# Scope of Work and Estimated Budget for Northwood and Lost Lakes TMDL P8 Model Updates, Lake Sediment Coring / Laboratory Analysis, Reporting, and Stakeholder Meetings

## Background

Monitoring data collected within Northwood and Lost Lakes of the BCWMC show water quality concerns associated with high total phosphorus concentrations. Northwood Lake is included on the MPCA's List of Impaired Waters for excess nutrients.

The BCWMC and MPCA have developed a partnership to complete Total Maximum Daily Load (TMDL) studies for these two waterbodies. These TMDLs will be used to provide a better understanding of the lakes' current conditions, identify major sources of nutrient loading into each of the lakes, develop estimates of nutrient loading from each of these sources, and to inform future planning for implementation of best management practices to address nutrient loadings and to improve water quality conditions within these waterbodies.

The MPCA and BCWMC have identified roles and responsibilities for each agency, associated with the development of the TMDLs, as described within the attached "TMDL Project Scope: BCWMC/MPCA TMDL Partnership – April 2025" document.

The following describes the Commission Engineer's proposed scope of work to assist with the Northwood and Lost Lakes TMDL project.

## Scope

### Task 1: Project Kickoff Meeting

BCWMC and MPCA staff will hold a project kickoff meeting with municipal partners and representatives from the local lake associations to provide information on the TMDL study and to answer any questions. We understand that BCWMC and MPCA staff will take the lead on coordinating the meeting, developing the meeting agenda, and creating presentation materials related to the TMDLs and various agency roles. Commission Engineers will support BCWMC and MPCA staff, if needed, by providing background information on results from water quality monitoring activities within Northwood and Lost Lakes. Commission Engineers will also attend the project kickoff meeting to participate in the discussion and help with answering questions.

### Deliverables

- Attendance at one in-person project kickoff meeting.
- Background information on monitoring activities within the lakes, if needed.

# Task 2: Lake Sediment Coring & Laboratory Analysis

The Commission Engineer's water quality field monitoring staff will collect lake sediment cores at one location, in the deep center, within each of the study lakes to analyze for phosphorus (P) concentrations and observe P release rates from lake bottom sediments within the laboratory. A total of up to 18 cores will be collected and transported to the Commission Engineer's limnology laboratory; 6 of the cores will be analyzed for P fractionization and 12 will be analyzed for sediment release rates under both aerobic and anaerobic conditions. The Commission Engineer will coordinate with the Commission Administrator and/or city staff on the timing and any access permissions that might be needed for performance of the field data collection. The proposed budget for this task assumes sediment coring will be completed in one day with two Commission Engineering field staff.

We will summarize the results from the laboratory analysis in the technical memorandum (developed in Task 3). The MPCA will use these results as inputs into the lake response model they are developing for the TMDL study. Results from this task will also be used to help inform potential lake sediment treatment doses in future efforts related to implementation (e.g., alum treatment).

# Deliverables

- Summarize results regarding sediment phosphorus concentrations for each sediment fraction and the observed sediment phosphorus release rates (to be included within technical memorandum developed in Task 3).

# Task 3: P8 Model Updates & Project Reporting

We will update the Commission's stormwater pollutant loading model (i.e., the P8 model) for subwatersheds draining to Northwood and Lost Lakes. The Commission Engineer last updated the Commission's existing P8 models for these areas in 2018. We will use information previously provided to the Commission by the Cities of Plymouth and New Hope on redevelopments and capital improvements completed within these subwatersheds since 2018, to update the P8 models to reflect current conditions within those areas. We will also incorporate more recent climate data (i.e., precipitation and temperature) into the models to appropriately simulate stormwater runoff conditions within these more recent years.

We will develop draft and final project reporting in technical memorandum format, along with a GIS figure showing subwatershed divides and modeled BMPs. Results from this task can be used to enable each MS4 to report total phosphorus (TP) loads for their TMDL wasteload allocations. We will save all P8 model inputs and outputs to a spreadsheet file and provide the data to the MPCA for the TMDL baseline year.

# Deliverables

- Updated P8 model and GIS mapping to reflect current conditions within the Northwood and Lost Lakes subwatersheds.
- Draft and final technical memorandum reporting on P8 model changes and results for the TMDL baseline year, including a spreadsheet file containing P8 model inputs and outputs.

## Task 5: Stakeholder Meetings

We will attend up to two additional project stakeholder meetings related to the Northwood and Lost Lakes TMDL project. Our proposed budget estimate assumes that these meetings will be in person and that we will create presentation materials associated with work completed in Tasks 2 and 3 of this proposal. We assume that MPCA staff will create any presentation materials associated with the TMDL process, in general, and those tasks that MPCA staff are completing for the work.

## Deliverables

- Attendance at up to two in person project coordination meetings.

# Budget

The scope described above will be performed on a time and materials basis for an estimated not-to-exceed cost of **$39,500**. Table 1 summarizes the estimated project work by task.

### Table 1 Proposed project budget

| | Task | Estimated Costs |
|---|---|---|
| 1. | Project kickoff | $4,600 |
| 2. | Northwood and Lost Lakes sediment core collection & laboratory analysis | $22,000 |
| 3. | P8 model updates & project reporting | $7,200 |
| 4. | Stakeholder Meetings | $5,700 |
| | **Total** | **$39,500** |