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Staff Memorandum

SCOPE OF WORK TO BE PERFORMED BY SEWRPC FOR PHASE ONE OF A COMPREHENSIVE LAKE MANAGEMENT PLAN FOR CRAVATH AND TRIPPE LAKES, WALWORTH COUNTY, WISCONSIN

April 23, 2024

As requested during a March 4, 2024, meeting of the City of Whitewater lake committee ("City"), the Southeastern Wisconsin Regional Planning Commission ("Commission") has prepared this scope of work examining a variety of management issues that the City believes are important to the continued health and vitality of Cravath and Trippe Lakes ("Lakes"). This scope of work provides most of the technical, schedule, and budget information regarding fieldwork and data collection efforts as the first phase of a two phase process in preparing a comprehensive lake management plan for the lakes. A subsequent phase and scope of work will cover data analysis, plan writing, and management plan activities; the City may elect to apply for a grant through the Wisconsin Department of Natural Resources ("WDNR") Surface Water Grant program to help fund some of this subsequent phase.

BACKGROUND INFORMATION

Cravath and Trippe Lakes are 68-acre and 113-acre, respectively, impounded lakes within the City of Whitewater in Walworth County. Trippe Lake is an impoundment of Whitewater Creek while Cravath Lake is an impoundment of Spring Brook. Outflow from Trippe lake flows into Cravath Lake while outflow from Cravath lake flows as Whitewater Creek downstream to the Bark River, then to the Rock River, then to the Mississippi River, and ultimately discharges into the Gulf of Mexico. Both lakes are impounded by dams owned and operated by the City of Whitewater. According to the WDNR Presto-Lite model, the lakes receive runoff from 42.2 square mile watershed that drains northwestern Walworth and northeastern Rock Counties.[1] The eastern portion of the watershed draining into Trippe Lake contains substantial natural resource areas, including Whitewater Lake, Rice Lake, several WDNR State Natural Areas, and parts of the Kettle Moraine State Forest. The western portion of the watershed draining into Cravath Lake is predominantly in agricultural and wetland uses.

The Commission produced Memorandum *Report No. 191, A Lake Protection Plan for Cravath and Trippe Lakes, Walworth County, Wisconsin,* in April 2011. Since that time, the City completed a lake drawdown and dredging project to address excessive sediment accumulation in the lakes. Following those efforts, the City would like to update the lake management plan to study several issues related to the lakes' ability to maintain desirable ecological conditions and provide quality recreational opportunities to lake users.

[1] *For more information on the WDNR Presto-Lite model, see the following webpage: https://dnr.wisconsin.gov/topic/SurfaceWater/PRESTO.html.*

Aquatic Plant Survey
Activity: Commission staff will conduct an aquatic plant point-intercept survey of both lakes that will inform the updated aquatic plant management plan. This survey is a requirement for completing WDNR-approved aquatic plant management plans and obtaining an updated mechanical harvesting permit.

Methods and Data Collected: The aquatic plant community of the Lake will be sampled on a set grid pattern of 233 points for Cravath and 305 points for Trippe (provided by WDNR staff) using the standard WDNR point-intercept survey method.[2] In this method, sampling sites are based on predetermined global positioning system (GPS) location points that are arranged in a grid pattern across the entire surface of a lake. This method allows the types and abundance of aquatic plants to be directly contrasted to prior point-intercept surveys.

Deliverables: Commission staff will provide standard WDNR digital spreadsheets with the survey results for each lake to the City and to WDNR biologists. The findings and significance of this aquatic plant data will be discussed in the aquatic plant management plan.

Publish Aquatic Plant Management Plan
Activity: Commission staff will compile aquatic plant information for the lakes into an updated aquatic plant management plan and recommend aquatic plant management techniques and locations within the lakes. This plan is a requirement for obtaining an updated mechanical harvesting permit from the WDNR.

Methods and Data Collected: Maps, figures, and tables will be prepared summarizing the newly collected aquatic plant data and contrasting them to earlier aquatic plant surveys. Digital versions of spreadsheet tables will be supplied to the WDNR for their use. At the minimum, the plan update will:

- Examine changes in species richness between 2017 and 2024
- Contrast invasive species abundance between 2017 and 2024
- Evaluate changes in sensitive species abundance and richness between 2017 and 2024
- Map the distribution and density of each species documented as part of the 2017 survey
- Update records of chemical treatment application
- Evaluate effect of control actions, including herbicide use, on invasive species populations

Lake user needs and desires, aquatic plant information, and the health of the Lake will be jointly considered in updating the aquatic plant management plan. Commission staff will work with the City, Lake users, and the WDNR to identify problem areas along with the current management techniques and potentially revise the plant management strategy to reflect current aquatic plant community health and Lake-user desires. Logistical considerations will also be addressed in this study, including cost-benefits of chemical treatments, DASH, and mechanical harvesting. Offloading, transport, and on-land disposal of cut plants will be examined in greater detail to help ensure that these activities comply with State and local regulations and guidelines. As the water levels in both lakes are controlled via outlet dams, use of

[2] J. Hauxwell, S. Knight, K Wagner A Mikuly k M N t M Porzky d S Ch s R comm d d B s M f Aq c P W : S mp D F L b P D E A App W D p m f N R B f S S v P b N PU -SS-1068 201 M 2

- Total suspended solid concentrations
- Chloride concentrations

Additional parameters of interest may include orthophosphate, nitrogen compounds (e.g., total nitrogen, nitrate, ammonia), and specific conductance. These discrete water quality measurements should be made at least monthly between May and September 2024. If feasible, UW-W faculty and students should strive to collect discrete streamflow measurements at the same monitoring locations and during the same sampling events. In addition, Commission staff recommend that "storm chaser" water quality and streamflow measurements be conducted during high streamflow following heavy rainfall as streams transport a lot of nutrients and sediment during these events.

The Commission can install continuous water temperature and water level loggers in six locations: within each lake and at the same four monitoring locations described in the stream water quality and streamflow measurements. These loggers can collect data hourly for at least one year. This water level information could be combined with water quality and discrete streamflow data collected in the lakes and streams to inform nutrient or water budget analyses.[4]

Deliverables: Commission staff will provide advice regarding water quality and water level monitoring logistics, including monitoring locations, parameters, and timing of sample collection. The Commission will also provide up to six continuous water temperature and water level logging devices and install these devices in the lakes, their tributaries, and at a downstream location on Whitewater Creek. Commission staff can also review and provide technical assistance on analyses or studies conducted by UW-W faculty and students as it relates to the water quality data collected and the comprehensive plan.

Shoreline Condition

Activity: Commission staff will complete an on-the-water shoreline condition inventory around the perimeter of the open-water portion of the lakes. The inventory will examine the type and quality of terrestrial and emergent vegetation present, the presence or absence of active erosion, the type and condition of artificial shoreline protection, the presence of buffer areas in the nearby uplands, and possibly other features such as springs, tributaries, and/or stormwater outfalls.

Method or Data Collected: With the assistance of a City volunteer, Commission staff will take notes and photographs of the shoreline and record locations of erosion, shoreline protection, and other features. Commission staff will inventory shoreline condition utilizing the standard WDNR protocol.[5]

Deliverable: The Commission will map shoreline conditions as well as recommend how to enhance shoreline and near-shore habitat and protect against erosion. Commission staff will discuss opportunities to fund shoreline restoration and/or protection projects through the WDNR Surface Water Grant program, the WDNR Healthy Lakes & Rivers program, and potentially other programs.

Recreational Use

Activity: Commission staff will qualitatively survey recreational use on and around the lakes during other fieldwork visits to the lakes, e.g. for the aquatic plant and shoreline surveys. The Commission can also provide advice regarding interactive signage designed to survey lake users.

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[4] *If enough discrete streamflow information is collected, Commission staff can assist UW-W faculty and students in constructing rating curves for the stream monitoring locations to convert the continuous water level data into continuous estimated streamflow. This estimated streamflow could be combined with discrete water quality sampling to determine, for example, total phosphorus loads to and leaving the lakes.*

[5] *Hein et al.*, Lake Shoreland and Shallows Habitat Monitoring Field Protocol, *Wisconsin Department of Natural Resources EGAD # 3400-2020-19, July 2020.*

As noted in the scope section of this document, this budget assumes that the City will acquire and make available certain pieces of equipment, will provide volunteer labor, and will be responsible for contractor fees (e.g., analytical laboratories) as necessary to conduct these tasks.

Following City review and acceptance of this scope of work, an agreement would be executed between the City and the Commission. Under that agreement, the City would be responsible for the entire $11,500 project cost.

#272511 - CRAVATH AND TRIPPE 2024 COMP PLAN SCOPE OF WORK PHASE ONE
300-1000
JPP/TMS/nkk
03/18/2024