

PICKETT, RAY & SILVER, INC.

CIVIL ENGINEERING, LAND SURVEYING & LAND PLANNING SERVICES
22 Richmond Center Court, St. Peters, Missouri 63376 Phone - 636-397-1211 Fax - 636-397-1104

LETTER OF TRANSMITTAL

Project Job Number: 16035.GLON.00S

Project Job Name: VALLEY PARK LEVEE TRAIL

SPOT ELEVATIONS

Transmittal Date: August 11, 2016

Sent Via: Email & Mail

Sent To: The Glennon Company
Glenn Jamboretz
10 Lindworth Drive
St. Louis, MO 63124

Received by:

Date and Time Received:

Description: 1 - Cover Letter
1 - Aerial View of Valley Park with levee spot elevations noted
1 - Copy of Control Points
1 - Copy of the Field Data
1 - Copy of the Meramec River Gauge dated 8/9/2016
1 - Copy of the US Army Corps of Engineers Report
1 - Invoice

Remarks:

No "copy to" required or

Typed by: Teri

Signed by:



David F. Skornia, P.L.S., Director of Survey

PICKETT, RAY & SILVER, INC.

CIVIL ENGINEERING, LAND SURVEYING & LAND PLANNING SERVICES

August 10, 2016

The Glennon Company
Attn: Glenn Jamboretz
10 Lindworth Drive
St. Louis, MO 63124

RE: VALLEY PARK LEVEE TRAIL SPOT ELEVATIONS - RESULTS
PR&S PROPOSAL NO. 16035.GLON.00S

Dear Mr. Jamboretz:

This letter is to inform you that our field work has been completed at the Valley Park Levee. Our crew met with Professor Robert Criss on August 9, 2016 to obtain spot elevations at several locations as shown on the provided drawing. We are also providing you with a listing of the elevations that were obtained at the site.

Our crews set up a horizontal and vertical control network for the elevations that were required by Professor Criss. We performed the study by utilizing our GPS equipment; first establishing horizontal control utilizing the reference marks provided by the Missouri Department of Natural Resources, Division of Geology and Land Survey. We located Station SL-79 and held both horizontal and vertical locations at this point, checked into SL-59 and verified these benchmarks with St. Louis County benchmark system and utilized benchmarks 18239 and 18423. We have enclosed descriptions of all four of these control points for future reference and show the correlation between the four (4) benchmarks and how they check to one another. We also verified the flood gauge in Valley Park, which is referenced as Gauge #VLLM7.

Our crews were on-site and obtained a spot elevation along the Meramec River at approximately 9:00 a.m. and we have enclosed a river staging from the State of Missouri for that time, which was posted at a flood stage of 5.93. The gauge reading on-site was noted at 24.18 feet. The results of the finding are enclosed.

Also enclosed is a listing of field data obtained from the survey operations. The coordinates listed are Missouri State Plane Coordinates.

Very truly yours,

PICKETT, RAY & SILVER, INC.



David F. Skornia, P.L.S.
Vice President, Director of Survey
ts

POINT #	DESCRIPTION	NAVD88	NGVD29
901	Vance Road #1 Top Levee	439.85	440.10
902	Vance Road #2	443.30	443.55
903	Gage BM Monument Disk	412.90	413.15
905	Staff Gage @ 24.18	415.56	415.81
906	Boat Ramp Water @ 9:00 a.m.	397.02	397.27
907	Top Levee #2	438.17	438.42
908	Top Levee #3	437.03	437.28
909	SL-79 (Held) = BM 18186	422.57	422.82
910	BM-18239 (checked)	421.59 421.68 recorded	421.84 421.95 recorded
912	BM 18423 (checked)	426.56 426.56 recorded	426.81 426.83 recorded
913	SL-59 (checked)	516.82 516.73 recorded	517.07
	GAGE VLLM7	391.38 392.67 Recorded 1.29 Difference	391.63 392.92 Recorded 1.29 Difference

Project file data		Coordinate System	
Name:		Name:	Default
Size:		Datum:	WGS 1984
Modified:	8/30/2013 1:10:56 PM (UTC:-6)	Zone:	Default
Time zone:	Mountain Standard Time	Geoid:	G12BUS
Reference number:		Vertical datum:	
Description:	<i>GPS DATA</i>		
Comment 1:	<i>16035</i>		
Comment 2:	<i>SPOTT ELEVUS 08-09-16</i>		
Comment 3:			

Additional Coordinate System Details

Local Site Settings			
Project latitude:	?	Ground scale factor:	1
Project longitude:	?	False northing offset:	0.000
Project height:	500.000	False easting offset:	0.000

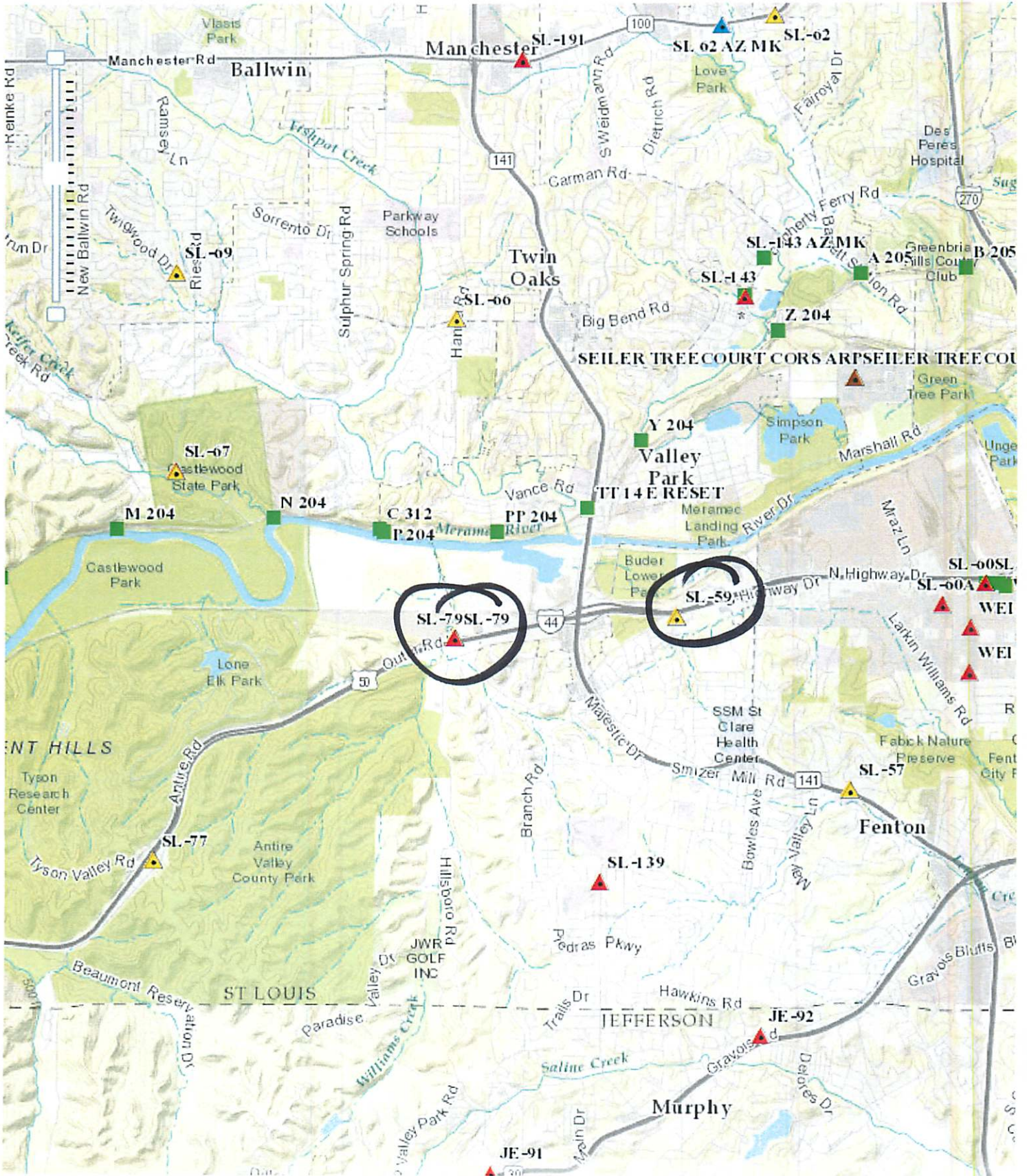
*STATE PLANE (FEET) COORDS (2000 ADJ.)
NAVD 88*

Point List

ID	Northing (US survey foot)	Easting (US survey foot)	Elevation (US survey foot)	Feature Code
90	984383.708	816990.286	422.570	cal
93	985128.045	824956.240	0.000	cal
901	989107.163	821211.507	439.852	vance 1 levee top
902	989689.868	820862.395	443.304	vance 2
903	987842.606	824613.129	412.904	gage bm disk
904	987842.620	824613.155	412.888	2-903
905	987838.389	824575.191	415.561	staff gage @24.18
906	987751.193	824657.758	397.020	boat ramp water level
907	988447.617	824599.131	438.170	levee top 2
908	989779.907	827954.660	437.029	levee top 3
909 <i>HELD VERT</i>	984383.708	816990.286	<i>Bm 18186</i> ✓ 422.570	<i>NAVD 88</i> SL-79
910	989788.367	820364.752	421.589	bm-18239
911	989788.190	820364.867	421.558	2-910
912	992528.622	823931.829	426.562	bm-18423
913 <i>HELD HORIZ</i>	<i>2000 ADJ.</i> 985128.045	824956.240 ✓	516.817	SL-59

8/9/2016 1:16:46 PM	Trimble Business Center
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Missouri Geographic Reference



ST. LOUIS GEOGRAPHIC
REFERENCE SYSTEM

SHEET 1 OF 3
MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
LAND SURVEY PROGRAM
P. O. Box 250
Rolla, Missouri 65402
(573) 368-2300

STATION NAME: SL-59

PID: AA8700

STATE: Missouri

COUNTY: St. Louis

TOWNSHIP: 44 NORTH, RANGE: 5 EAST, SECTION: USS 1983 E 1/4

USGS 7.5' QUAD: Kirkwood NGS QUAD. OR QUIDQSN: 38090133

DATE MONUMENTED: 1992

TECHNICAL DATA TABLE:

DATE OF OBSERVATIONS: 1992 ORDER: 1st
DATE OF ADJUSTMENT: 2000

GEODETTIC DATA-NAD 1983:

STATE PLANE COORDINATE DATA:

LATITUDE: 38°32'20.70501"

MISSOURI

LONGITUDE: 90°29'00.24081"

COORDINATES (METERS):

ELEVATION (METERS)*: 157.5

NORTH (Y): 300267.629

EAST (X): 251447.165

*NAVD 1988

ZONE: EAST

CONVERGFNCE: +00°00'37.2"

GRID FACTOR: .9999135

(Note: 1 Meter = 3.28083333 Feet)

AZIMUTH MARK INFORMATION:

STATION	TO	STATION	ASTRONOMIC AZIMUTH	GRID AZIMUTH
SL-59	TO	SL-59A	073°45'53.7"	073°45'16"

Remarks

The HORIZONTAL POSITION was determined by GPS observations and adjusted by the National Geodetic Survey in 2000

The AZIMUTH was determined by observation of Polaris with an estimated accuracy of 1 second of arc

The ELEVATION was determined by GPS observations

The ELLIPSOID HEIGHT was determined by GPS observations referenced to NAD83

GEOID 99 was used in determining ELEVATION and/or ELLIPSOID HEIGHT

Date of Report 2001

985 128.045
~~99303.046~~
824 956.240

STATION: SL-59

DESCRIPTION:

The station is a standard DNR GRS aluminum disk stamped, "SL-59, 1992", set in a 12" diameter concrete post. The underground station is a standard DNR GRS aluminum disk stamped, "SL-59U, 1992", set in a mass of concrete. The azimuth mark is a standard DNR GRS aluminum disk stamped, "SL-59A, 1992", set in a 12" diameter concrete post.

STATION, AZIMUTH MARKS AND REFERENCE TIES:

The station is located in USS #1983 T44N, R5E, on the south side of South Hwy Drive; 212+ ft. west of the Maritz overpass of I-44; 8.0 ft. south of the back of curb of South Hwy Drive; 21.6 ft. south of the center line of South Hwy Drive; 26.86 ft. southwest of a nail and shiner in a wrong way sign post; 212+ ft. west of the entrance to #5 parking lot of Maritz Company; 82.8 ft. NNE of the center bolt of fire hydrant; 8.29 ft. south of a cut cross on curb; and 2 ft. east of a carsonite witness post.

The azimuth is in Section 20, T44N, R5E on the south side of South Hwy Drive under the Maritz Co. walkway overpass; .32 mile east of the Maritz overpass of I-44; 29.0 ft. southeast of the center line of South Hwy Drive; 7.3 ft. southeast of the edge of pavement; 16.05 ft. southwest of a cut cross on the west end of curb of turn lane; 40.6 ft. northwest of the northeast corner of pedestrian walkway building; 39.0 ft. south of the northwest corner; 7.88 ft. south of a cut cross 0.7 ft. into pavement; and 2.0 ft. east of a carsonite witness post.

STATION & AZIMUTH MARK TO REACH:

To reach the station from the intersection of I-44 and 141 (Meramec Station Road), go south on 141, go under I-44 and turn left (east) on South Hwy Drive. Go east on South Hwy Drive for .73 mile to station on the right 212+ ft. west of the entrance to Maritz Company parking lot #5.

To reach the azimuth mark from the station, continue east on South Hwy Drive for .32 mile and mark on the right under the Maritz Company pedestrian walkway over I-44.

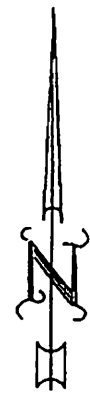
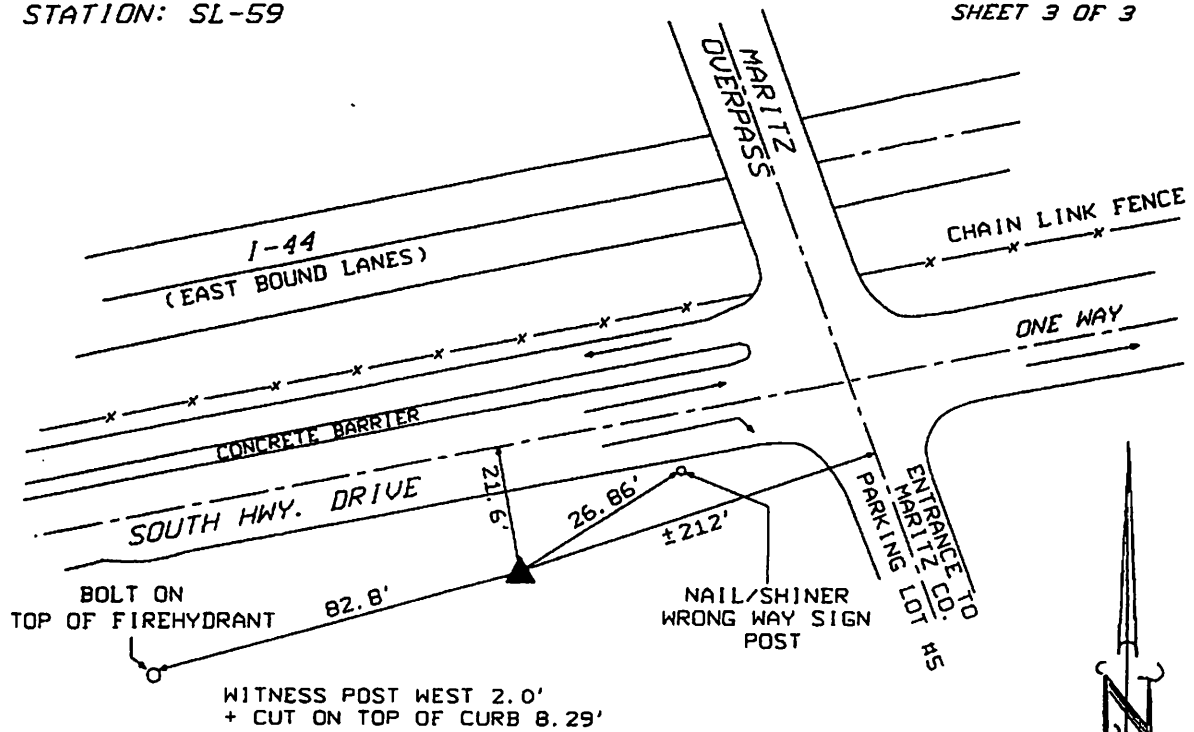
SPECIAL INFORMATION:

SUPERSEDED SURVEY CONTROL

NGS (1997) LAT: 38°32'20.70597" LONG: 90°29'00.24092"
MODNR (1995) LAT: 38°32'20.72063" LONG: 90°29'00.23810"
MODNR (1993) LAT: 38°32'20.71987" LONG: 90°29'00.23810"
MODNR (1992) LAT: 38°32'20.72025" LONG: 90°29'00.23802"

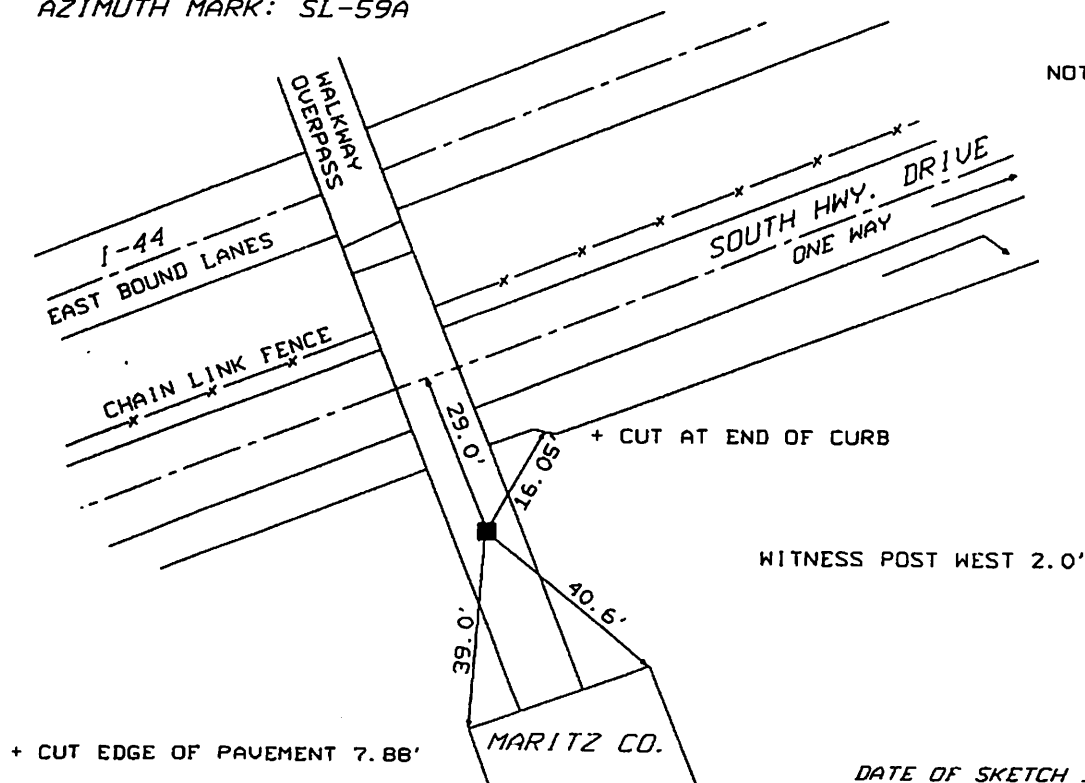
STATION: SL-59

SHEET 3 OF 3



NOT TO SCALE

AZIMUTH MARK: SL-59A



DATE OF SKETCH 1991

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

PROGRAM = datasheet95, VERSION = 8.9

1 National Geodetic Survey, Retrieval Date = AUGUST 10, 2016

AA8700 *****

AA8700 DESIGNATION - SL 59

AA8700 PID - AA8700

AA8700 STATE/COUNTY- MO/ST LOUIS

AA8700 COUNTRY - US

AA8700 USGS QUAD - KIRKWOOD (1993)

AA8700

AA8700 *CURRENT SURVEY CONTROL

1. meter = 3.28083333 FT

AA8700

AA8700* NAD 83(2011) POSITION- 38 32 20.70472(N) 090 29 00.23909(W) ADJUSTED

AA8700* NAD 83(2011) ELLIP HT- 126.519 (meters) (06/27/12) ADJUSTED

AA8700* NAD 83(2011) EPOCH - 2010.00

AA8700* NAVD 88 ORTHO HEIGHT - 157.5 (meters) 517. (feet) GPS OBS

516.73 FT

AA8700

AA8700 NAVD 88 orthometric height was determined with geoid model GEOID93

AA8700 GEOID HEIGHT - -31.007 (meters) GEOID93

AA8700 GEOID HEIGHT - -30.992 (meters) GEOID12B

AA8700 NAD 83(2011) X - -42,145.835 (meters) COMP

AA8700 NAD 83(2011) Y - -4,995,288.481 (meters) COMP

AA8700 NAD 83(2011) Z - 3,952,502.758 (meters) COMP

AA8700 LAPLACE CORR - 0.73 (seconds) DEFLEC12B

AA8700

AA8700 Network accuracy estimates per FGDC Geospatial Positioning Accuracy

AA8700 Standards:

AA8700 FGDC (95% conf, cm) Standard deviation (cm) CorrNE

AA8700 Horiz Ellip SD_N SD_E SD_h (unitless)

AA8700 -----

AA8700 NETWORK 1.03 1.43 0.47 0.36 0.73 -0.02758891

AA8700 -----

AA8700 Click [here](#) for local accuracies and other accuracy information.

AA8700

AA8700

AA8700.The horizontal coordinates were established by GPS observations

AA8700.and adjusted by the National Geodetic Survey in June 2012.

AA8700

AA8700.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has

AA8700.been affixed to the stable North American tectonic plate. See

AA8700.[NA2011](#) for more information.

AA8700

AA8700.The horizontal coordinates are valid at the epoch date displayed above

AA8700.which is a decimal equivalence of Year/Month/Day.

AA8700

AA8700.The orthometric height was determined by GPS observations and a

AA8700.high-resolution geoid model.

AA8700

AA8700.Significant digits in the geoid height do not necessarily reflect accuracy.

AA8700.GEOID12B height accuracy estimate available [here](#).

AA8700

AA8700.The X, Y, and Z were computed from the position and the ellipsoidal ht.

AA8700

AA8700.The Laplace correction was computed from DEFLEC12B derived deflections.

AA8700

AA8700.The ellipsoidal height was determined by GPS observations

AA8700.and is referenced to NAD 83.

AA8700

AA8700. The following values were computed from the NAD 83(2011) position.

AA8700

AA8700;	North	East	Units	Scale Factor	Converg.
AA8700;SPC MO E	- 300,267.620	251,447.207	MT	0.99993336	+0 00 37.2
AA8700;UTM 15	- 4,268,632.652	719,339.488	MT	1.00019250	+1 34 06.9

AA8700!

- Elev Factor	x	Scale Factor	=	Combined Factor		
AA8700!SPC MO E	-	0.99998015	x	0.99993336	=	0.99991351
AA8700!UTM 15	-	0.99998015	x	1.00019250	=	1.00017265

AA8700

AA8700

SUPERSEDED SURVEY CONTROL

AA8700

AA8700	NAD 83(2007)-	38 32 20.70495(N)	090 29 00.23934(W)	AD(2002.00)	0
AA8700	ELLIP H (02/10/07)	126.540 (m)		GP(2002.00)	
AA8700	NAD 83(1997)-	38 32 20.70501(N)	090 29 00.24081(W)	AD()	1
AA8700	ELLIP H (02/17/00)	126.557 (m)		GP()	4 1
AA8700	NAD 83(1997)-	38 32 20.70597(N)	090 29 00.24092(W)	AD()	1
AA8700	NAD 83(1986)-	38 32 20.72063(N)	090 29 00.23810(W)	AD()	1

AA8700

AA8700. Superseded values are not recommended for survey control.

AA8700

AA8700. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

AA8700. See file dsdata.txt to determine how the superseded data were derived.

AA8700

AA8700_U.S. NATIONAL GRID SPATIAL ADDRESS: 15SYC1933968632(NAD 83)

AA8700

AA8700_MARKER: DD = SURVEY DISK

AA8700_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

AA8700_STAMPING: SL-59 1992

AA8700_MARK LOGO: MODNR

AA8700_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET

AA8700_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

AA8700+STABILITY: SURFACE MOTION

AA8700_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

AA8700+SATELLITE: SATELLITE OBSERVATIONS - September 08, 2005

AA8700

AA8700	HISTORY	- Date	Condition	Report By
AA8700	HISTORY	- 1992	MONUMENTED	MODNR
AA8700	HISTORY	- 20050908	GOOD	INDIV

AA8700

AA8700

STATION DESCRIPTION

AA8700

AA8700'DESCRIBED BY MO DEPT OF NAT RES 1992

AA8700'STATION, AZIMUTH MARKS AND REFERENCE TIES THE STATION IS A STANDARD
 AA8700'DNR GRS ALUMINUM DISK STAMPED---SL-59, 1992 SET IN A 12 IN. DIAMETER
 AA8700'CONCRETE POST THE UNDERGROUND STATION IS A STANDARD DNR GRS ALUMINUM
 AA8700'DISK STAMPED SL-59U, 1992 SET IN A MASS OF CONCRETE. THE STATION IS
 AA8700'LOCATED IN U.S.S. 1983 T44N, R5E ON THE SOUTH SIDE OF SOUTH HIGHWAY
 AA8700'DRIVE, 212 FT WEST OF THE MARITZ OVERPASS OF I-44, 8.0 FT (2.4 M)
 AA8700'SOUTH OF THE BACK OF CURB OF SOUTH HIGHWAY DRIVE, 21.6 FT (6.6 M)
 AA8700'SOUTH OF THE CENTER LINE OF SOUTH HIGHWAY DRIVE, 26.86 FT (8.19 M) SW
 AA8700'OF A NAIL AND SHINER IN A WRONG WAY SIGN POST, 212 FT WEST OF THE
 AA8700'ENTRANCE TO 5 PARKING LOT OF MARITZ COMPANY, 82.8 FT (25.2 M) NNE OF
 AA8700'THE CENTER BOLT OF FIRE HYDRANT, 8.29 FT (2.53 M) SOUTH OF A CUT CROSS
 AA8700'ON CURB, AND 2 FT (0.6 M) EAST OF A CARSONITE WITNESS POST THE AZIMUTH
 AA8700'MARK IS A STANDARD DNR GRS ALUMINUM DISK STAMPED---SL-59A 1992 SET IN
 AA8700'A 12 IN. DIAMETER CONCRETE POST IT IS IN SECTION 20, T44N, R5E ON THE
 AA8700'SOUTH SIDE OF SOUTH HIGHWAY DRIVE UNDER THE MARTIZ CO. WALKWAY
 AA8700'OVERPASS, .32 MILES (0.51 KM) EAST OF THE MARITZ OVERPASS OF I-44,
 AA8700'29.0 FT (8.8 M) SE OF THE CENTER LINE OF SOUTH HIGHWAY DRIVE, 7.3 FT
 AA8700'(2.2 M) SE OF THE EDGE OF PAVEMENT, 16.05 FT (4.89 M) SW OF A CUT
 AA8700'CROSS ON THE WEST END OF CURB OF TURN LANE, 40.6 FT (12.4 M) NW OF THE
 AA8700'NE CORNER OF PEDESTRIAN WALKWAY BUILDING, 39.0 FT (11.9 M) SOUTH OF
 AA8700'THE NW CORNER, 7.88 FT (2.40 M) SOUTH OF A CUT CROSS 0.7 FT (21.3 CM)

AA8700' INTO PAVEMENT, AND 2.0 FT (0.6 M) EAST OF A CARSONITE WITNESS POST
AA8700' STATION AND AZIMUTH MARK TO REACH TO REACH THE STATION FROM THE
AA8700' INTERSECTION OF I-44 AND 141 (MERAMEC STATION ROAD), GO SOUTH ON 141,
AA8700' GO UNDER I-44 AND TURN LEFT (EAST) ON SOUTH HIGHWAY DRIVE. GO EAST ON
AA8700' SOUTH HIGHWAY DRIVE FOR .73 MILES (1.17 KM) TO STATION ON THE RIGHT
AA8700' 212 FT WEST OF THE ENTRANCE TO MARITZ COMPANY PARKING LOT 5. TO REACH
AA8700' THE AZIMUTH MARK FROM THE STATION, CONTINUE EAST ON SOUTH HIGHWAY
AA8700' DRIVE FOR .32 MILES (0.51 KM) AND MARK ON THE RIGHT UNDER THE MARITZ
AA8700' COMPANY PEDESTRIAN WALKWAY OVER I-44. DATE OF REPORT 06-06-1995

AA8700

STATION RECOVERY (2005)

AA8700

AA8700

AA8700' RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2005 (BB)

AA8700' RECOVERED AS DESCRIBED

*** retrieval complete.

Elapsed Time = 00:00:03

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

PROGRAM = datasheet95, VERSION = 8.9

1 National Geodetic Survey, Retrieval Date = AUGUST 10, 2016

AA8720 *****

AA8720 DESIGNATION - SL 79

AA8720 PID - AA8720

AA8720 STATE/COUNTY- MO/ST LOUIS

AA8720 COUNTRY - US

AA8720 USGS QUAD - MANCHESTER (1993)

AA8720

*CURRENT SURVEY CONTROL

1-meter = 3.28083333 FT.

AA8720

AA8720* NAD 83(2011) POSITION- 38 32 13.34878(N) 090 30 40.50089(W) ADJUSTED

AA8720* NAD 83(2011) ELLIP HT- 97.781 (meters) (06/27/12) ADJUSTED

AA8720* NAD 83(2011) EPOCH - 2010.00

AA8720* NAVD 88 ORTHO HEIGHT - 128.8 (meters) 423. (feet) GPS OBS

422.57

AA8720

AA8720 NAVD 88 orthometric height was determined with geoid model GEOID93

AA8720 GEOID HEIGHT - -31.008 (meters) GEOID93

AA8720 GEOID HEIGHT - -30.994 (meters) GEOID12B

AA8720 NAD 83(2011) X - -44,575.015 (meters) COMP

AA8720 NAD 83(2011) Y - -4,995,386.241 (meters) COMP

AA8720 NAD 83(2011) Z - 3,952,307.431 (meters) COMP

AA8720 LAPLACE CORR - 0.37 (seconds) DEFLEC12B

AA8720

AA8720 Network accuracy estimates per FGDC Geospatial Positioning Accuracy

AA8720 Standards:

AA8720 FGDC (95% conf, cm) Standard deviation (cm) CorrNE

AA8720 Horiz Ellip SD_N SD_E SD_h (unitless)

AA8720 -----

AA8720 NETWORK 1.10 1.39 0.52 0.34 0.71 -0.13690970

AA8720 -----

AA8720 Click [here](#) for local accuracies and other accuracy information.

AA8720

AA8720

AA8720.The horizontal coordinates were established by GPS observations

AA8720.and adjusted by the National Geodetic Survey in June 2012.

AA8720

AA8720.NAD 83(2011) refers to NAD 83 coordinates where the reference frame has

AA8720.been affixed to the stable North American tectonic plate. See

AA8720.[NA2011](#) for more information.

AA8720

AA8720.The horizontal coordinates are valid at the epoch date displayed above

AA8720.which is a decimal equivalence of Year/Month/Day.

AA8720

AA8720.The orthometric height was determined by GPS observations and a

AA8720.high-resolution geoid model.

AA8720

AA8720.Significant digits in the geoid height do not necessarily reflect accuracy.

AA8720.GEOID12B height accuracy estimate available [here](#).

AA8720

AA8720.The X, Y, and Z were computed from the position and the ellipsoidal ht.

AA8720

AA8720.The Laplace correction was computed from DEFLEC12B derived deflections.

AA8720

AA8720.The ellipsoidal height was determined by GPS observations

AA8720.and is referenced to NAD 83.

AA8720

AA8720. The following values were computed from the NAD 83(2011) position.

AA8720

AA8720;	North	East	Units	Scale Factor	Converg.
AA8720;SPC MO E	- 300,040.743	249,019.178	MT	0.99993335	-0 00 25.2
AA8720;UTM 15	- 4,268,339.761	716,917.915	MT	1.00017949	+1 33 04.1

AA8720

AA8720! - Elev Factor x Scale Factor = Combined Factor

AA8720!SPC MO E - 0.99998466 x 0.99993335 = 0.99991801

AA8720!UTM 15 - 0.99998466 x 1.00017949 = 1.00016415

AA8720

SUPERSEDED SURVEY CONTROL

AA8720

AA8720	NAD 83(2007)-	38 32 13.34901(N)	090 30 40.50113(W)	AD(2002.00)	0
AA8720	ELLIP H (02/10/07)	97.802 (m)		GP(2002.00)	
AA8720	NAD 83(1997)-	38 32 13.34906(N)	090 30 40.50252(W)	AD()	1
AA8720	ELLIP H (02/17/00)	97.818 (m)		GP()	4 1
AA8720	NAD 83(1997)-	38 32 13.35007(N)	090 30 40.50263(W)	AD()	1
AA8720	NAD 83(1986)-	38 32 13.36472(N)	090 30 40.49996(W)	AD()	1

AA8720

AA8720. Superseded values are not recommended for survey control.

AA8720

AA8720. NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

AA8720. See file dsdata.txt to determine how the superseded data were derived.

AA8720

AA8720_U.S. NATIONAL GRID SPATIAL ADDRESS: 15SYC1691768339(NAD 83)

AA8720

AA8720_MARKER: DD = SURVEY DISK

AA8720_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

AA8720_STAMPING: SL-79 1992

AA8720_MARK LOGO: MODNR

AA8720_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET

AA8720_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

AA8720+STABILITY: SURFACE MOTION

AA8720_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

AA8720+SATELLITE: SATELLITE OBSERVATIONS - November 24, 2008

AA8720

AA8720 HISTORY - Date Condition Report By

AA8720 HISTORY - 1992 MONUMENTED MODNR

AA8720 HISTORY - 20050926 GOOD EDSI

AA8720 HISTORY - 20081124 GOOD INDIV

AA8720

STATION DESCRIPTION

AA8720

AA8720'DESCRIBED BY MO DEPT OF NAT RES 1992

AA8720'STATION, AZIMUTH MARKS AND REFERENCE TIES THE STATION IS A STANDARD
 AA8720'DNR GRS ALUMINUM DISK STAMPED---SL-79, 1992 SET IN A 12 IN. DIAMETER
 AA8720'CONCRETE POST THE UNDERGROUND STATION IS A STANDARD DNR GRS DISK
 AA8720'STAMPED SL-79U, 1992 SET IN A MASS OF CONCRETE. THE STATION IS 1.03
 AA8720'MILES (1.66 KM) WEST OF THE I-44 AND MO ROUTE 141 (MERAMEC STATION
 AA8720'RD.) INTERSECTION, 64.2 FT (19.6 M) WEST OF A NAIL AND SHINER IN A
 AA8720'POWER POLE, 31.0 FT (9.4 M) WEST OF THE CENTER LINE OF A GRAVEL ROAD,
 AA8720'25.0 FT (7.6 M) NORTH OF THE CENTER LINE OF THE NORTH OUTER ROAD, AND
 AA8720'1.05 FT (0.32 M) WEST OF A WITNESS POST THE AZIMUTH MARK IS A STANDARD
 AA8720'DNR GRS ALUMINUM DISK STAMPED---SL-79A 1992 SET IN A 12 IN. DIAMETER
 AA8720'CONCRETE POST IT IS LOCATED IN U.S.S. 880, T44N, R5E AND IS LOCATED
 AA8720'NORTH OF I-44 AND WEST OF MO ROUTE 141 (MERAMEC STATION ROAD) AND I-44
 AA8720'INTERSECTION .75 MILES, 23.5 FT (7.2 M) NORTH OF THE CENTER LINE OF
 AA8720'THE NORTH OUTER ROAD, 37.0 FT (11.3 M) EAST OF A GRAVEL ENTRANCE TO A
 AA8720'ROCK FILL AREA, 6.4 FT (2.0 M) SE OF A NAIL AND SHINER IN A POWER
 AA8720'POLE, AND 2.05 FT (0.62 M) SOUTH OF A WITNESS POST STATION AND AZIMUTH
 AA8720'MARK TO REACH TO REACH THE STATION FROM THE INTERSECTION OF I-44 AND
 AA8720'141 (MERAMEC STATION RD.), GO NORTH ON 141 FOR .17 MILES (0.27 KM) TO
 AA8720'THE NORTH OUTER ROAD WEST TAKE NORTH OUTER ROAD WEST FOR 1.03 MILES
 AA8720'(1.66 KM) TO THE STATION ON THE RIGHT. TO REACH THE AZIMUTH MARK FROM

AA8720'THE STATION GO EAST ON THE NORTH OUTER ROAD FOR .04 MILES (0.06 KM) TO
AA8720'A GRAVEL ENTRANCE ON THE LEFT TURN INTO ENTRANCE AND STOP. MARK IS ON
AA8720'THE RIGHT. DATE OF REPORT 06-06-1995

AA8720

AA8720

STATION RECOVERY (2005)

AA8720

AA8720'RECOVERY NOTE BY ENGINEERING DESIGN SOURCE 2005 (BB)

AA8720'RECOVERED AS DESCRIBED

AA8720

AA8720

STATION RECOVERY (2008)

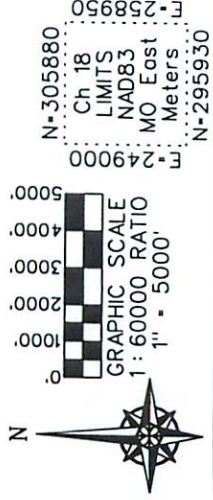
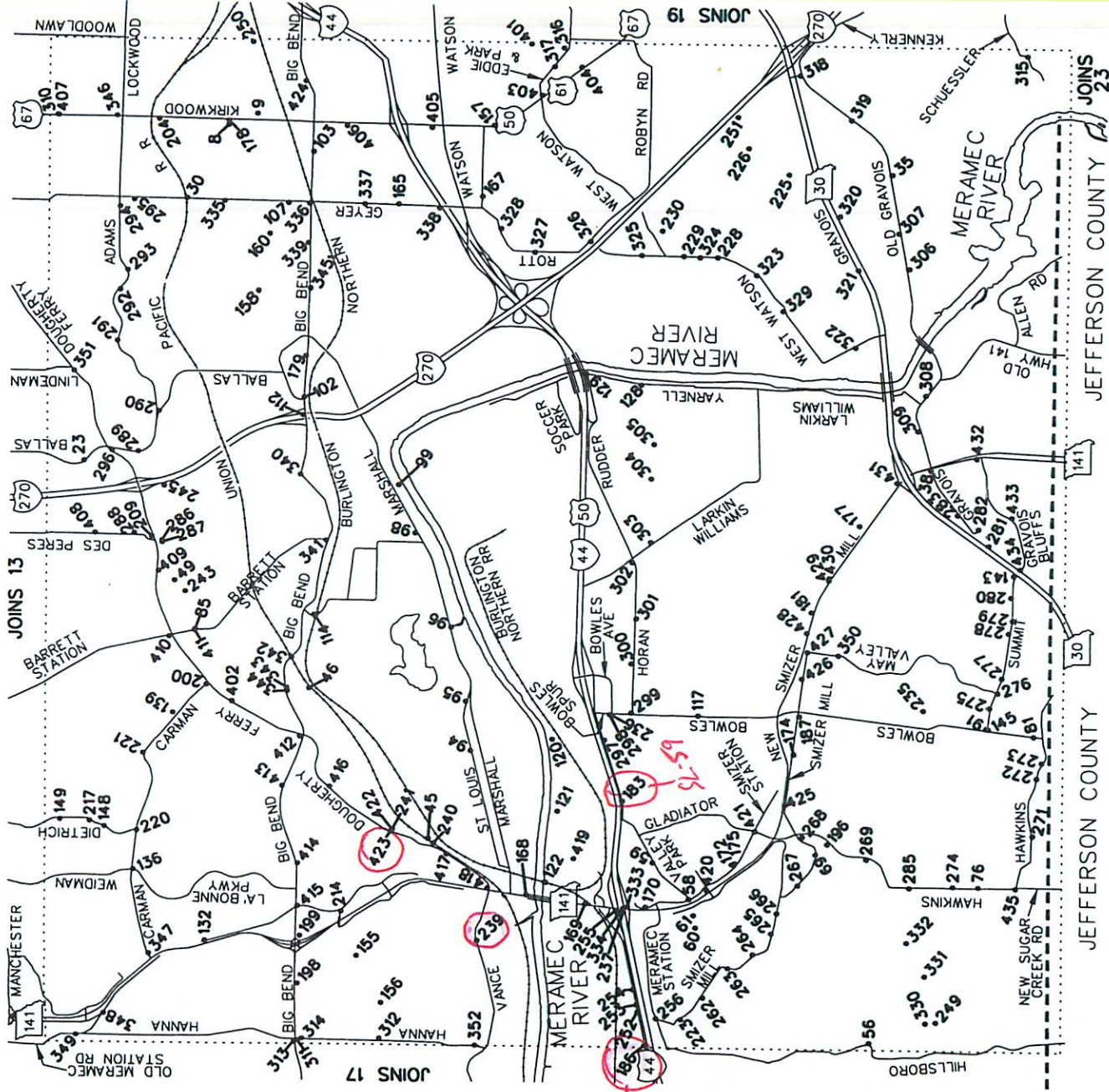
AA8720

AA8720'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2008 (MSS)

AA8720'RECOVERED IN GOOD CONDITION.

*** retrieval complete.

Elapsed Time = 00:00:03



(Rev: 10/30/2015)
 St Louis County, Missouri
 Benchmark System
CHAPTER 18
INDEX MAP
 (NEAR T44N-R5E)

BM Numbers on Chapter Index Maps are abbreviated.
 Full BM Numbers include Chapter and Bmmap Number.
 BM Number - ((CH x 1000) + Bmmap)
 [CH=Chapter Number]
 [Bmmap=Number on Map]
 Examples: Assuming Chapter 18
 BM on map as 2 - BM Number 18002.
 BM on map as 97 - BM Number 18097.
 BM on map as 526 - BM Number 18526.

St Louis County Benchmarks Chapter 18:

Rev: 10/30/2015

Refer to "Addendum 1" for summary of implementing NAVD88 as NAVD88(SLC2011a).

Refer to "Introduction" for general information and conditions of usage.

Benchmark positions are NEVER for use as horizontal survey control.

18179 NAVD88(SLC2011a) Elev = 626.31 FtUS (or) 190.899 Meter
 NGVD29 Elev = 626.68 FtUS
 "Standard Aluminum Disk" stamped SL-53 1992 Disk is set on the north side of Big Bend Road east of Hwy. I-270; 33' north of the centerline of Big Bend Road and 34' west of a 40 mph speed limit sign. Approximately 0.4 miles east of the intersection of Hwy I-270 and Big Bend Road.
 <NGS PID="AA8694", Designation="SL 53">
 SP MO East N=303388.2± E=255844.7± Meter - Published
 Rough NAD83 Lat=38.567180°±(N/+) Long=90.432932°±(W/-)

18181 NAVD88(SLC2011a) Elev = 467.38 FtUS (or) 142.458 Meter
 NGVD29 Elev = 467.72 FtUS
 "Standard Aluminum Disk" stamped SL-57 1992 Disk is set at the northeast corner of Littleton Court and Highway 141; 17' east of the centerline of Littleton Court and 35' north of the centerline of New Smizer Mill Road.
 <NGS PID="AA8698", Designation="SL 57">
 SP MO East N=298419.2± E=253332.3± Meter - Published
 Rough NAD83 Lat=38.522427°±(N/+) Long=90.461786°±(W/-)

18183 NGVD29 Elev = 517.14 FtUS
 "Standard Aluminum Disk" stamped SL-59 1992 Disk is set on the South Highway Drive of Hwy. I-44 212' west of the centerline of the entrance to the Maritz parking lot; 21' south of the centerline of the South Highway Drive.
 <NGS PID="AA8700", Designation="SL 59">
 SP MO East N=300267.6± E=251447.2± Meter - Published
 Rough NAD83 Lat=38.539084°±(N/+) Long=90.483400°±(W/-)

SL-59

#18186 NAVD88(SLC2011a) Elev = 422.57' FtUS (or) 128.799 Meter
NGVD29 Elev = 422.82 FtUS
 Standard DNR aluminum disk stamped SL-79 situated north of the North Outer Road along the north side of I-44 approximately 1 mile west of the intersection of Highway 141 and the North Outer Road, south of property addressed as #427 W. Outer Road and platted as Lot "B" of "WILLIAMS CREEK SUBD OF PEERLESS PARK" (Plat Book 355 Page 537). Benchmark is roughly 0.7 feet below ground level, 25 feet north of the centerline of North Outer Road, 100 feet southeast of the southeast corner of chain link fence around small sewer treatment plant, and 118 feet west of a fire hydrant.
 <NGS PID="AA8720", Designation="SL 79">
 SP MO East N=300040.8± E=249019.2± Meter - Published
 Rough NAD83 Lat=38.537042°±(N/+) Long=90.511250°±(W/-)

SL-79
 Δ 0.25
 NAVD 88 lower
 THAN NGVD 29

St Louis County Benchmarks Chapter 18:

Rev: 10/30/2015

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"Standard Aluminum Disk" stamped SL-57 1992 Disk is set at the northeast corner of Littleton Court and Highway 141; 17' east of the centerline of Littleton Court and 35' north of the centerline of New Smizer Mill Road.
<NGS PID="AA8698", Designation="SL 57">
SP MO East N=298419.2± E=253332.3± Meter - Published
Rough NAD83 Lat=38.522427°±(N/+) Long=90.461786°±(W/-)

18183 NGVD29 Elev = 517.14 FtUS
"Standard Aluminum Disk" stamped SL-59 1992 Disk is set on the South Highway Drive of Hwy. I-44 212' west of the centerline of the entrance to the Maritz parking lot; 21' south of the centerline of the South Highway Drive.
<NGS PID="AA8700", Designation="SL 59">
SP MO East N=300267.6± E=251447.2± Meter - Published
Rough NAD83 Lat=38.539084°±(N/+) Long=90.483400°±(W/-)

SL-59

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NGVD29 Elev = 422.82 FtUS
Standard DNR aluminum disk stamped SL-79 situated north of the North Outer Road along the north side of I-44 approximately 1 mile west of the intersection of Highway 141 and the North Outer Road, south of property addressed as #427 W. Outer Road and platted as Lot "B" of "WILLIAMS CREEK SUBD OF PEERLESS PARK" (Plat Book 355 Page 537). Benchmark is roughly 0.7 feet below ground level, 25 feet north of the centerline of North Outer Road, 100 feet southeast of the southeast corner of chain link fence around small sewer treatment plant, and 118 feet west of a fire hydrant.
<NGS PID="AA8720", Designation="SL 79">
SP MO East N=300040.8± E=249019.2± Meter - Published
Rough NAD83 Lat=38.537042°±(N/+) Long=90.511250°±(W/-)

SL-79
Δ 0.25
NAVD 88 lower
THAN NGVD29

St Louis County Benchmarks Chapter 18:

Rev: 10/30/2015

Refer to "Addendum 1" for summary of implementing NAVD88 as NAVD88(SLC2011a).
Refer to "Introduction" for general information and conditions of usage.

Benchmark positions are NEVER for use as horizontal survey control.

- 18235 NAVD88(SLC2011a) Elev = 500.36 FtUS (or) 152.510 Meter
NGVD29 Elev = 500.54 FtUS
RM 158 FEMA PANEL 288; Chiseled "Sq" on top of northeast corner of concrete curb inlet cover, 30 feet west of Green Knoll Drive culvert for Fenton Creek, approximately 180' east of Green Knoll and Green Hurst.
SP MO East N=297307± E=252369± Meter - Estimated
Rough NAD83 Lat=38.512410°±(N/+) Long=90.472836°±(W/-)
- 18236 NGVD29 Elev = 462.00 FtUS
RM 288 FEMA PANEL 286; Cut "Sq" on southwest wingwall of bridge on Bowles Avenue over Yarnell Creek.
SP MO East N=300384± E=252298± Meter - Estimated
Rough NAD83 Lat=38.540131°±(N/+) Long=90.473640°±(W/-)
- 18237 NGVD29 Elev = 436.87 FtUS
RM 409 FEMA PANEL 286; Standard tablet stamped "69-75 S.L.C." but scraped so as to be illegible in December 2011. Tablet is under the bridge near the southwest corner of west abutment at the overpass of Hwy 141 and east bound I-44; approximately 2.5 feet north of the centerline of the southernmost steel beam at west end of I-44 bridge span and at top of concrete slope protection under bridge on the west side of Hwy 141. The benchmark is no longer accessible for routine differential leveling because only a foot and a half of vertical clearance is available above the tablet, and the steel beams effectively prevent observation from most angles. Tablet may be observable by total station trig leveling using a peanut prism. [Note: St Louis County Highway Department Survey Section did not verify the previously published elevation, and may discontinue publication of this benchmark in the future.]
SP MO East N=300248± E=250344± Meter - Estimated
Rough NAD83 Lat=38.538909°±(N/+) Long=90.496054°±(W/-)
- 18239 ~~NAVD88(SLC2011a) Elev = 421.68 FtUS (or) 128.527 Meter~~
~~NGVD29 Elev = 421.95 FtUS~~
RM 496 FEMA PANEL 286; Chiseled "Sq" on top of the wingwall on the southeast corner of the Vance Road bridge over Fishpot Creek.
SP MO East N=301687± E=250047± Meter - Estimated
Rough NAD83 Lat=38.551873°±(N/+) Long=90.499461°±(W/-)

*Δ 0.27
NAVD88 lower
than NGVD29*

St Louis County Benchmarks Chapter 18:

Rev: 10/30/2015

Refer to "Addendum 1" for summary of implementing NAVD88 as NAVD88(SLC2011a).
Refer to "Introduction" for general information and conditions of usage.

Benchmark positions are NEVER for use as horizontal survey control.

- 18420 NAVD88(SLC2011a) Elev = 547.05 FtUS (or) 166.742 Meter
NGVD29 Elev = 547.34 FtUS
Cut square on the east side of the concrete base of traffic signal mast supporting the signal arm controlling traffic along northbound Highway 141 and situated in the northeast quadrant of Highway 141 and Centurion Drive, roughly 53' east of centerline Highway 141 and 60' north of centerline Centurion Drive.
SP MO East N=299430± E=250570± Meter - Estimated
Rough NAD83 Lat=38.531539°±(N/+) Long=90.493462°±(W/-)
- 18421 NAVD88(SLC2011a) Elev = 590.44 FtUS (or) 179.965 Meter
NGVD29 Elev = 590.71 FtUS
Cut "U" on curb at south bull nose rounding of triangular traffic island situated south of Smizer Station Road, west of Gladiator Drive and east of the right turn lane from eastbound Smizer Station Road onto southbound Gladiator Drive, roughly 21' west of centerline Gladiator Drive and 36' south of centerline Smizer Station Road.
SP MO East N=298957± E=251161± Meter - Estimated
Rough NAD83 Lat=38.527278°±(N/+) Long=90.486685°±(W/-)
- 18422 NAVD88(SLC2011a) Elev = 425.73 FtUS (or) 129.764 Meter
NGVD29 Elev = 426.01 FtUS
Found cross on the east end of the concrete curb or barrier wall near a metal railing along the north side of bridge pavement on a private bridge (gated at the west end) for Lakehill Road over Grand Glaze Creek, roughly 80' east of the centerline of Forest Avenue and 50' north of the easterly projection of Highland Avenue.
SP MO East N=302520± E=251146± Meter - Estimated
Rough NAD83 Lat=38.559377°±(N/+) Long=90.486851°±(W/-)
- 18423 NAVD88(SLC2011a) Elev = 426.56 FtUS (or) 130.015 Meter
NGVD29 Elev = 426.83 FtUS
Cut "U" in the center west end of the concrete curb or barrier wall near a metal railing along the north side of bridge pavement on a private bridge (gated at the west end) for Lakehill Road over Grand Glaze Creek, roughly 42' east of the centerline of Forest Avenue and 50' north of the easterly projection of Highland Avenue.
SP MO East N=302523± E=251135± Meter - Estimated
Rough NAD83 Lat=38.559404°±(N/+) Long=90.486977°±(W/-)

$\Delta = 0.27$
NAVD88
lower than
NGVD29



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Five German Blades
Zero Upchargin



HARRY'S

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- Forecasts
- Travel
- Tools
- International

Meramec River - Gauge VLLM7
Valley Park, MO

Lat: 38.55N, Lon: 90.50W

Gauge ID search...

GO

[Large Map](#) [US Map](#)

Critical Stages			
14' -Action	16' -Flood	19' -Moderate Flood	25' -Major Flood

Latest Observation

Updated: 11:00:00 AM CDT TUE AUG 9 2016

Stage: 5.75 ft

Forecast

Forecast not available for this location.



HARRY'S
Five German Blades
Zero Upchargin

TRY HARRY'S

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that doesn't take over your web site
Click here

Taverne, MO
At: 2:53 PM EDT
Healy County
MO
Sun 9:23 AM
www.weatherforyou.com

- Observation History
- Hydrograph
- Flood Impacts
- Historical Events
- Nearby Gauges

Date CDT	Stage ft
08/09/2016 11:00 am	5.75
08/09/2016 10:00 am	5.90
08/09/2016 09:00 am	5.93
08/09/2016 07:30 am	5.94
08/09/2016 07:00 am	6.02
08/09/2016 06:00 am	6.24
08/09/2016 05:00 am	5.97
08/09/2016 04:00 am	6.11
08/09/2016 03:00 am	6.17
08/09/2016 02:00 am	6.16
08/09/2016 01:00 am	5.71
08/09/2016 12:00 am	6.04
08/08/2016 11:00 pm	5.84
08/08/2016 10:00 pm	5.81
08/08/2016 09:00 pm	5.56
08/08/2016 08:00 pm	5.61
08/08/2016 07:00 pm	5.37
08/08/2016 06:00 pm	5.35
08/08/2016 05:00 pm	5.17
08/08/2016 04:00 pm	5.30
08/08/2016 03:00 pm	5.22
08/08/2016 02:00 pm	4.94
08/08/2016 01:00 pm	4.78
08/08/2016 12:00 pm	4.77
08/08/2016 11:00 am	4.64
08/08/2016 10:00 am	4.43
08/08/2016 09:00 am	4.35
08/08/2016 08:00 am	4.15
08/08/2016 07:00 am	3.88
08/08/2016 06:00 am	3.59
08/08/2016 05:00 am	3.41

Data provided by NOAA Advanced Hydrologic Prediction Service

FAST
ASPIRIN-LIKE
Joint movement
GLUCOSAMINE
EXTRA STRENGTH

- > Easy to take
- > Easy to absorb

Flowmeter for water

and any other conductive liquid. Three decades of reliable magmeters

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Dave Skornia

From: Dave Skornia
Sent: Tuesday, August 02, 2016 7:33 AM
To: Dave Skornia
Subject: Sent from Snipping Tool

Meramec River - Gauge VLLM7 Valley Park, MO

Lat: 38.55N, Lon: 90.50W

[Large Map](#)[US Map](#)

Critical Stages			
14' -Action	16' -Flood	19' -Moderate Flood	25' -Major Flood

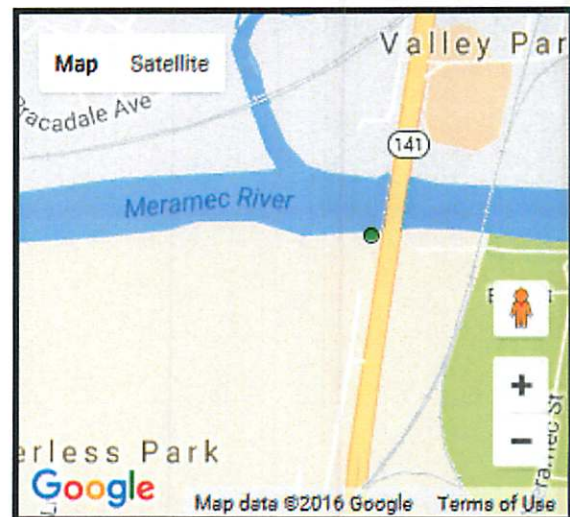
Latest Observation

Updated: 6:00:00 AM CDT TUE AUG 2 2016

Stage: -0.71 ft

Forecast

Forecast not available for this location.



<http://www.weatherforyou.com/reports/index.php?forecast=rivers&gauge=VLLM7>

U.S. ARMY CORPS OF ENGINEERS, ST. LOUIS DISTRICT, RIVER & RESERVOIR DAILY REPORT
(PHONE: 800-432-1208)

NOTE: ALL WATER LEVELS GIVEN IN STAGE, UNLESS INDICATED (GAGE ZERO + STAGE = ELEVATION {el}) FORECASTS INCLUDE OBSERVED PRECIP UP TO 6AM TODAY + EXPECTED PRECIP TO 6AM TOMORROW ONLY.

LAST MODIFIED: Tuesday - August 2, 2016 7:25 AM

<http://mvs-wc.mvs.usace.army.mil>

NGVD 29

River Mile	Gage Station	6am Levels	24hr Chg	National Weather Service River Forecast			Flood Level	Gage Zero	Record Level	Record Date
				Next 3 days 08/03	08/04	08/05				
MISSISSIPPI RIVER										
309.0	Hannibal	13.7	-0.1	13.6	13.3	13.0	08/01/16 22:03	16.0	449.43	31.80 7-16-93
301.2	L&D 22 TW	12.2	-0.2	12.0	11.6	11.0	08/01/16 10:18	16.0	446.10	29.58 7-25-93
282.9	Louisiana	12.8	-0.1	12.5	12.3	12.2	08/01/16 10:18	15.0	437.33	28.40 7-28-93
273.5	L&D 24 HW (elev)	445.6	0.1						421.81	
273.2	L&D 24 TW	22.8	-0.2	22.4	21.9	21.4	08/01/16 10:18	25.0	421.81	37.70 7-29-93
260.3	Mosier Landing (elev)	439.6	-0.1					441.0	400.00	454.30 7-29-93
241.5	L&D 25 HW (elev)	430.6	-0.1						407.00	
241.2	L&D 25 TW	22.6	-0.1	22.1	21.6	21.1	08/01/16 10:18	26.0	407.00	39.60 8-1-93
218.6	Grafton	15.7	0.0	15.8	15.7	15.7	08/01/16 22:03	18.0	403.79	38.20 8-1-93
201.1	Mel Price L&D HW (elev)	414.4	0.6						395.48	
200.5	Mel Price L&D TW	12.2	-0.1	12.7	13.4	13.6	08/01/16 22:03	21.0	395.48	42.70 8-1-93
180.0	St. Louis	15.4	-0.4	17.5	19.7	20.7	08/01/16 22:03	30.0	379.94	49.58 8-1-93
136.0	Brickeys Landing	18.0	-0.1					26.0	357.78	47.00 8-5-93
109.9	Chester	18.1	-0.1	18.3	19.8	21.6	08/01/16 22:03	27.0	341.05	49.70 8-7-93
52.1	Cape Girardeau	23.4	-0.1	23.5	24.2	25.5	08/01/16 09:56	32.0	304.65	48.86 1-1-16
43.7	Thebes	22.3	-0.2					33.0	300.00	47.74 1-2-16
20.2	Thompson Landing	-M-						39.0	280.00	54.49 1-3-16
2.0	Birds Point	23.6	-0.1					38.0	274.53	58.33 5-2-11
ILLINOIS RIVER										
263.1	Morris	5.5	-0.9	5.6	5.5	5.4	08/01/16 22:03	13.0	478.50	24.91 4-19-13
224.7	La Salle	13.0	-1.4	12.8	12.3	12.1	08/01/16 22:03	20.0	430.00	34.44 4-20-13
164.6	Peoria	-M-		11.7	11.2	11.9	08/01/16 22:03	18.0	428.40	29.35 4-23-13
88.6	Beardstown	11.6	-0.3	11.3	11.0	10.1	08/01/16 22:03	14.0	419.90	29.81 4-27-13
70.8	Meredosia (elev)	9.7 (427.7)	-0.2	9.5	9.2	8.9	08/01/16 22:03	17.0	418.00	28.83 7-2-15
61.3	Valley City	8.4	-0.2	8.1	7.9	7.6	08/01/16 22:03	14.0	418.00	27.00 5-26-43
56.0	Florence	25.8	-0.1					31.0	400.00	43.60 8-1-93
21.5	Hardin	21.3	-0.0	21.2	21.1	21.0	08/01/16 22:03	25.0	400.00	42.30 8-3-93
CUIVRE RIVER										
20.0	Troy	6.3	-0.1					21.0	450.27	33.00 4-12-94
MISSOURI RIVER										
97.9	Hermann	14.1	5.7	15.8	16.7	15.8	08/01/16 10:01	21.0	481.56	36.3 7-31-93
67.0	Washington	9.9	4.5	11.2	13.2	13.1	08/01/16 10:01	20.0	457.56	35.40 7-31-93
27.9	St. Charles	13.9	1.4	16.1	18.4	19.2	08/01/16 10:01	25.0	413.59	39.6 8-2-93
MERAMEC RIVER										
117.0	Sullivan	3.4	0.0					11.0	581.82	32.3 12-4-82
13.4	Union - Bourbeuse R.	1.9	-0.5					15.0	488.58	34.31 12-29-15
50.5	Pacific	-0.4	0.3					15.0	432.53	33.42 12-30-15
34.1	Eureka	4.1	0.1					18.0	404.18	46.06 12-30-15
14.1	Byrnesville - Big R.	3.7	-0.2					16.0	433.69	30.2 8-21-15
21.4	Valley Park	-0.7	0.2					16.0	392.92	44.11 12-31-15
6.0	Arnold	12.5	-0.5					24.0	373.21	47.26 12-31-15
OHIO RIVER										
42.8	Paducah	16.8	0.6	14.6	14.1	13.7	08/01/16 09:56	39.0	286.30	62.4 2-2-37
2.0	Cairo	26.1	-0.1	25.5	25.1	24.8	08/01/16 09:56	40.0	270.47	61.72 5-2-11
KASKASKIA RIVER										
135.7	Vandalia	5.7	0.5					18.0	453.30	27.88 4-19-13
18.6	Red Bud (elev)	369.0	0.0					374.0	300.00	394.83 1-2-16
0.8	L&D HW (elev)	368.9	0.0					373.0	300.00	394.4 8-6-93
0.8	L&D TW (elev)	363.6	-0.1					373.0	300.00	394.4 8-6-93

BIG MUDDY RIVER

86.6	Plumfield	9.2	0.3	20.0	353.24	31.8	5-1-96
36.6	Murphysboro	10.4	1.1	22.0	335.50	42.0	5-15-61

Lake	Midnight		Storage Utilized Consr Flood	Precip (in.)	Yesterdays Inflow (dsf)	Controlled Outflow (cfs)		Seasonal Rule Curve (ft.)	Pool Forecast		Record Level	Record Date	
	Pool Level (elev)	24hr Chg				Midnight	Evening		Crest	Date			
Shelbyville	600.25	-0.11	100.0	1.3	0.00	150	580	380	599.7		620.26	6-29-74	
Carlyle	445.24	-0.04	100.0	0.9	0.14	1490	1640	1640	445		459.80	5-18-02	
Rend	406.96	0.01	100.0	36.8	0.41	120	270	270	405		413.83	5-19-95	
Wappapello	360.31	-0.04	100.0	6.3	0.00	1030	1190	1190	359.74		400.04	5-3-11	
Mark Twain	605.62	-0.35	98.5	0.0	0.08	20	2910	50	606	611.0	08/05	640.36	7-30-08

Lake level and discharges in red/bold exceed arbitrary impact levels.

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