



Mounds Lake Project



Is the need for water really an issue?

Introduction

This summary is largely aimed at displaying various reports done on Central Indiana's water resources. There have been many reports conducted to showcase this critical resource. This summary is showcasing five different reports, conducted by various agencies.

Indiana Chamber. ["Water and Economic Development in Indiana: Modernizing the State's Approach to a Critical Resource."](#) August 2014.

"The diversification of the water portfolio reflects the fact that there is no single solution to water supply and growth in this portion of the state. Although utilities have identified the need and taken initial steps, supplies are limited and, without new sources, economic growth is at risk."

"The population in Central Indiana is growing rapidly, and estimates of future demand suggest another 50 million gallons per day (MGD) of supply will be required to meet the needs of the region by 2050."

- Indiana's water supply is varied (reservoirs, streams/rivers, and aquifers)
- As the population of Central Indiana continues to grow, strong long-term water planning is necessary to continue to provide for the state's economic growth.

"As the water utilities in the middle of the state consider new well fields to satisfy growth, conservation and demand management will become standard policy in meeting seasonal peak demand for water. Limited groundwater and relatively low flows in streams limit available options. This part of the state will need to build new surface water storage capable of satisfying future demands or develop well fields in other watersheds. The latter alternative will require that water from distant well fields be piped in to meet the demands of population growth."

- The current plan is to add more straws to the same glass, by adding well fields to a limited resource in groundwater.
- This severely diminishes the state's ability to be resilient when faced with a sustained drought period.

Indy Chamber. ["Central Indiana's Regional Water Supply. A Water Synthesis Report with Recommendations for Future Management."](#) Spring 2010.

"Compounding strain on central Indiana's water resources is the region's growing population. Hamilton and Hendricks counties are two of the fastest growing counties in the United States (U.S. Census Bureau, 2004). The population in these two counties and in Boone, Hancock, and Johnson counties is expected to increase more than 20 percent between 2005 and 2025 (Indiana Business Research Center, 2008)."

- Drought preparedness is incredibly crucial for the longevity of Central Indiana's growth.
- Maintaining a sustainable source of water is the key to this growth.

"A 2004 central Indiana water report states that the region's surface water supplies are nearly fully developed, and that net surface water use will likely exceed minimum stream flow requirements (7Q10) before 2020 (Malcolm Pirnie, 2004). As a result, central Indiana's surface water supplies will no longer be

available to meet future water demand. Public water suppliers, industrial users, and energy producers (the three largest withdrawers of surface water) will have to use groundwater when new sources are needed. Currently, groundwater is central Indiana’s buffer against drought. However, if groundwater withdrawals increase, less will be available during water shortages.”

- The most salient point of this report is that under the current trajectory, water shortages would be inevitable under the new growth.

Black & Veatch. “Phase II Yield and Demand Study.” October 2008.

“With the constraints and assumptions used in this evaluation, it is concluded that the existing water system in Indianapolis will not be able to yield enough water to meet demands during climate conditions similar to the 1940-1941 drought-of-record. This assumes the addition of several wells added to the existing wellfields, and the proposed Waverly wellfield and existing treatment plant upgrades... If the 1988 drought conditions recur and the existing reservoirs and wellfields are operated efficiently, the system may produce enough water to meet average day demands. Additionally, the system may not be able to meet the summertime peak demands without significant reductions in future consumption through water use restrictions or conservation.”

- This report was conducted in 2008 and the same conclusions are important in 2021.
- Indianapolis (and Central Indiana as a whole) are largely vulnerable to a long-term drought.
- The possibility of a long-term drought places a strain on the current water infrastructure.

“As shown in Figure 10-20 in Section 10.4.3, even if consumption is significantly reduced through water restrictions, the magnitude of the maximum day yield deficit could be on the order of approximately 100 MGD or more by 2020, if the drought-of-record were to occur again.”

- As predicted in 2008, the possibility of increased need has been realized.
- The population continues to grow, but the water supply has continue to tap the same resources.

Indiana Department of Natural Resources, Division of Water. “Indiana’s Water Shortage Plan.” March 2015.

“Historically, in Indiana the streamflow equivalent to the 7Q10 (lowest seven (7) day average flow having a ten (10) year recurrence interval) could be considered to be the minimum streamflow. This value is a critical factor in determining the level of treatment required for discharges into the State’s rivers and streams. Since this criteria is critical to protecting water quality and little attention has been directed at assessing the minimum flow needed to sustain other instream uses in Indiana, the 7Q10 is commonly looked at as the minimum acceptable streamflow.”

Table 6. Criteria to Identify Drought Conditions and Water Shortage Stages

Water Shortage Stages	1-Month Standardized Precipitation Index	U.S. Drought Monitor (Conditions)	Streamflow As Percentage Of Normal (Average Streamflow)
Normal (White and Yellow)	+0.99 to -0.99	None to D0	Greater than or equal to 25
Watch (Tan)	-1.00 to -1.49	D1	10 to 24
Warning (Orange)	-1.50 to -1.99	D2	6 to 9
Emergency (Red)	-2.00 or less	D3 to D4	5 or less

- The State of Indiana identifies a 7Q10 streamflow as a minimum standard.
 - This criterion only addresses water quality, not water quantity.
- Table 6 demonstrates the designations for drought conditions as defined by the state of Indiana.
- These shortages consider both precipitation amounts as well as streamflow standards.
- As demonstrated by the table, water shortages are more common than not.

Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers. “[Recommended Standards for Water Works.](#)” 2012.

“3.1.1 Quantity

The quantity of water at the source shall:

a. be adequate to meet the maximum projected water demand of the service area as shown by calculations based on a one in fifty-year drought or the extreme drought of record, and should include consideration of multiple year droughts. Requirements for flows downstream of the intake shall comply with requirements of the appropriate reviewing authority;

b. provide a reasonable surplus for anticipated growth;

c. be adequate to compensate for all losses such as silting, evaporation, seepage, etc.;

d. be adequate to provide ample water for other legal users of the source.”

- Based on a 10-state standard, Central Indiana should plan for a 50-year drought or the extreme drought of record.
- One of the key standards is to be able to provide water for potential growth.

Conclusion

Finally, in order to tie all the reports together, Central Indiana is in a critical place when concerned with its water resources. These five reports all differ but get to a similar conclusion... Central Indiana’s water resources are limited, and growth continues to place an added strain on the current system. The current process of adding additional wells continue to tap into the same groundwater sources. While this is a viable incremental action, it places Central Indiana in a precarious position when considering a long-term drought. *Indiana’s Water Shortage Plan* shows how to determine a water shortage within Central Indiana. *Yield and Demand Study* showcases how the current plan is currently vulnerable to a potential long-term drought. Both the Indiana Chamber and the Indy Chamber articles highlight how Central Indiana is going to continue to grow but rely on the presence of a resilient water supply. Finally, the *Recommended Standards for Water Works* shows a clear standard for ensuring a resilient and ample water supply for any anticipated growth. All together, these articles paint a fairly important picture for Central Indiana, and it’s need for long-term water planning. An ever-increasing demand will continue to put more and more of a strain the current system. If a sustained drought were to occur, it has been identified that the system would have a difficult time coping with the combination of increased demand and lack of replenishing the system.