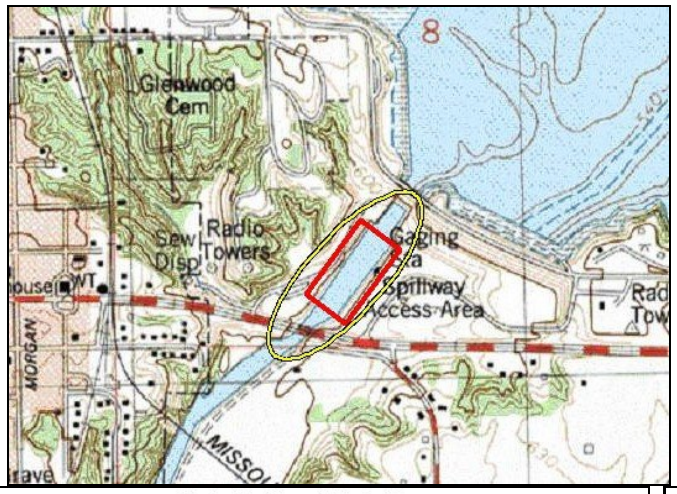
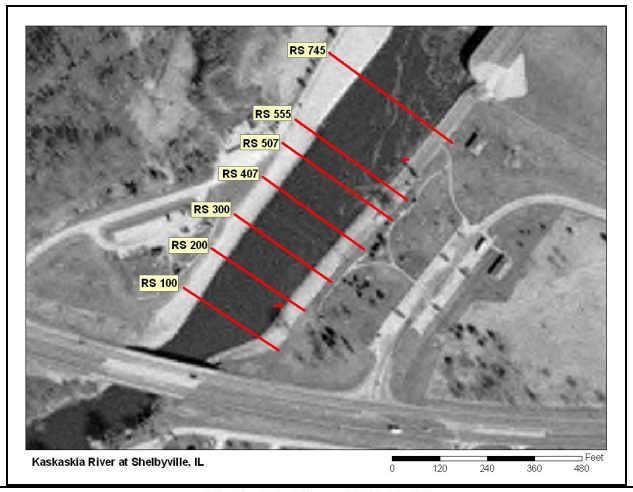
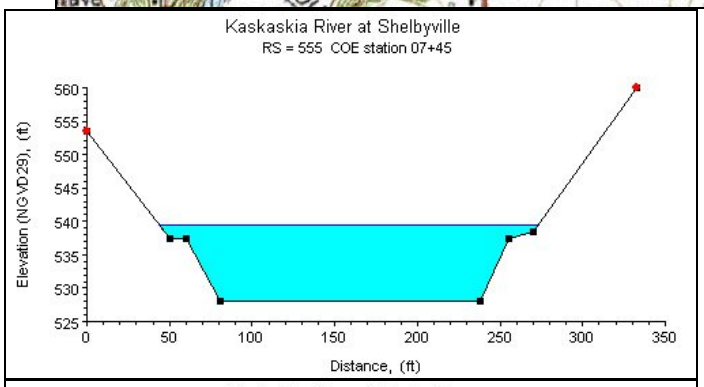
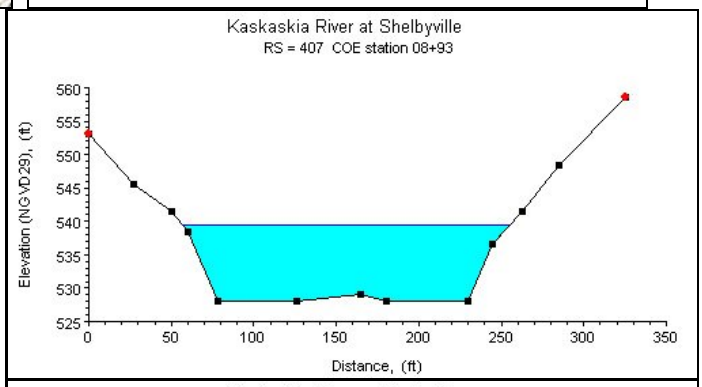
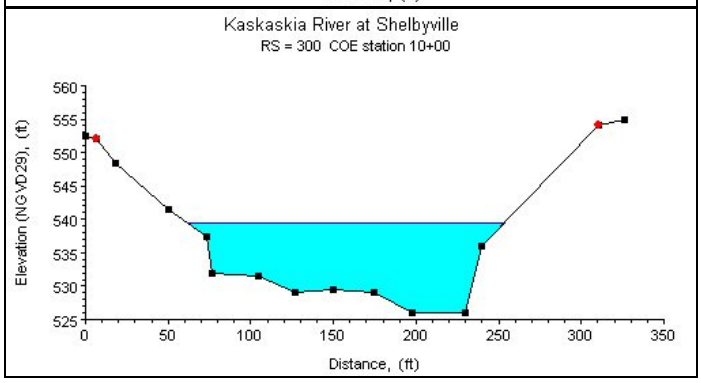
Kaskaskia River at Shelbyville, IL

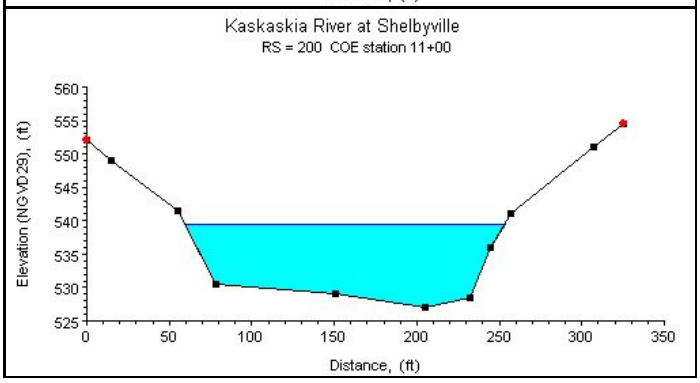












Study Reach.--The channel reach under consideration is constructed with riprap on both bank. The study reach, approximately 600 ft long , extends from upstream of the gage house to the upstream side of the State Highway 16 Bridge, as shown in the quadrangle map on the top left. Seven surveyed cross sections are available to describe the channel geometries. The channel alignment, approximate variations in channel width and bank conditions, and locations of surveyed cross sections are shown in the aerial photo on the top right. Cross-sectional geometries vary gradually and continuously from upstream to downstream. Seven surveyed cross sections (surveyed by the U.S. Army Corps of Engineers 1980) are available to describe channel geometry. The general shapes of cross sections in the study reach are illustrated with four selected cross section, (see plots above).

Gage Location.--Lat 39°24'26", long 88°46'53" (revised WY 2000), in SE1/4 SW1/4 sec.8, T.11N., R.4E., Shelby County, on left bank 700 ft upstream from bridge on State Highway 16 in Shelbyville, 700 ft downstream from

Shelbyville dam, 0.5 mi upstream from railroad bridge, and 7 mi upstream from Robinson Creek, and at river mi 197.5. The USGS streamgage-station number is 05592000.

Drainage Area.--1,054 sq mi.

Gage Datum and Elevations of Reference Points.--Datum of gage is 530.00 ft. Reference point. RP-4, is two file marks on the top of the upstream side of the ladder at the cleanout doorsill of the stilling well at the USGS station, elevation=554.935 ft; reference point for n-value study, RP-N1, is the top of the lag bolt on the streamward side of the downstream, streamward post of the observation deck 450 ft downstream of the gage, elevation=547.31 ft; RP-N2 is the top of the nut on concrete anchor bolt set in the downstream face of the concrete guardrail on the bridge for the east bound lanes of State Highway 16 at station number 122, elevation=565.834 ft. All elevations are in NGVD 1929 convention.

Stage, Discharge Measurements, and Computed n-Values.--Water-surface elevations were measured at the gage house and RP-Ns at midway, and downstream of the study reach for each discharge measurement. Corresponding water-surface slopes were obtained by dividing the differences in water-surface elevations by the distance between the selected locations. Discharge measurements were made using the conventional current meter or tethered boat acoustic Doppler current profiler (ADCP). Because this site has stable stage-discharge rating curve, discharge for an event could be determined from the rating curve if the surveyed water stage is within the range of stable rating. The computed n-values are listed in the following table. Whenever possible, the computed n-values are associated with a photo taken at the time of the measurement.

Date of Observation	Discharge (ft^3/s)	Average Cross Section Area (ft^2)	Hydraulic Radius (ft)	Mean Velocity (ft/s)	Slope	Coefficient of Roughness *n*
11/21/2003	724.0	1709.8	8.70	0.42	0.000023	0.071
7/21/2004	988.0	1831.5	9.09	0.54	0.000023	0.056
4/19/2004	1490.0	2081.5	9.82	0.71	0.000034	0.053
1/6/2004	2880.0	2780.6	11.51	1.04	0.000115	0.078
1/6/2004	2930.0	2806.5	11.57	1.05	0.000115	0.077
1/13/2004	3110.0	2915.8	11.82	1.07	0.000115	0.076
1/16/2004	3280.0	2903.1	11.79	1.13	0.000092	0.063
4/17/2006	3775.0	3050.3	12.12	1.24	0.000082	0.070

05592000 Kaskaskia River at Shelbyville, IL 04/17/06
Looking upstream from observation deck

05592000 Kaskaskia River at Shelbyville, IL 03/05/04
Looking Downstream

05592000 Kaskaskia River at Shelbyville, IL
Low flow, looking Downstream
06/15/04

05592000 Kaskaskia River at Shlebyville, IL
Looking Downstream from gage house
01/06/04
n = 0.077

05592000 Kaskaskia River at Shlebyville, IL
Looking Upstream from bridge
01/06/04
n = 0.077

05592000 Kaskaskia River at Shelbyville, IL
Looking Downstream from gage house
01/13/04
n = 0.076

05592000 Kaskaskia River at Shelbyville, IL
Looking Downstream
01/16/04
n = 0.063

05592000 Kaskaskia River at Shelbyville, IL
Looking downstream from observation deck
04/17/06

Description of Channel.--This channel is constructed with riprap paved banks. Bed materials consist of boulders and cobbles and bank material consists of boulder and cobble sized riprap. The banks are about 30 ft high and have a top width of about 325 ft. The cross-sectional shape is trapezoidal with a bottom width approximately 150 ft. The study reach is straight.

Floods.--Maximum stage during period of record, 22.37 ft (discharge, 25,900 ft^3/s) June 29, 1957. Maximum daily discharge since construction of Shelbyville Reservoir, 5,580 ft^3/s on Mar. 22, 1998, gage height, 12.99 ft, datum then in use. Maximum stage since construction of Shelbyville Reservoir, 13.16 ft, Mar. 20, 1982, datum then in use. Flood of June 1, 2002, gage height 17.65 ft, present datum, discharge, 4,920 ft^3/s.

Estimated n-Values using Cowan s Approach.--0.09