

WUAC Data Committee

October 26, 2022

Committee Final Draft Recommendation: Inland Lakes ARIs development

Inland Lakes and Adverse Resource Impacts

Background. The Great Lakes Compact and Michigan's Part 327 are predicated on the charge of protecting water-dependent natural resources from adverse impact. The scope of this charge is broadly inclusive of water-dependent natural resources. At the point of creation and adoption of Part 327, a framework was developed for predicting the impact of water withdrawals on water-dependent natural resources, using stream fish communities as the indicator metric, and the science available at the time supported this framework development for rivers and streams. An analogous framework for inland lakes or wetlands was not feasible at that time. Due to this, Part 327 addressed impacts to inland lakes, not through predicted impact pathways to ecological components of those systems, but through general provisions focused on impacts to the human uses of inland lakes, through water withdrawals. Ever since, previous iterations of the Water Use Advisory Council have discussed obstacles and needs for creating an assessment framework for inland lakes that would function similarly to the stream-based system the water withdrawal assessment process relies upon now; and be consistent with the scope and charges of the Great Lakes Compact.

In recent years, new tools for efficient data collection regarding lakes have become available (e.g., lake level instrumentation and crowd-sourced data platforms, water penetrating LIDAR, lake source water isotope analysis), and new approaches to classifying lakes based on sensitivity to withdrawals (e.g., Wisconsin Central Sands Region Study) have developed making this effort more feasible. The Data Committee also reviewed and had guest speakers from Wisconsin DNR present the findings of their approach for assessing impacts to inland lakes from water withdrawals. Further investigation on this topic is necessary, and several forms of support are now required in order to enable meaningful progress.

The WUAC Data Committee, in order to continue productive investigations into Inland Lakes ARIs, needs;

- 1.) Technical support from limnological experts, for assistance in identifying and developing mechanistic pathways of impact that tie lake inputs to meaningful indicator metrics, and for identifying viable data needs and collection strategies
- 2.) Facilitative modeling expertise to aid in the development and assessment of viable classification strategies for inland lakes, and for conceptual model development to test validity of concepts
- 3.) Targeted, pilot scale data acquisition, to allow assessment of the utility, reliability, and cost-efficiency of suspected strategic data needs (e.g., lake water level variability, lake bathymetry, surrounding hydro-geological data, water chemistry, ecological metrics), and assessing how much of these might be conducted by citizens, industry, governmental agencies, or academic institutions.

These theoretical, modeling, and data investigations must go hand in hand, and be informed by each other iteratively. A viable conceptual modeling framework cannot be developed without consideration of the types of data that are possible for use within it; and it is also impracticable to

understand what types of data collection and what precision of data is needed without considering the intended uses of that data within the conceptual modeling framework.

Recommendation

Inland Lakes Adverse Resource Impact, Conceptual Framework Development and Pilot Data Acquisition Assessment. Since the inception of the Great Lakes Compact and Michigan's implementation statute, Part 327, assessment of ARI effects for inland lakes has been hampered by the absence of an acceptable scientific conceptual framework for predicting withdrawal impacts to inland lakes, classification of lakes based on sensitivity to withdrawals, identification of mechanistic pathways linking withdrawals to meaningful components of inland lake resources, and by the absence of datasets suspected to be necessary. The WUAC has continuously investigated this issue, and now recommends a first initial financial investment required for the WUAC to make meaningful progress on this topic. This investment is not expected to produce a final acceptable framework for assessing ARIs for inland lakes, but rather is needed to accomplish meaningful progress in development of a first iteration conceptual framework and to conduct targeted data collection pilot projects, so that meaningful future progress and developments are possible, and this issue does not continue as unaddressed. **The WUAC recommends a one-time financial investment of \$200,000, that would be used over two years, to acquire technical support for the WUAC's committees to engage limnological expertise, facilitative modeling capacity, and to conduct multiple targeted pilot scale data acquisition assessments; continued review which the WUAC has deemed necessary to make progress on the inland lakes adverse resource impact assessment topic.**

Notes for Implementation:

Projected Implementation Details: Scope of work, RFPs and contracts should be developed jointly between WUAC and EGLE, to implement one-time funding request of \$200,000. Work conducted under contracts, would be expected to be performed over a 2 year period. Phase 1, first year, would include work on conceptual framework development, (including \$50,000 for limnological and other technical expertise consulting; and \$75,000 for facilitative modeling consulting). Phase 2, second year, \$75,000 would be used to conduct targeted data acquisition feasibility assessments for specific data needs identified in phase 1. Phase 3, year 3, would include WUAC review of the work from phase 1 & 2, and development of subsequent recommendations for this topic. One time funding request = \$200,000; Year 1 = \$125,000, Year 2 = \$75,000, Year 3 = \$0.