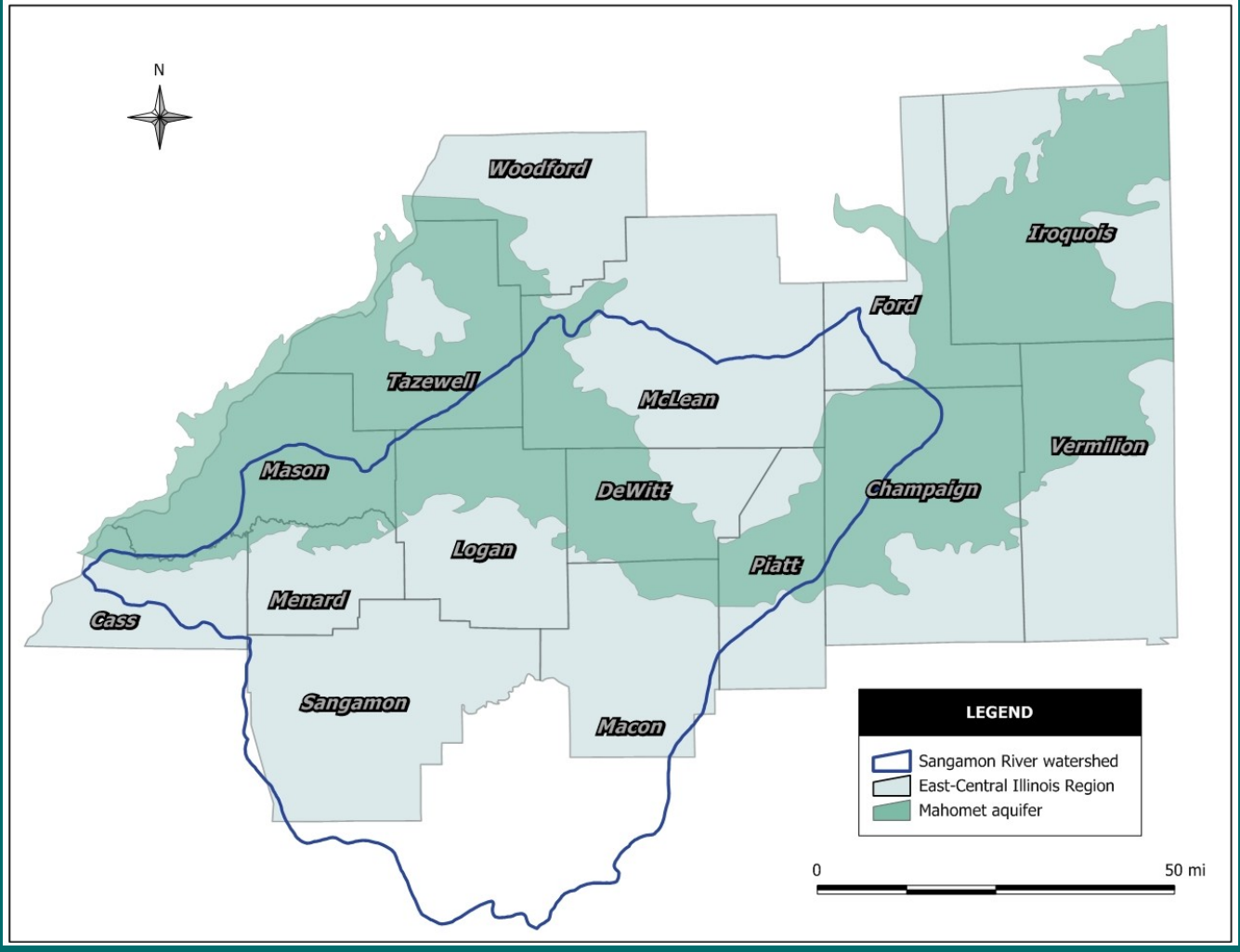
Water Demand Scenarios for the East-Central Illinois Planning Region: 2005-2050

FINAL REPORT

Prepared for:
East-Central Regional Water
Supply Planning Committee



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Bloomington, IN
August 29, 2008

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WATER DEMAND SCENARIOS FOR THE EAST-CENTRAL ILLINOIS PLANNING REGION: 2005-2050

FINAL PROJECT REPORT

Prepared for:

The East-Central Regional Water Supply Planning Committee

Prepared by:

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August 29, 2008

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Acknowledgments

This project was funded by the Mahomet Aquifer Consortium (MAC) through a grant from the Illinois Department of Natural Resources (IDNR).

This study benefited from the generosity and insight of many. Particularly, we would like to thank the participating agencies: the Regional Water Supply Planning Committee (RWSPC), the MAC, the Illinois State Water Survey (ISWS), and the Illinois State Geological Survey (ISGS).

The RWSPC members have provided guidance and perspective into various aspects of the water demand sectors. Their earnest participation was essential to this project. They are Shannon Allen (representing Soil and Water Conservation), Morris Bell (Water Authorities), Dwain Berggren (Evironment), Robert Betzelberger (Small Business), Tom Davis (former Electric Generating Utilities representative), Frank Dunmire (Rural Water Districts), Jay Henry (Electric Generating Utilities), Evelyn Neavear (Counties), Brent O'Neill (Water Utilties), Mark Sheppard (Industries), Bill Smith (Municipalities), Jeff Smith (Agriculture), and Bradley Uken (Public). We would also like to thank Robbie Berg, who helped with the public outreach effort and administratively throughout this project.

The data provided by the ISWS formed the foundation for many of the datasets that were critical in developing water demand relationships and determining the future water withdrawals. Particularly, we appreciate the time and energy of Derek Winstanley, Chief of the ISWS; Ed Glatfelter, Water Supply Planner; Tim Bryant, Coordinator of the Illinois Water Inventory Program; Al Wehrmann, Director of the Center for Groundwater Science; Vern Knapp, Senior Hydrologist; Jim Angel, State Climatologist. Their technical and scientific knowledge provided invaluable recommendations and insight.

Technical review comments by the ISGS were greatly appreciated, particularly from Ed Mehnert, Hydrogeologist and David Larson, Geologist and Hydrogeology Section Head. We also acknowledge the collaboration and encouragement of Mr. Gary Clark, IDNR Director of the Office of Water Resources.

We would also like to acknowledge Mr. Patrick Mills, Hydrologist and State Coordinator of the NWUIP in the USGS Illinois Water Science Center for his care and attention in preparation of certain datasets and review of draft documents.

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Key Terms

2005 Normal 2005 model generated value using normal (1971-2000) weather data.

2005 Reported 2005 value reported from the original data source; not a modeled value.

2005 Weather 2005 model generated value using actual weather data from 2005.

Adjusted R^2 modification of R^2 that adjusts for the number of explanatory terms in a model.

Consumptive use water abstracted which is no longer available for use because it has evaporated, transpired, been incorporated into products and crops, or consumed by man or livestock.

Elasticity the degree to which a change in an explanatory variable changes water demand.

Estimate an approximate calculation.

Model generated value derived from the model.

Model residuals the differences between the responses observed at each combination values of the explanatory variables and the corresponding prediction of the response computed using the regression function.

N number of observations

Non-consumptive use water abstracted from a source, used for some purpose, and returned to the source for use by others downstream.

Probability of t-statistics gives the probability of obtaining the given t-ratio by chance. This means lower probability indicates higher statistical significance. Generally the value of 0.05 or lower is taken to indicate statistical significance.

R^2 measures the fraction of the total variability in the response that is accounted for by the model.

Root Mean Square Error (MSE) the distance, on average, of a data point from the fitted line, measured along a vertical line.

Scenario a specific set of assumptions used to estimate future water withdrawals.

t ratio the ratio of the standard error of the estimate of the regression coefficient divided by the value of the coefficient (representing the ratio of signal to noise). Low t-ratios indicate low statistical significance of the estimated regression coefficient. Generally values greater than 2 indicate statistical significance.

Water demand the volume of water required by users to satisfy their needs. In a simplified way it is often considered equal to water withdrawal, although conceptually the two terms do not have the same meaning.

Water use the water from a groundwater or surface water source that is consumed or used. This water is not returned to the source.

Water withdrawals the amount of water removed from a groundwater or surface water source.

Abbreviations and Units

Ave. Average

BL Baseline Scenario

C&I Commercial and Industrial Water Sector

CWLP Springfield City Water Light and Power

DCEO Illinois Department of Commerce and Economic Opportunity

EIA Energy Information Administration

EPA United States Environmental Protection Agency

ET Actual Evapotranspiration

GPCD Gallons Per Capita Per Day

GPED Gallons Per Employee Per Day

IDES Illinois Department of Employment Security

IDNR Illinois Department of Natural Resources

ISGS Illinois State Geological Survey

ISWS Illinois State Water Survey

IREIM Illinois Region Econometric Input/Output Model

IR&AG Irrigation and Agriculture Water Sector

IWIP Illinois Water Inventory Program

kWh kiloWatt Hour

LRI Less Resource Intensive Scenario

MGD Million Gallons Per Day

MRI More Resource Intensive Scenario

MWh MegaWatt Hour

PET Potential Evapotranspiration

PG Power Generation Sector

Precip. Precipitation

PWS Public Water Supply Water Sector

SIC Standard Industrial Code

Temp. Temperature

USGS United States Geological Survey

WHPA Wittman Hydro Planning Associates

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