

Midwest Technology Assistance Center
Groundwater Resource Assessment for Small Communities

**Groundwater Availability
At
Stewardson
(Shelby County)**

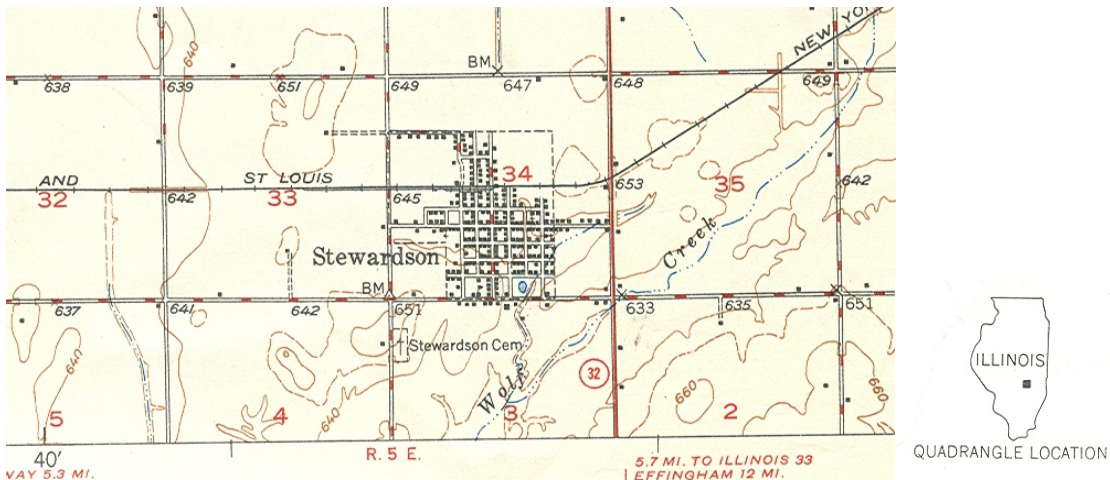
Project Overview

This project is an outgrowth of the Public Service Program of the Center for Groundwater Science (CGS) at the Illinois State Water Survey. For over 50 years, the CGS has provided groundwater information to any requesting individual, commercial facility or public water facility. Groundwater resource assessments have been an integral part of this public service and have been undertaken for thousands of individuals and facilities throughout its history. Community groundwater supplies that have been identified as potentially “deficient” are the targets for this project. The criterion used for determining community deficiency were; 1) Water Supply and Demand (operating time), 2) Aquifer Limitation, 3) Well Specific Capacity, and 4) Facility History. The Village of Stewardson has been identified as a target community for groundwater assessment through this project.

Project Goal

To provide a resource tool of pertinent groundwater information to each target facility. This document describes a summary of historic information, current conditions and the potential for expansion of the water supply of Stewardson.

Stewardson (Shelby County)



The Village of Stewardson (Facility Number 1730400) utilizes two active community water supply wells. Well Nos. 1 (Illinois EPA No. 45181) and 3 (Illinois EPA No. 01209) distribute 58,100 gallons per day to 350 service connections which serve an estimated population of 747.

Stewardson was determined to be “Adequate” by the project criteria and this report serves as a summary of information should they need to increase their current supply. The shallow depth of Well No. 1 (50 feet) included this facility within the study.

Historic Information

Background Well Information

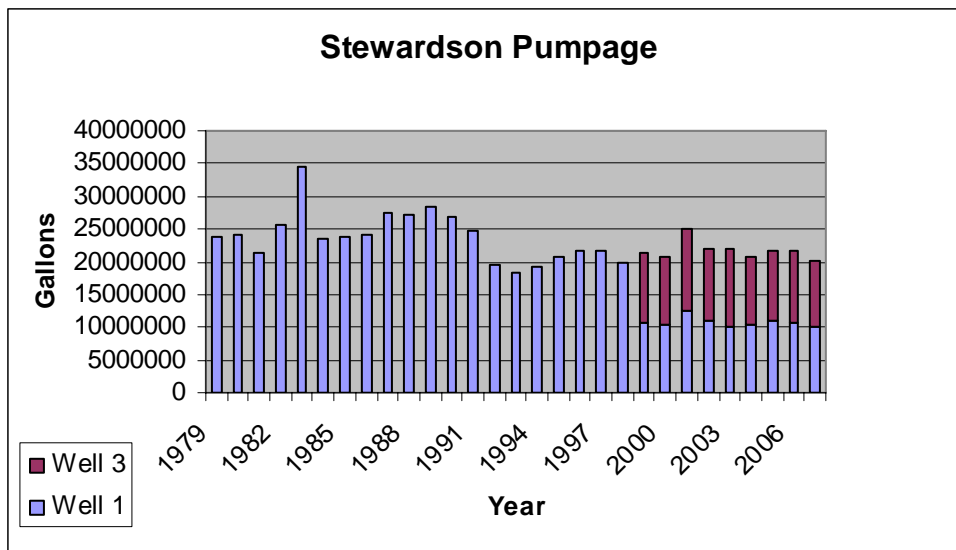
Well No. 1

Constructed within sand and gravel in 1955 to a depth of 50 feet, the well is located in Section 35, T.10N., R.5E., Shelby County. A drawdown of 4.85 feet was reported while pumping at a rate of 150 gpm for 6 hours. The nonpumping water level was 9.40 feet and the calculated specific capacity was 30.93 gpm/ft., upon construction.

Well No. 3 (Locally Well No. 2)

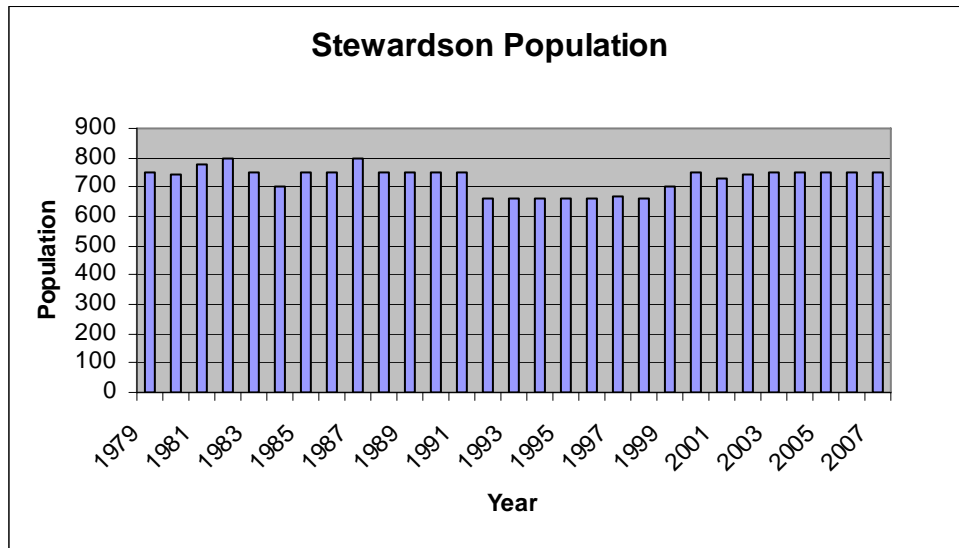
Constructed within sand and gravel in 1998 to a depth of 52 feet, the well is located in Section 35, T.10N., R.5E., Shelby County. A drawdown of 5.03 feet was reported while pumping at a rate of 53 gpm for 2.5 hours. The nonpumping water level was 18.23 feet and the calculated specific capacity was 10.54 gpm/ft., upon construction.

Background Pumpage Information



Source: ISWS Illinois Water Inventory Program

Historic Population Information



Source: ISWS Illinois Water Inventory Program

Regional Information

Resources within the Stewardson area

Domestic Groundwater Supplies

The available regional data indicate that groundwater for domestic and farm use in this part of Illinois is obtained from mainly large-diameter bored and drilled wells finished within the unconsolidated materials, as well as from small-diameter drilled wells finished within the shallow bedrock. The bored and drilled wells within the unconsolidated materials range from 25 to 50 feet deep. The small-diameter drilled wells within the bedrock range in depth from about 150 to 200 feet deep and tap a shallow sandstone unit. The wells are reported as low-yielding but sufficient for domestic home supplies.

Municipal Groundwater Supplies

There is one town within the local area of Stewardson that uses groundwater as their source; the Village of Strasburg, located to the northeast in Shelby County.

The Village of Strasburg uses two wells (No. 3 and No. 101) reported to be finished within sand and gravel at depths of 57 and 50 feet. The wells are rated at 135 and 87 gpm, respectively.

Figures 1 and 2 picture the ISWS Potential Yield maps for sand and gravel and bedrock aquifers in Illinois, respectively. The pertinent counties for Stewardson are highlighted. Figure 1 indicates that sand and gravel deposits are

very limited within the local Stewardson area. The bedrock map (Figure 2) indicates that bedrock deposits suitable for development are very limited throughout the area. Figures 3 and 4 present the probability of occurrence of the sand and gravel and the water-yielding character of the shallow bedrock for the Stewardson area as depicted in the Illinois State Geologic Survey Circular 225, *Groundwater Geology in South-Central Illinois* (Selkregg, et al., 1957). Figure 3 indicates "Fair to Good," possibilities for the occurrence of water-bearing sand and gravel deposits locally. Figure 4 indicates low-yielding shales and sandstone units directly beneath the drift and only small supplies are generally available from these shallow bedrock units. The domestic well construction records verify these map outlooks.

Groundwater Availability Summary

The available information indicates that, although the sand and gravel deposits the village currently uses are local and variable, they are capable of providing for the village with their water needs now and into the future. Should Stewardson need to expand and the town elects to drill another well, exploration of the same general area is recommended, however, care should be taken in properly spacing any new well away from the current wells to ensure drawdown interference is minimal.

References

- Selkregg, L.F., W.A. Pryor, and J.P. Kempton. 1957.
Groundwater Geology in South-Central Illinois. A Preliminary Geologic Report. Illinois State Geological Survey Circular 225.

Estimated Potential Yields of Sand and Gravel Aquifers in Stewardson Area

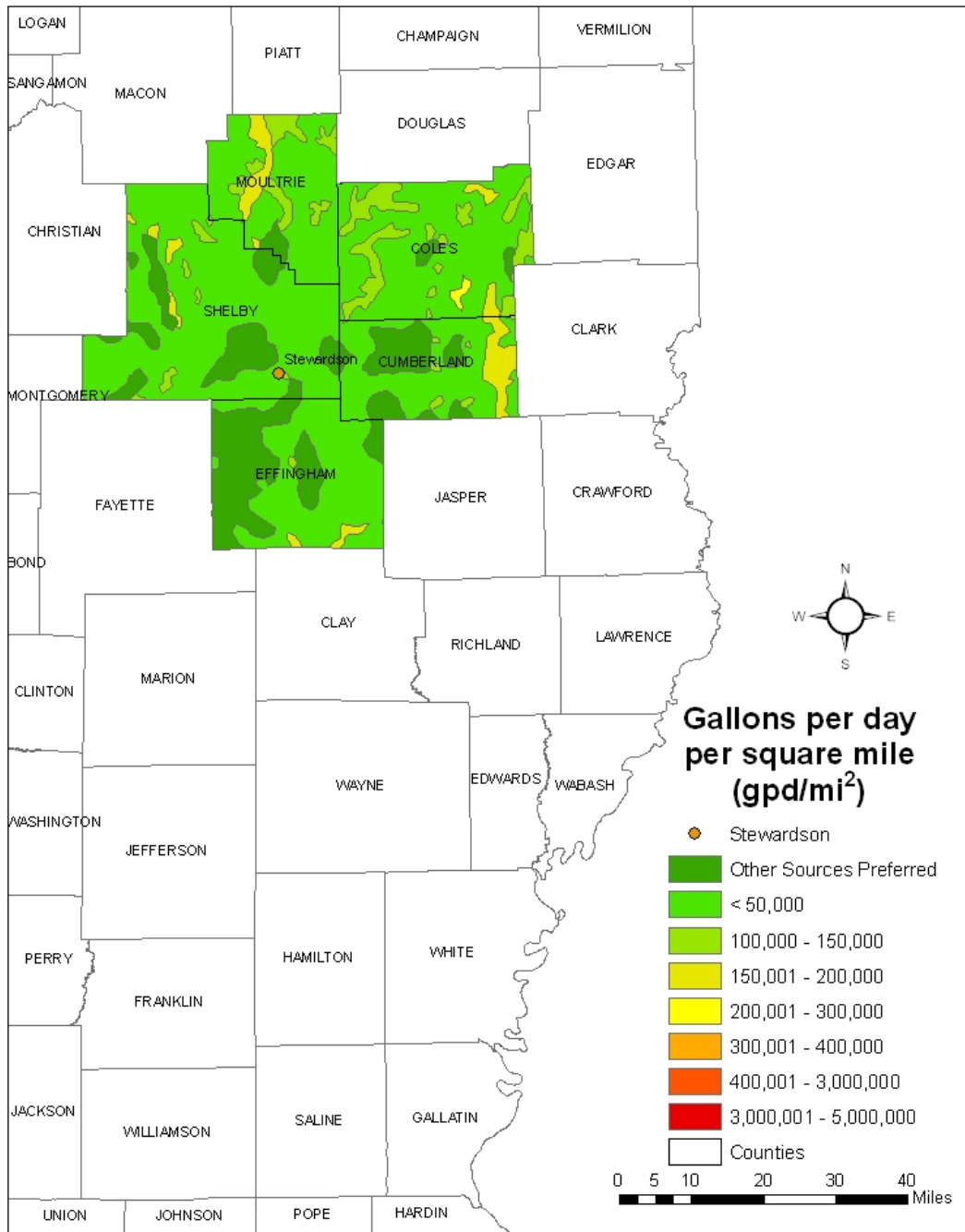


Figure 1.

Estimated Potential Yields of Shallow Bedrock Aquifers in Stewardson Area

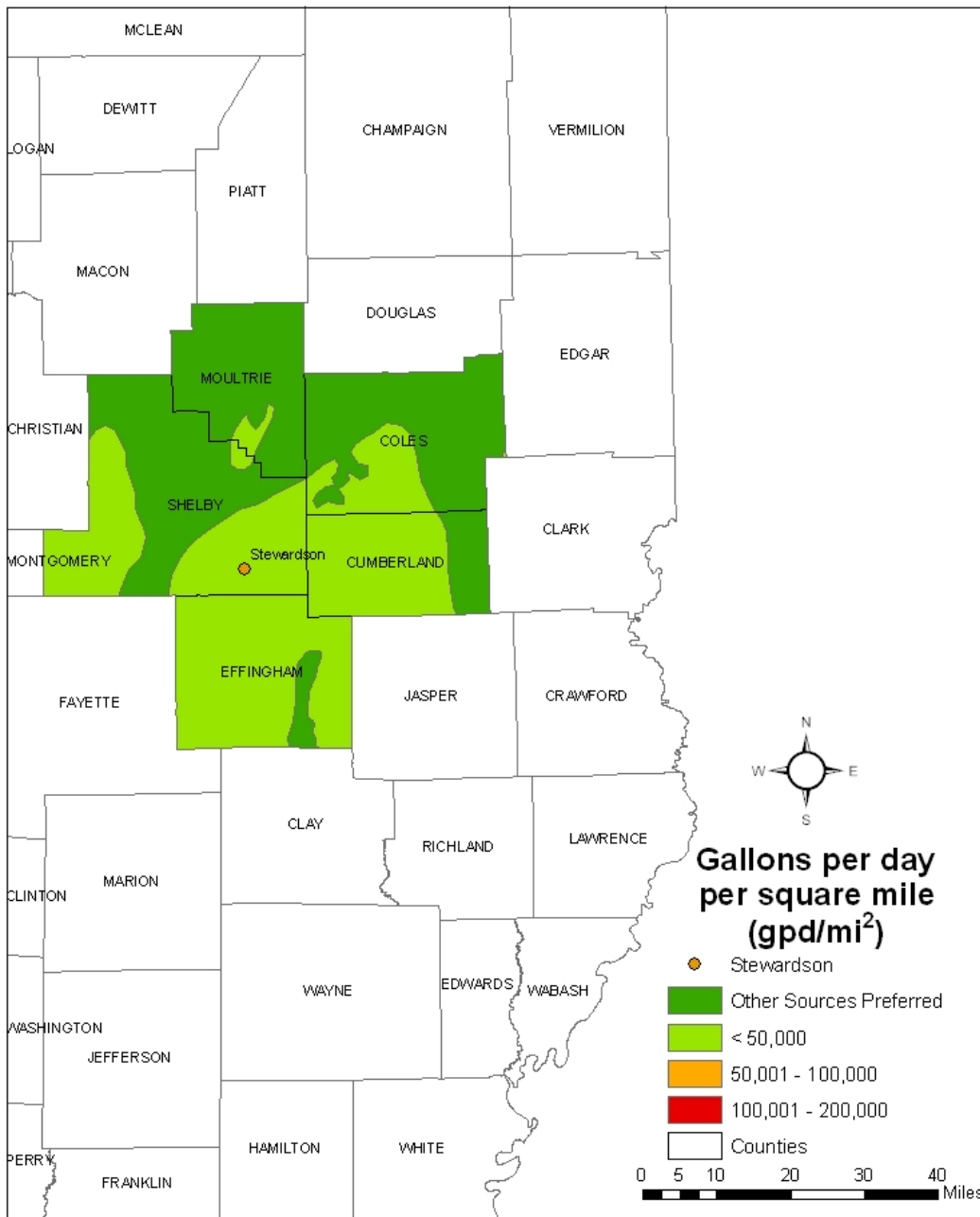


Figure 2.

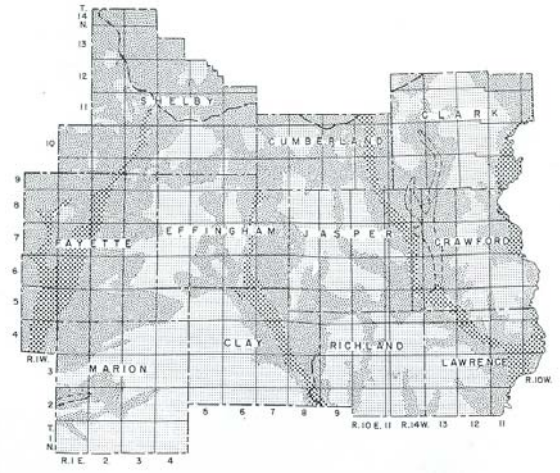
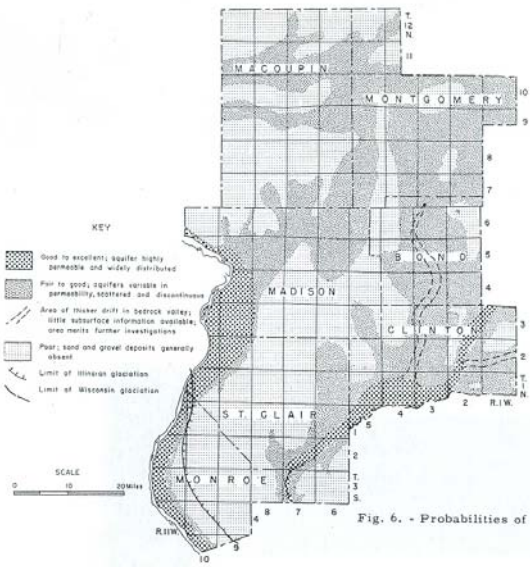


Figure 3.

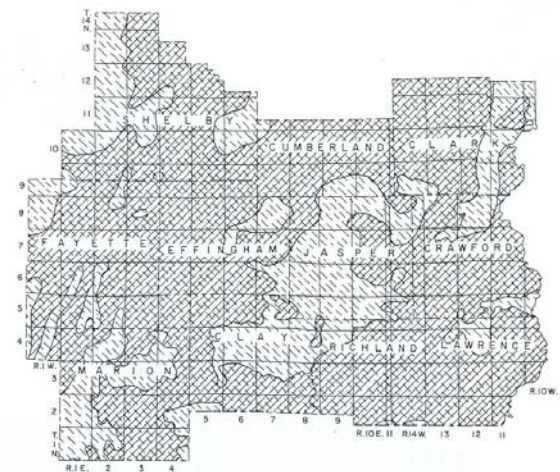
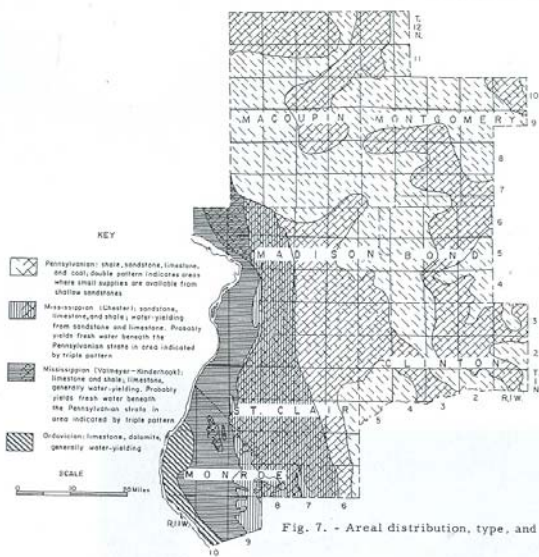


Figure 4.

ISWS publications list for Stewardson and surrounding areas.

COLES

- *1965 RI-53 Potential yield of aquifers in Embarras River Basin, Illinois. Walton-Csallany. Open File Report.
- 1965 RS-48 Relationship between water use and population in the Embarras River Basin, Illinois. Csallany.
- *1966 RI-55 Yields of wells in Pennsylvanian and Mississippian rocks in Illinois. Csallany. 42p.
- *1969 RI-62 Groundwater resources of the buried Mahomet Bedrock Valley. Visocky-Schicht. 52p.
- 1972 RI-70 Plans for meeting water requirements in the Kaskaskia River Basin, 1970-2020. Singh-Visocky-Lonnquist. 24p.
- *1980 CR-237 Assessment of eighteen public groundwater supplies in Illinois. Wehrmann-Visocky-Burris-Ringler-Brower. 185p.
- 1982 COOP-8 Hydrogeologic evaluation of sand and gravel aquifers for municipal groundwater supplies in East-Central Illinois. Kempton-Morse-Visocky. 59p.

CUMBERLAND

- *1965 RI-53 Potential yield of aquifers in Embarras River Basin, Illinois. Walton-Csallany. Open File Report.
- 1965 RS-48 Relationship between water use and population in the Embarras River Basin, Illinois. Csallany.
- *1978 CR-209 Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann-Kim- Ringler. 193p.

EFFINGHAM

- *1965 RI-53 Potential yield of aquifers in Embarras River Basin, Illinois. Walton-Csallany. Open File Report.
- *1966 RI-55 Yields of wells in Pennsylvanian and Mississippian rocks in Illinois. Csallany. 42p.
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- *1980 CR-237 Assessment of eighteen public groundwater supplies in Illinois. Wehrmann-Visocky-Burris-Ringler-Brower. 185p.
- 1992 COOP-14 Pilot Study: Agricultural chemicals in rural, private wells in Illinois. Schock-Mehnert-Caughey-Dreher-Dey-Wilson-Ray-Chou-Valkenburg-Gosar-Karny-Barnhardt-Black-Brown-Garcia. 84p.
- 1992 COOP-15 Characterization of the study areas for the Pilot Study: Agricultural chemicals in rural, private wells in Illinois. Barnhardt-Mehnert-Ray-Schock. 114p.

MOULTRIE

- *1966 RI-55 Yields of wells in Pennsylvanian and Mississippian rocks in Illinois. Csallany. 42p.
- *1969 RI-62 Groundwater resources of the buried Mahomet Bedrock Valley. Visocky-Schicht. 52p.
- 1972 RI-70 Plans for meeting water requirements in the Kaskaskia River Basin, 1970-2020. Singh-Visocky-Lonnquist. 24p.
- *1978 CR-209 Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann- Kim-Ringler. 193p.
- 1982 COOP-8 Hydrogeologic evaluation of sand and gravel aquifers for municipal groundwater supplies in east-central Illinois. Kempton-Morse-Visocky. 59p.

SHELBY

- *1966 RI-55 Yields of wells in Pennsylvanian and Mississippian rocks in Illinois. Csallany. 42p.
- 1967 C-92 Groundwater availability in Shelby County, Illinois. Sanderson. 37p.
- 1997 CR611 Delineation of Time-Related Recharge Areas for the City of Shelbyville Well Fields. Anliker-Roadcap. 69p.
- 1972 RI-70 Plans for meeting water requirements in the Kaskaskia River Basin, 1970-2020. Singh-Visocky-Lonnquist. 24p.

- *1978 CR-209 Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann-Kim- Ringler. 193p.
- 1982 COOP-8 Hydrogeologic evaluation of sand and gravel aquifers for municipal groundwater supplies in east-central Illinois. Kempton-Morse-Visocky. 59p.
- *1982 CR-299 A summary of information related to the comprehensive management of groundwater and surface water resources in the Sangamon River Basin, Illinois. O'Hearn-Williams. 145p.
- 1997 CR-611 Delineation of time-related recharge areas for the city of Shelbyville well fields. Anliker-Roadcap. 69p.