Kankakee Basin Regional Water Study

The Kankakee River flowing through Kankakee River State Park

Prepared By:

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Executive Summary

Study Purpose: The Kankakee Basin Regional Water Study (Study) estimated historical and 50-year future water demand and water supply availability. The Kankakee Basin Study Area in northwestern Indiana encompasses all or portions of the 14 counties within the Kankakee River Watershed, including Benton, Elkhart, Fulton, Jasper, Kosciusko, La Porte, Lake, Marshall, Newton, Porter, Pulaski, St. Joseph, Starke, and White, and covers approximately 3,125 square miles (**Figure ES-1**).

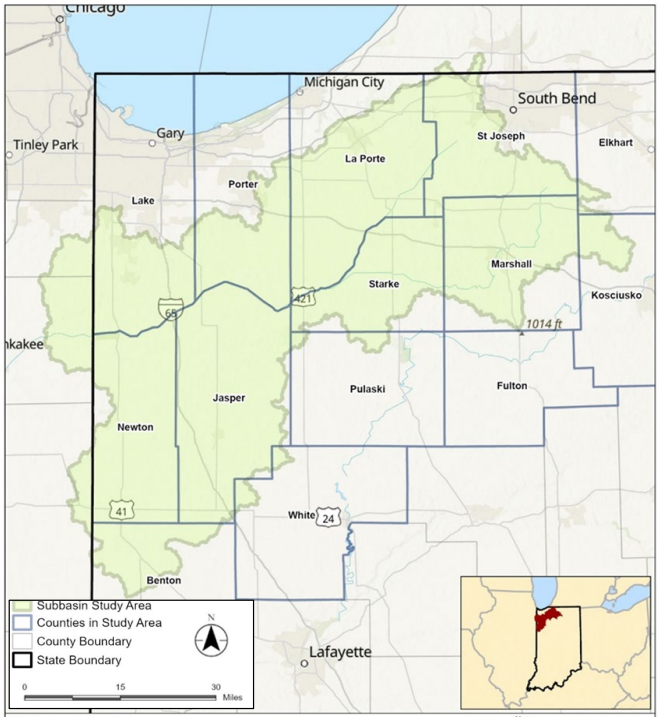

Figure ES-1. Kankakee Basin Regional Water Study Area

Study Approach: The water availability estimates presented in this Study are based on **data-driven analyses following a methodology similar to that used in previous regional water studies in Indiana**. Water availability was calculated as baseflow in a stream or river not allocated to a defined use or purpose, also referred to as 'excess' water in the system. Calculations were conducted, and results are presented, for eight hydrologic subbasins of the Kankakee River Watershed. **Stakeholders throughout the Study Area provided important input to the Study** on topics such as future demand assumptions and estimates of water withdrawals and return flows.

Regional Setting: The Kankakee Basin in Indiana (including the Yellow River, Kankakee River, and Iroquois River) contains a diverse landscape characterized by low relief topography and an intricate network of rivers, ditches, and wetlands that shape local hydrology. **The region is largely agricultural, with relatively low population density. The populated areas are largely concentrated along the Interstate 65 corridor.** Most residents live in rural areas interspersed with small urban centers and unincorporated communities. The combination of flat topography, sandy soils, and intensive land use continues to influence water availability, water quality, and water management across the basin. Note that **riverine flooding and erosion/ sedimentation are active concerns in the Basin, but these topics are outside the water availability focus of the Indiana regional water studies.**

Water Demand: Historical water withdrawals within the Study Area were primarily characterized using monthly water use data by sector for 1985 to 2023 from the Indiana Department of Natural Resources Significant Water Withdrawal Facility database. Historical withdrawals are relatively evenly split between surface water and groundwater in the Kankakee Basin – the primary use of surface water is energy production, and the primary uses of groundwater are irrigation and public supply.

In 2023, average annual withdrawals from the Kankakee Basin were 165 million gallons per day (MGD). By comparison, Kankakee Basin water withdrawals were 21% of the adjacent North Central

Indiana regional water study area (which drains approximately 8,320 square miles) 2022 average withdrawals, estimated to be 789 MGD (Stantec 2025). **A major difference between water use in the Kankakee Basin and other regions of the State is that agricultural/ irrigation water withdrawals comprise the largest share of total average annual withdrawals** (**Figure ES-2**).

By 2075, total Kankakee Basin water withdrawals are projected to increase to 244 MGD, a 48% increase over historical. Irrigation, industrial, energy production, and public supply are all projected to increase into the future, with the industrial sector (inclusive of currently planned data centers) having the largest relative increase compared to historical (41%). Irrigation water withdrawals exhibit either a constant or increasing trend through the forecasted future period, reaching an expected annual average of 105 MGD in 2075 (a 31% increase over historical).

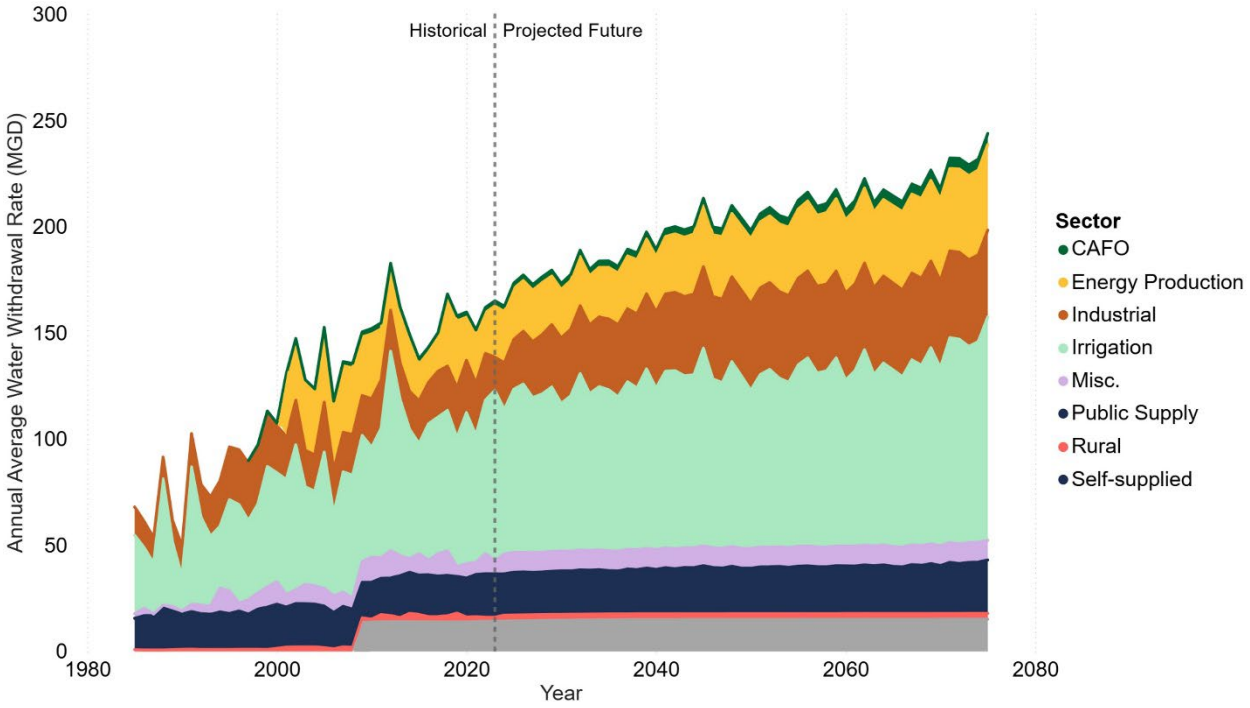

Figure ES-2. Historical (1985 – 2023) and Projected Future (2024 – 2075) Annual Water Demand in Kankakee Basin, by Sector (MGD)

Historical Water Availability: The Kankakee Basin has historically had adequate water available for the needs in the basin. However, the available water is not equally distributed throughout the region or throughout the year, with larger availability in the mainstem Kankakee River subbasins and greater seasonal fluctuations in smaller tributary subbasins. Spring consistently exhibits the highest water availability due to precipitation and snowmelt-driven runoff, followed by Winter. Summer and Fall are more limited, reflecting higher evapotranspiration and irrigation-related water use. In the mainstem Kankakee River subbasins, Fall water availability often exceeds Summer levels, likely due to reduced irrigation withdrawals later in the year. Subbasins with larger drainage areas, particularly those along the mainstem, show the highest cumulative water availability (i.e., water availability inclusive of flows

generated from regional upstream contributions). Seasonal and year-to-year differences in cumulative excess water availability (combined locally-derived and upstream-contributed) closely mirror changes in baseflow (i.e., the portion of streamflow supplied by groundwater that sustains rivers and streams during periods with little to no rainfall), confirming that **hydrologic and geologic factors such as aquifer recharge potential, groundwater storage, and seasonal precipitation govern regional water supply more strongly than human influences in this basin.**

Projected Future Water Availability: The magnitude of projected future water availability in the Study Area will likely differ from recent history because of the influence of projected future water demands and the effects of climate change. Across all seasons, median future projections of available water are expected to meet or exceed water demands in all subbasins. Seasonal patterns are expected to be similar to historical trends – highest available water in Spring, followed by Winter and Summer, and lowest in Fall. Elevated Spring water availability is primarily attributed to increased natural baseflow projected under future climate conditions. In contrast, Fall water availability is projected to decline, driven by reduced baseflow during drier late-season conditions.

All subbasins are projected to experience reductions in Fall excess and cumulative excess water availability (both local and regional) ranging from -15% to -32% (**Figure ES-3**) compared to historical conditions. These reductions are attributed primarily to declines in projected Fall baseflow and higher seasonal water demands. The largest decreases in Fall excess water availability generated within each subbasin and cumulative excess water availability contributed from regional upstream subbasins are observed in Subbasins 02 and 03 which include portions of La Porte, Marshall, St. Joseph, and Starke Counties.

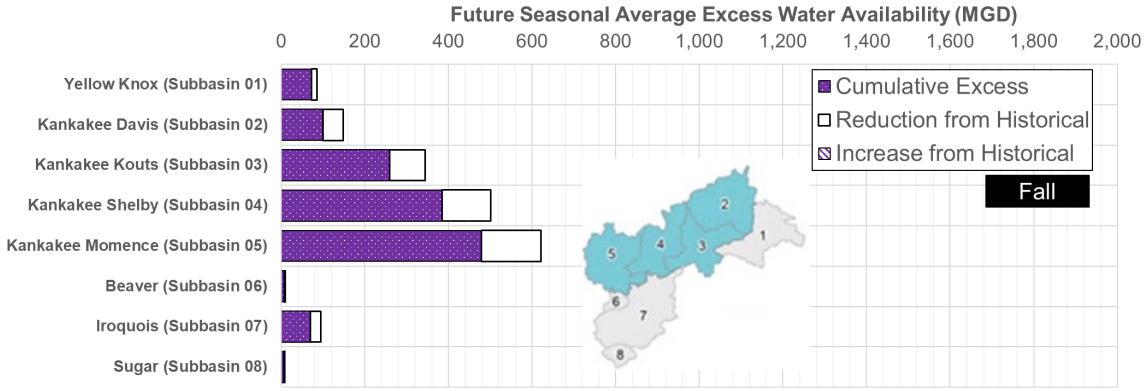

Figure ES-3. Change from Historical (2007 – 2023) to Future (2060s) Fall Season Cumulative Excess Water Availability by Subbasin

Similar to historical conditions, cumulative (local+regional) excess water availability remains positive in most future years, with future supplies typically exceeding projected demands (including instream flow requirements). Wet season (Winter and Spring) baseflow is projected to increase under future climate conditions, leading to higher water availability during these periods.

Figure ES-4 compares historical and projected future cumulative (local+regional) excess water availability at representative "typical" (median), "dry year," and "drought" conditions, in this case for the Fall season. The results show a consistent projected decline in median Fall water availability across all subbasins. The Kankakee Davis (Subbasin 02; including portions of La Porte, Marshall, St. Joseph Counties), Kankakee Kouts (Subbasin 03; including portions of La Porte and Starke Counties), Iroquois (Subbasin 07; including portions of Jasper, Newton, and White Counties), and Sugar (Subbasin 08; including portions of Benton County) subbasins are projected to exhibit the largest water availability reductions relative to historical conditions. **Under drought conditions, these subbasins are projected to experience negative cumulative excess water availability, suggesting potential water supply shortages and increased ecological stress in future Fall seasons.**

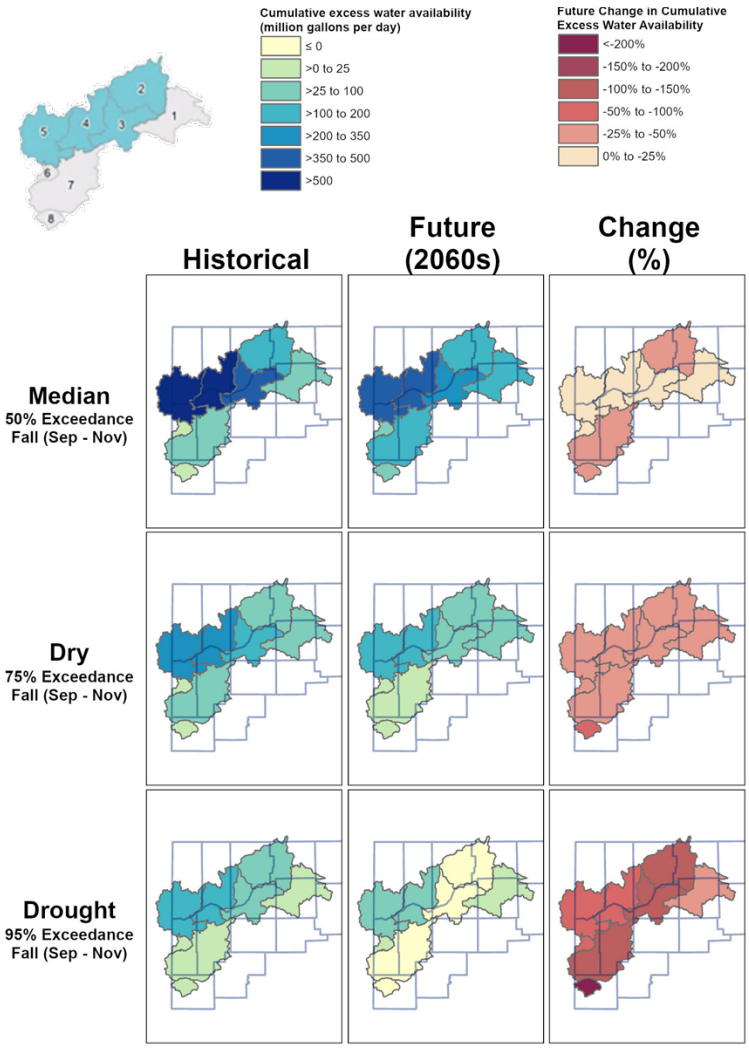

Figure ES-4. Changes between Historical and Projected Fall Cumulative Excess Availability for Median (50%), Dry (75%), and Drought (95%) Conditions

Cumulative excess water availability (regional) in the Fall is projected to decline substantially across all subbasins, by approximately 15% to 127% relative to historical conditions, due to decreased baseflow and higher consumptive demands. Even with projected increases in consumptive use of up to 25–30%, most subbasins are expected to retain adequate water availability during typical conditions. Under extreme dry conditions, particularly in the Fall, multiple subbasins can transition from surplus to deficit, reflecting the compounding effects of lower precipitation, reduced baseflow, and elevated demand. Seasonal contrasts intensify under future conditions, with wetter Spring and Winter periods followed by drier Fall periods.

Water Resource Risks, Opportunities, and Recommendations: Like many other regions of Indiana, **the Kankakee Basin is projected to grow – slightly in population, and more significantly**

in economic productivity and in water demand. Fortunately, **the Basin has generally abundant water resources, and this is projected to remain the case under most conditions in the future. The region can likely support increases in water demand while maintaining overall supply reliability.** However, **future projections of water availability under some conditions – notably in the Fall season in dry and drought years for certain subbasins – indicate potential for water stress, meaning potential unsatisfied demands and/or heightened ecological stress in the future.**

Risks: Specific risks and uncertainties are identified in three broad categories – **Demand Growth Uncertainty, Water Availability Risks and Drivers, and Local Versus Regional/Upstream Contributed Water Availability.**

Opportunities and Recommendations: Six potential approaches are recommended that can individually and/or collectively contribute toward an increase in future available water supply to maintain or strengthen the people, environment, productivity, and economy of the Kankakee Basin in Indiana. **These include strategies to enhance the supply of surface water and/or groundwater, decrease the demand for water, and better understand and manage water as a limited resource.** Included are strategies for water users, water providers, and local/regional and state entities. Also note that many of these recommendations are applicable to basins across the State**;** some were included in the adjacent North Central Indiana Regional Water Study (Stantec 2025), and others were recently mandated by Governor Braun's Executive Order 25-63 (2025).