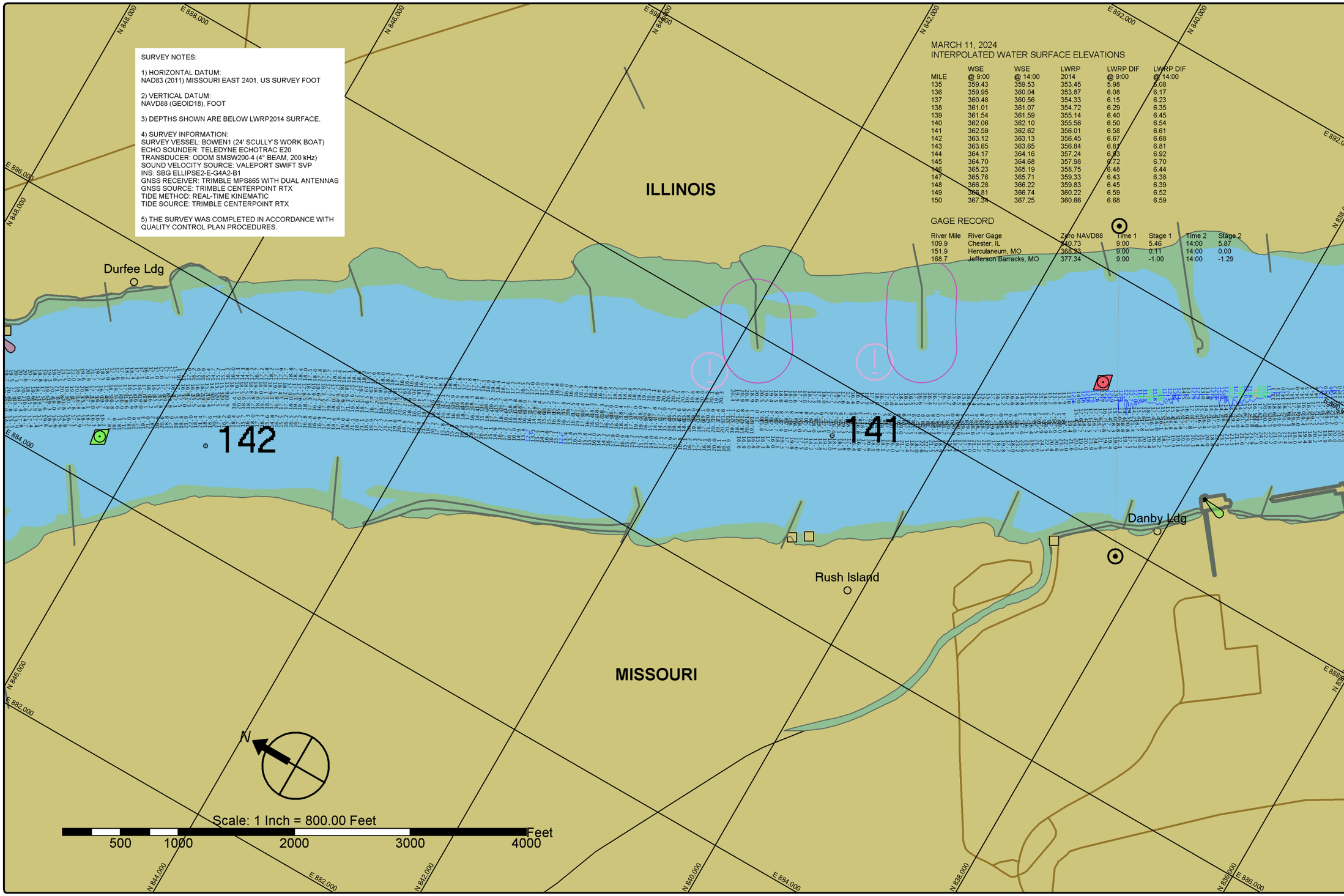



St. Louis District

DATES OF SURVEY:
MARCH 11, 2024

FILE NO.: 160_135C1124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

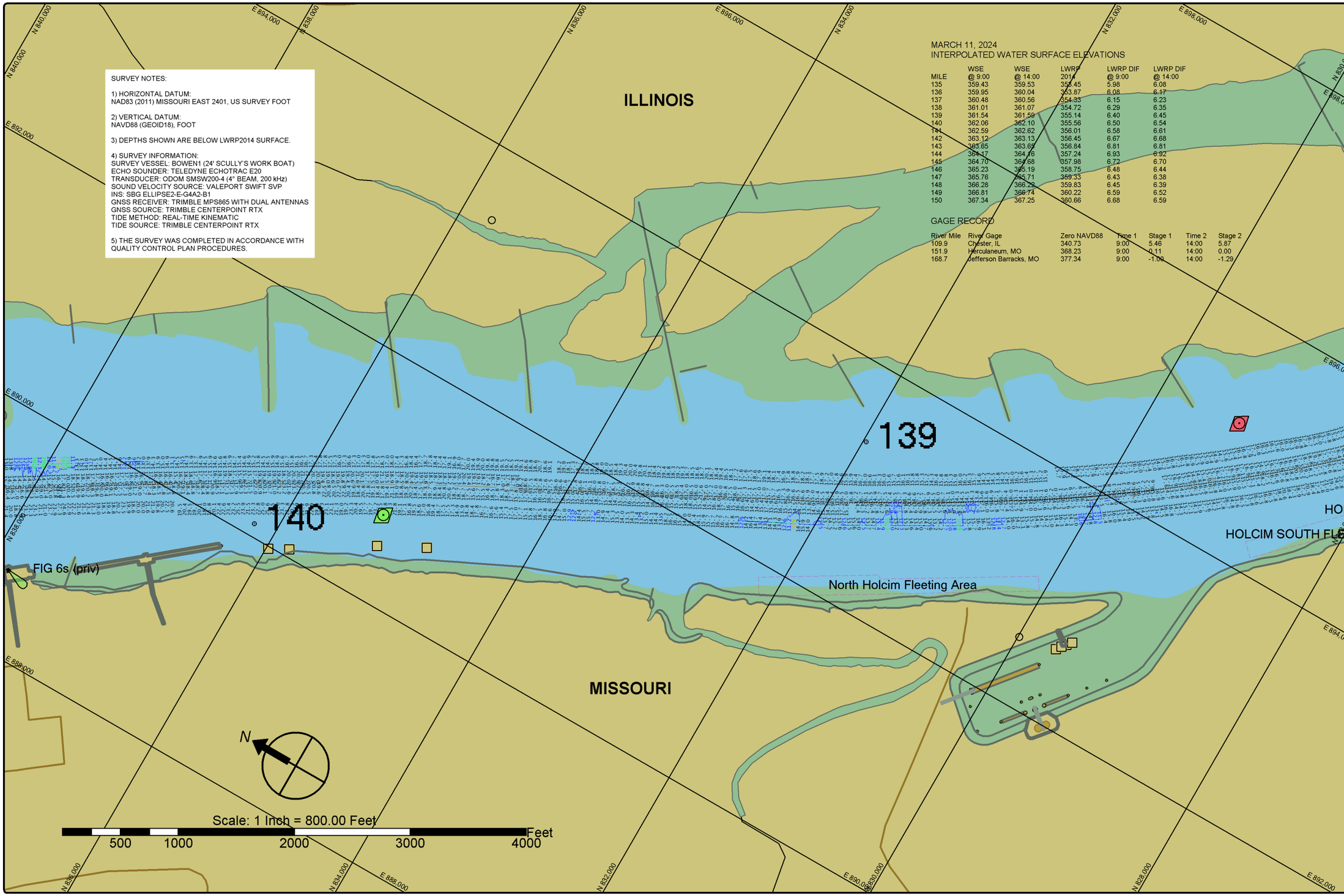
Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 140.2 - 142.2

SHEET NO.
1 OF 1




SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

3) DEPTHS SHOWN ARE BELOW LWRP2014 SURFACE.

4) SURVEY INFORMATION:
SURVEY VESSEL: BOWEN1 (24' SCULLY'S WORK BOAT)
ECHO SOUNDER: TELEDYNE ECHOTRAC E20
TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

| MILE | WSE @ 9:00 | WSE @ 14:00 | LWRP 2014 | LWRP DIF @ 9:00 | LWRP DIF @ 14:00 |
|---|---|---|---|---|---|
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| 136 | 359.95 | 360.04 | 353.87 | 6.08 | 6.17 |
| 137 | 360.48 | 360.56 | 354.33 | 6.15 | 6.23 |
| 138 | 361.01 | 361.07 | 354.72 | 6.29 | 6.35 |
| 139 | 361.54 | 361.59 | 355.14 | 6.40 | 6.45 |
| 140 | 362.06 | 362.10 | 355.56 | 6.50 | 6.54 |
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| 143 | 363.65 | 363.65 | 356.84 | 6.81 | 6.81 |
| 144 | 364.17 | 364.16 | 357.24 | 6.93 | 6.92 |
| 145 | 364.70 | 364.68 | 357.98 | 6.72 | 6.70 |
| 146 | 365.23 | 365.19 | 358.75 | 6.48 | 6.44 |
| 147 | 365.76 | 365.71 | 359.33 | 6.43 | 6.38 |
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| 149 | 366.81 | 366.74 | 360.22 | 6.59 | 6.52 |
| 150 | 367.34 | 367.25 | 360.66 | 6.68 | 6.59 |

GAGE RECORD

| River Mile | River Gage | Zero NAVD88 | Time 1 | Stage 1 | Time 2 | Stage 2 |
|---|---|---|---|---|---|---|
| 109.9 | Chester, IL | 340.73 | 9:00 | 5.46 | 14:00 | 5.87 |
| 151.9 | Herculaneum, MO | 368.23 | 9:00 | 0.11 | 14:00 | 0.00 |
| 168.7 | Jefferson Barracks, MO | 377.34 | 9:00 | -1.00 | 14:00 | -1.29 |

St. Louis District

DATES OF SURVEY:
MARCH 11, 2024

FILE NO.: 160_135C1124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

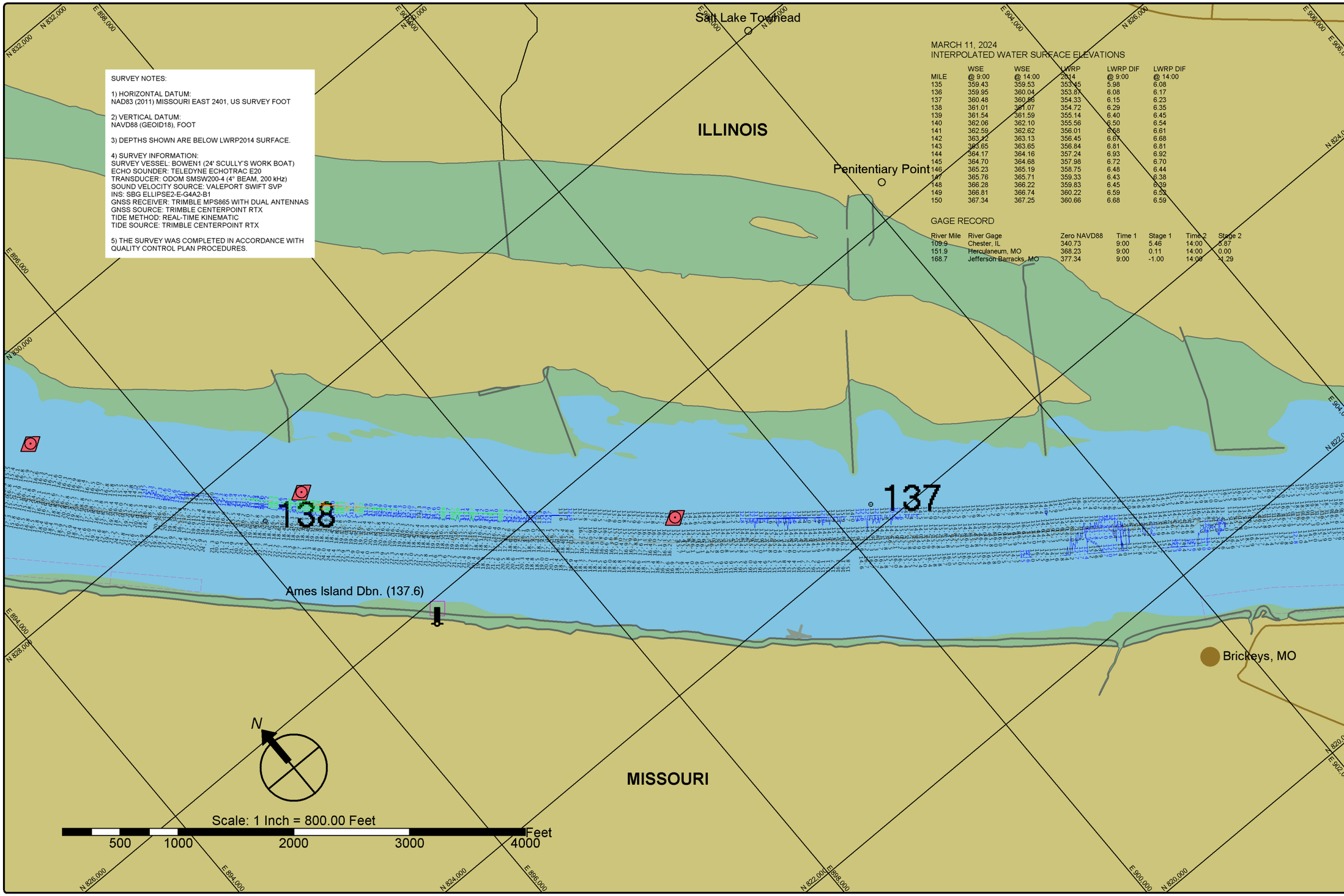
Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 138.2 - 140.2

SHEET NO.
1 OF 1




SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

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GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

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MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

| MILE | WSE @ 9:00 | WSE @ 14:00 | LWRP 2014 | LWRP DIF @ 9:00 | LWRP DIF @ 14:00 |
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| 144 | 364.17 | 364.16 | 357.24 | 6.93 | 6.92 |
| 145 | 364.70 | 364.68 | 357.98 | 6.72 | 6.70 |
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GAGE RECORD

| River Mile | River Gage | Zero NAVD88 | Time 1 | Stage 1 | Time 2 | Stage 2 |
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St. Louis District

DATES OF SURVEY:
MARCH 11, 2024

FILE NO.: 160_135C1124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

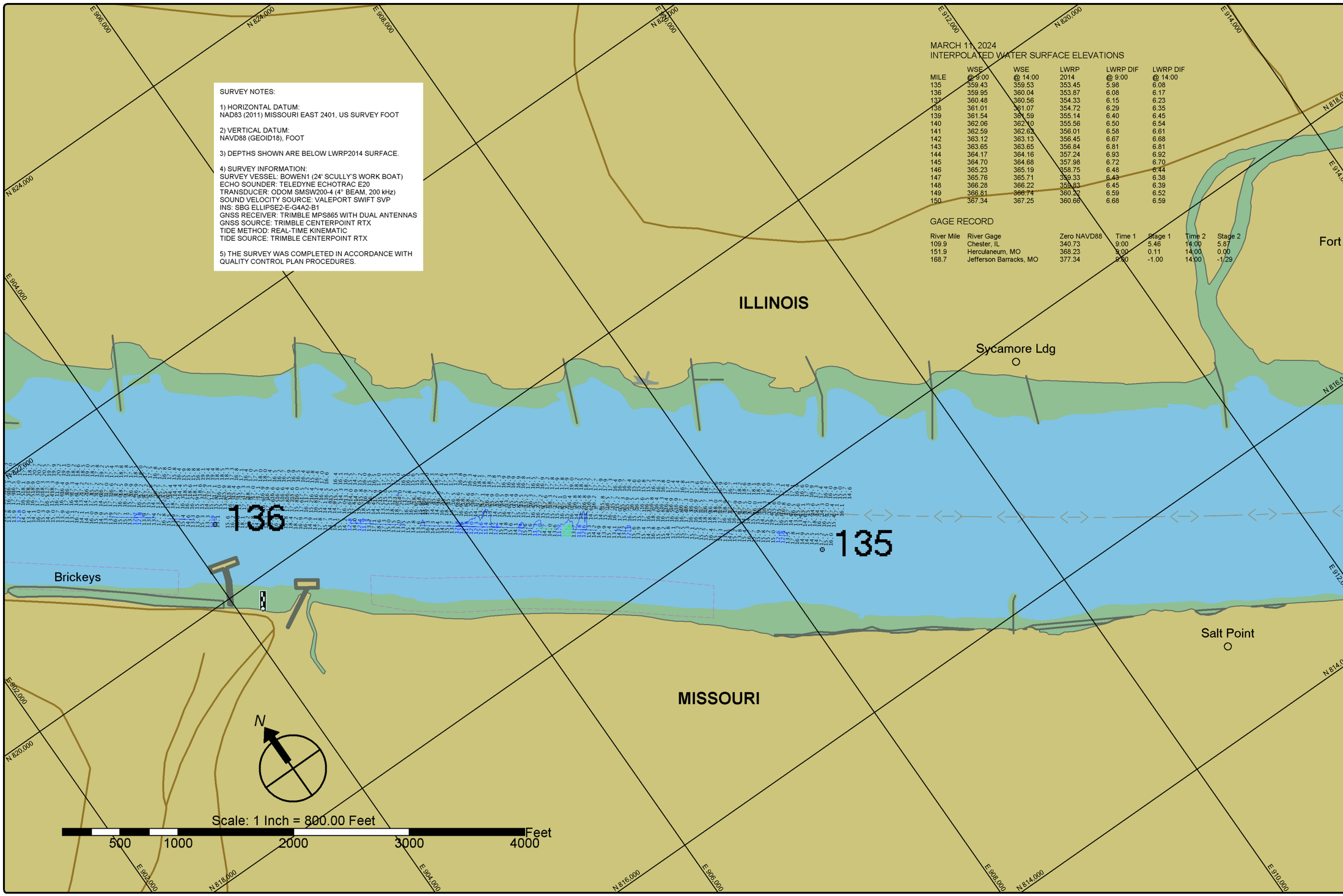
Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST. CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 136.2 - 138.2

SHEET NO.
1 OF 1




SURVEY NOTES:

1) HORIZONTAL DATUM:
NAD83 (2011) MISSOURI EAST 2401, US SURVEY FOOT

2) VERTICAL DATUM:
NAVD88 (GEOID18), FOOT

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TRANSDUCER: ODOM SMSW200-4 (4° BEAM, 200 kHz)
SOUND VELOCITY SOURCE: VALEPORT SWIFT SVP
INS: SBG ELLIPSE2-E-G4A2-B1
GNSS RECEIVER: TRIMBLE MPS865 WITH DUAL ANTENNAS
GNSS SOURCE: TRIMBLE CENTERPOINT RTX
TIDE METHOD: REAL-TIME KINEMATIC
TIDE SOURCE: TRIMBLE CENTERPOINT RTX

5) THE SURVEY WAS COMPLETED IN ACCORDANCE WITH QUALITY CONTROL PLAN PROCEDURES.

MARCH 11, 2024
INTERPOLATED WATER SURFACE ELEVATIONS

| MILE | WSE @ 9:00 | WSE @ 14:00 | LWRP 2014 | LWRP DIF @ 9:00 | LWRP DIF @ 14:00 |
|---|---|---|---|---|---|
| 135 | 359.43 | 359.53 | 353.45 | 5.98 | 6.08 |
| 136 | 359.95 | 360.04 | 353.87 | 6.08 | 6.17 |
| 137 | 360.48 | 360.56 | 354.33 | 6.15 | 6.23 |
| 138 | 361.01 | 361.07 | 354.72 | 6.29 | 6.35 |
| 139 | 361.54 | 361.59 | 355.14 | 6.40 | 6.45 |
| 140 | 362.06 | 362.10 | 355.56 | 6.50 | 6.54 |
| 141 | 362.59 | 362.63 | 356.01 | 6.58 | 6.61 |
| 142 | 363.12 | 363.13 | 356.45 | 6.67 | 6.68 |
| 143 | 363.65 | 363.65 | 356.84 | 6.81 | 6.81 |
| 144 | 364.17 | 364.16 | 357.24 | 6.93 | 6.92 |
| 145 | 364.70 | 364.68 | 357.98 | 6.72 | 6.70 |
| 146 | 365.23 | 365.19 | 358.75 | 6.48 | 6.44 |
| 147 | 365.76 | 365.71 | 359.33 | 6.43 | 6.38 |
| 148 | 366.28 | 366.22 | 359.83 | 6.45 | 6.39 |
| 149 | 366.81 | 366.74 | 360.22 | 6.59 | 6.52 |
| 150 | 367.34 | 367.25 | 360.66 | 6.68 | 6.59 |

GAGE RECORD

| River Mile | River Gage | Zero NAVD88 | Time 1 | Stage 1 | Time 2 | Stage 2 |
|---|---|---|---|---|---|---|
| 109.9 | Chester, IL | 340.73 | 9:00 | 5.46 | 14:00 | 5.87 |
| 151.9 | Herculaneum, MO | 368.23 | 9:00 | 0.11 | 14:00 | 0.00 |
| 168.7 | Jefferson Barracks, MO | 377.34 | 9:00 | -1.00 | 14:00 | -1.29 |

St. Louis District

DATES OF SURVEY:
MARCH 11, 2024

FILE NO.: 160_135C1124
REQUEST NO.: W912P924F0029

SCALE:
1" = 800' (ANSI B)

FIELD BOOKS:

Approved: FIELD CARTOGRAPHER
Approved: CIVIL ENGINEERING TECHNICIAN
Approved: ASST CHIEF OF SURVEY
Approved: CHIEF OF SURVEY
Date:

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT
ST. LOUIS, MISSOURI

SURVEYED BY:
BOWEN ENGINEERING AND SURVEYING, P.C.
2121 MEGAN DRIVE
CAPE GIRARDEAU, MO 63701

UPPER MISSISSIPPI RIVER BASIN
MISSISSIPPI RIVER
CHANNEL PATROL
RIVER MILES 134.2 - 136.2

SHEET NO.
1 OF 1