

Reference: Tadd & Upper Lakes Subwatershed Assessment

AMENDED 1/12/2026

September 2, 2025

Project/File: Tadd & Upper Lakes Subwatershed Assessment

Middle Fork Crow Watershed District

ATTN: Andy Johnson
189 County Road 8 NE
Spicer, MN 56288

Hello Andy,

Reference: Tadd & Upper Lakes Subwatershed Assessment

It is Stantec's understanding that the Middle Fork Crow Watershed District would like to evaluate sources of pollutant loading to Upper and Tadd Lakes. Both lakes are shallow and have historically experienced high nutrient levels, low water clarity, and excessive algae growth. In summer of 2024, average surface total phosphorus concentrations were 0.26 mg/L in Tadd Lake and 0.4 mg/L in Upper Lake. These values are similar to limited historical measurements from summer 1987, which were 0.37 mg/L and 0.42 mg/L, respectively. Throughout the summer of 2024, dissolved oxygen (DO) concentrations in deeper water layers remained hypoxic (DO < 3 mg/L) or anoxic. These low-oxygen conditions can cause significant internal phosphorus (P) release from bottom sediments into the overlaying water column, which can be a major contributor to a lake's total phosphorus budget.

To inform future water quality management efforts, this project will directly measure internal sediment P release and quantify the mass of mobile P in lake sediments. This will allow us to compare internal phosphorus loading with external inputs from the surrounding watershed. Using a lake response model, we will develop recommendations for management strategies and identify priority monitoring efforts to improve water quality in both Tadd and Upper Lake.

Below are five subtasks that meet the goals of the evaluation.

Subtask 1 – Determine Contributing Area to Upper and Tadd Lakes

The contributing area to each lake is not clearly defined. Stantec will leverage stormwater conveyance data, LiDAR elevations, and past watershed boundary estimates to define an explicit contributing area to each lake. Field reconnaissance may be required to make final determinations where the aforementioned data is not adequate. An effort will be made to incorporate recon with staff's previously scheduled engagements near Atwater (e.g., board meetings, pre-con meetings, etc.) to limit project costs.

Subtask 2 – Internal Loading Feasibility Study

Reference: Tadd & Upper Lakes Subwatershed Assessment

Stantec will collect sediment cores from the deepest holes of Upper and Tadd lake to determine internal phosphorus loading (i.e., phosphate release rate) and phosphorus composition (i.e., fractionation of phosphorus forms) to measure the pool of P likely to diffuse from the sediments. Briefly our field and laboratory analysis will consist of:

- Sediment Phosphorus Release

- Two Stantec staff will collect a total of ~~two~~ ^{Four} sediment cores, ~~one~~ ^{Two} in each lake. Each sediment core will be split into two sections to provide a sample duplicate for measuring phosphorus release. Rates will be averaged to obtain one rate of sediment P release per lake.
- Sediment cores will be delivered to University of Wisconsin–Stout for analysis by Dr. Bill James and team. In the lab, the duplicate sediment cores will be incubated under controlled temperature and light conditions to quantify the rate of sediment phosphorus release under anoxic conditions. Results from this analysis will be used in the lake response model (Subtask 3).

- Sediment Phosphorus Composition

- Four** —→ ~~Two~~ additional sediment cores will be collected for each lake for P fractionation analysis to quantify the mobile and non-mobile pools of P from Upper and Tadd Lake.
- Each core will be sectioned and analyzed at two different depths (0-5 cm; 5-10 cm) to quantify the pools of P that are subject to diffusion from the sediments and characterize the areal extent of potential internal P loads.
- Maximum Allowable Dosage
 - Lake water (unfiltered) will also be collected from Upper and Tadd Lake for jar testing to determine maximum allowable alum dosage before causing a drop in pH, which could prevent optimal binding with phosphorus.

Subtask 3 – Lake Modeling & Pollutant Load Characterization

Stantec will incorporate the sediment data collected in Subtask 2 to develop lake response models for each lake to determine the proportion of internal and external phosphorus loads in order to evaluate effective management strategies for water quality improvement. Because the lake contributing area are compositionally different, where Upper Lake's contributing area is largely agriculture and Tadd Lake's contributing area is largely residential, we can approximate relative loading of agricultural vs. residential vs. internal for each lake. Stantec will:

Reference: Tadd & Upper Lakes Subwatershed Assessment

- Develop lake response models (e.g., Canfield-Bachmann equation for natural lakes, 1981) using the measured release rates to characterize internal loading on an annual basis.
- Calculate an approximate estimate of agricultural loading and residential loading and assume atmospheric contributions are negligible.
- Assumptions:
 - MFCWD will share all dissolved oxygen (DO) profiles from recent monitoring efforts for estimation of anoxic duration.
 - MFCWD will share all surface in-lake phosphorus data from recent monitoring efforts to input into the model.
 - MFCWD will share data on the Atwater Splash Pad (Centennial Park) volume contributions.

Subtask 4 – Identification of Potential Projects & Estimated Load Reduction/Costs

Stantec will develop prioritizations of management activities both in-lake and watershed level focused on reducing P loading for Tadd and Upper Lake. Stantec will summarize these potential BMPs and in-lake treatments along with associated estimated reductions and cost estimates.

Subtask 5 – Technical Memorandum

Stantec will develop a 5-10 page technical memorandum summarizing methods and results.

Budget

Stantec will perform the work tasks described on a time and materials basis for an estimated budget of ~~\$18,973~~, which is broken out by labor and expenses (including lab costs) for each task (Table 1). Stantec will provide monthly invoices based on time and materials for work completed.

Reference: Tadd & Upper Lakes Subwatershed Assessment

Table 1. Estimated budget.

Subtask	Labor	Expense	Total
1	\$930		\$930
2	\$3,536	\$3,530*	\$7,066
3	\$4,212		\$4,212
4	\$3,388		\$3,388
5	\$3,277		\$3,277
Total	\$15,343	\$3,530	\$18,873

Annotations:

- Red arrow from ~~\$3,530*~~ to **\$6,590***
- Red arrow from ~~\$7,066~~ to **\$10,126**
- Red arrow from ~~\$3,530~~ to **\$6,590**
- Red arrow from ~~\$18,873~~ to **\$21,933**

*Expense estimates for sediment core lab fees, transportation, and boat usage

Schedule

Stantec anticipates that the complete date will be December 31, 2026 to allow for lake sediment sampling and iterative evaluation of project goals and outcomes in coordination with the District.

Thank you,



Tom Beneke
Senior Scientist
Phone: (763) 252 6826
tom.beneke@stantec.com



Adrianna Gorsky, PhD
Environmental Scientist
Phone: (608) 896 4109
adrianna.gorsky@stantec.com

Reference: Tadd & Upper Lakes Subwatershed Assessment

By signing this proposal, MFCRWD authorizes Stantec to proceed
Client Company Name
with the services herein described and the Client acknowledges that it has read and agrees to be bound by
the attached Professional Services Terms and Conditions.

This proposal is accepted and agreed on the 9th of September, 2025.
Day Month Year

Per: Ruth A. Schaefer Middle Fork Crow River Watershed District
Client Company Name

Ruth A. Schaefer Board Chair
Print Name & Title

Ruth A. Schaefer
Signature

Signature acknowledging amended budget pursuant to the professional services terms and conditions of the September 9th, 2025 contract agreement

Attest Ruth A. Schaefer 1-13-26
Signature Date



The following Terms and Conditions are attached to and form part of a proposal for services to be performed by Consultant and together, when the Client authorizes Consultant to proceed with the services, constitute the Agreement. Consultant means the Stantec entity issuing the Proposal.

Description of Work: Consultant shall render the services described in the Proposal (hereinafter called the "Services") to the Client.

Terms and Conditions: No terms, conditions, understandings, or agreements purporting to modify or vary these Terms and Conditions shall be binding unless hereafter made in writing and signed by the Client and Consultant. In the event of any conflict between the Proposal and these Terms and Conditions, these Terms and Conditions shall take precedence. This Agreement supercedes all previous agreements, arrangements or understandings between the parties whether written or oral in connection with or incidental to the Project.

Compensation: Payment is due to Consultant within 28 days of receipt of invoice. Failure to make any payment when due is a material breach of this Agreement and will entitle Consultant, at its option, to suspend or terminate this Agreement and the provision of the Services. Interest will accrue on accounts overdue at the lesser of 1.5 percent per month (18 percent per annum) or the maximum legal rate of interest. Unless otherwise noted, the fees in this agreement do not include any value added, sales, or other taxes that may be applied by Government on fees for services. Such taxes will be added to all invoices as required. The Client will make electronic payment of the invoices, the details of which can be obtained or verified by contacting gr@stantec.com. Consultant provides no guarantee or warranty that the Client's Project requirements can be achieved within its proposed Project budget or schedule. Any services to redesign, value-engineer or make changes to the Client's Project requirements, whether for cost-saving, schedule efficiency, or otherwise, constitute additional services.

Notices: Each party shall designate a representative who is authorized to act on behalf of that party. All notices, consents, and approvals required to be given hereunder shall be in writing and shall be given to the representatives of each party.

Termination: Either party may terminate the Agreement without cause upon thirty (30) days notice in writing. If either party breaches the Agreement and fails to remedy such breach within seven (7) days of notice to do so by the non-defaulting party, the non-defaulting party may immediately terminate the Agreement. Non-payment by the Client of Consultant's invoices within 30 days of Consultant rendering same is agreed to constitute a material breach and, upon written notice as prescribed above, the duties, obligations and responsibilities of Consultant are terminated. On termination by either party, the Client shall forthwith pay Consultant all fees and charges for the Services provided to the effective date of termination.

Environmental: Except as specifically described in this Agreement, Consultant's field investigation, laboratory testing and engineering recommendations will not address or evaluate pollution of soil or pollution of groundwater. Consultant is entitled to rely upon information provided by the Client, its consultants, and third-party sources provided such third party is, in Consultant's opinion, a reasonable source for such information, relating to subterranean structures or utilities. The Client releases Consultant from any liability and agrees to defend, indemnify and hold Consultant harmless from any and all claims, damages, losses and/or expenses, direct and indirect, or consequential damages relating to subterranean structures or utilities which are not correctly identified in such information.

Professional Responsibility: In performing the Services, Consultant will provide and exercise the standard of care, skill and diligence required by customarily accepted professional practices normally provided in the performance of the Services at the time and the location in which the Services were performed.

Indemnity: The Client releases Consultant from any liability and agrees to defend, indemnify and hold Consultant harmless from any and all claims, damages, losses, and/or expenses, direct and indirect, or consequential damages, including but not limited to attorney's fees and charges and court and arbitration costs, arising out of, or claimed to arise out of, the performance of the Services, excepting liability arising from the sole negligence of Consultant.

Limitation of Liability: It is agreed that, to the fullest extent possible under the applicable law, the total amount of all claims the Client may have against Consultant under this Agreement, including but not limited to claims for negligence, negligent misrepresentation and/or breach of contract, shall be strictly limited to the lesser of professional fees paid to Consultant for the Services or \$100,000.00. No claim may be brought against Consultant more than two (2) years after the cause of action arose. As the Client's sole and exclusive remedy under this Agreement any claim, demand or suit shall be directed and/or asserted only against Consultant and not against any of Consultant's employees, officers or directors.

Consultant's liability with respect to any claims arising out of this Agreement shall be absolutely limited to direct damages arising out of the Services and Consultant shall bear no liability whatsoever for any consequential loss, injury or damage incurred by the Client, including but not limited to claims for loss of use, loss of profits and/or loss of markets.

In no event shall Consultant's obligation to pay damages of any kind exceed its proportionate share of liability for causing such damages.

Documents: All of the documents prepared by or on behalf of Consultant in connection with the Project are instruments of service for the execution of the Project. Consultant retains the property and copyright in these documents, whether the Project is executed or not. These documents may not be used for any other purpose without the prior written consent of Consultant. In the event Consultant's documents are subsequently reused or modified in any material respect without the prior consent of Consultant, the Client agrees to defend, hold harmless and indemnify Consultant from any claims advanced on account of said reuse or modification.

Any document produced by Consultant in relation to the Services is intended for the sole use of Client. The documents may not be relied upon by any other party without the express written consent of Consultant, which may be withheld at Consultant's discretion. Any such consent will provide no greater rights to the third party than those held by the Client under the contract and will only be authorized pursuant to the conditions of Consultant's standard form reliance letter.

Consultant cannot guarantee the authenticity, integrity or completeness of data files supplied in electronic format ("Electronic Files"). Client shall release, indemnify and hold Consultant, its officers, employees, Consultant's and agents harmless from any claims or damages arising from the use of Electronic Files. Electronic files will not contain stamps or seals, remain the property of Consultant, are not to be used for any purpose other than that for which they were transmitted, and are not to be retransmitted to a third party without Consultant's written consent.



Field Services: Consultant shall not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with work on the Project and shall not be responsible for any contractor's failure to carry out the work in accordance with the contract documents. Consultant shall not be responsible for the acts or omissions of any contractor, subcontractor, any of their agents or employees, or any other persons performing any of the work in connection with the Project. Consultant shall not be the prime contractor or similar under any occupational health and safety legislation.

Governing Law/Compliance with Laws: The Agreement shall be governed, construed and enforced in accordance with the laws of the jurisdiction in which the majority of the Services are performed. Consultant shall observe and comply with all applicable laws, continue to provide equal employment opportunity to all qualified persons, and to recruit, hire, train, promote and compensate persons in all jobs without regard to race, color, religion, sex, age, disability or national origin or any other basis prohibited by applicable laws.

Dispute Resolution: If requested in writing by either the Client or Consultant, the Client and Consultant shall attempt to resolve any dispute between them arising out of or in connection with this Agreement by entering into structured non-binding negotiations with the assistance of a mediator on a without prejudice basis. The mediator shall be appointed by agreement of the parties. The Parties agree that any actions under this Agreement will be brought in the appropriate court in the jurisdiction of the Governing Law, or elsewhere by mutual agreement. Nothing herein however prevents Consultant from any exercising statutory lien rights or remedies in accordance with legislation where the project site is located.

Assignment: The Client shall not, without the prior written consent of Consultant, assign the benefit or in any way transfer the obligations under these Terms and Conditions or any part hereof.

Severability: If any term, condition or covenant of the Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions of the Agreement shall be binding on the Client and Consultant.

Force Majeure: Any default in the performance of this Agreement caused by any of the following events and without fault or negligence on the part of the defaulting party shall not constitute a breach of contract, labor strikes, riots, war, acts of governmental authorities, unusually severe weather conditions or other natural catastrophe, disease, epidemic or pandemic, or any other cause beyond the reasonable control or contemplation of either party. Nothing herein relieves the Client of its obligation to pay Consultant for services rendered.

Contra Proferentem: The parties agree that in the event this Agreement is subject to interpretation or construction by a third party, such third party shall not construe this Agreement or any part of it against either party as the drafter of this Agreement.

Business Practices: Each Party shall comply with all applicable laws, contractual requirements and mandatory or best practice guidance regarding improper or illegal payments, gifts, or gratuities, and will not pay, promise to pay or authorize the payment of any money or anything of value, directly or indirectly, to any person (whether a government official or private individual) or entity for the purpose or illegally or improperly inducing a decision or obtaining or retaining business in connection with this Agreement or the Services.

FLORIDA CONTRACTS: PURSUANT TO FLORIDA STATUTES CHAPTER 558.0035 AN INDIVIDUAL EMPLOYEE OR AGENT MAY NOT BE HELD INDIVIDUALLY LIABLE FOR DAMAGES RESULTING FROM NEGLIGENCE.

