



STORMWATER MANAGEMENT COMMISSION

MEMORANDUM

To: Stormwater Management Commission

From: Mia Gerace, Stormwater Coordinator/Interim NBWW Technical Coordinator

Date: August 4, 2022

RE: North Branch Chicago River Watershed Workgroup (NBWW) Nutrient Assessment Reduction Plan (NARP)

ACTION REQUESTED: Ratification of Scope of Work and Master Professional Services Agreement between NBWW and Geosyntec for NARP Development at \$360,605 (Outcome A) OR \$590,205 (Outcome B)

The NBWW has entered an agreement with Geosyntec for NARP development services. The NARP is a special condition in select NBWW members' National Pollutant Discharge Elimination System (NPDES) permit. The NARP will establish watershed-specific water quality targets for dissolved oxygen, Chlorophyll-a, total phosphorus, dissolved reactive phosphorus, and nitrogen. Additionally, the NARP will identify point and non-point source pollutant reductions needed to meet watershed-specific water quality standards and identify mechanisms to facilitate cost-effective NARP Implementation.

Geosyntec will determine if Outcome A or Outcome B procedures will be followed by the end of Phase 1: Conduct Strategic Data Collection and Data Analysis (November 2022), which will then determine the budget. Under Outcome A, existing funding levels are adequate to proceed. Under Outcome B, the NBWW will need to re-evaluate its dues.

Attachment: NBWW NARP Fully Executed Agreement

Service Order for FY 2022
Effective Date: June 1, 2022
Project No. _____

This Service Order is issued pursuant to and subject to the terms and conditions of the Professional Services Agreement (“Agreement”) between North Branch Chicago River Watershed Workgroup (NBWW, “Client”) and Geosyntec Consultants, Inc., and its subsidiaries and affiliates (collectively “Geosyntec”) dated January 22, 2021, which is hereby incorporated herein as Appendix A. Capitalized terms used in this Service Order are defined in the Agreement.

Project Name, Description and Location of Project Site: Development of Nutrient Assessment Reduction Plan for NBWW

Service Order Authorized Representatives:

For NBWW:

Name: Brandon Janes, P.E., NBWW President
Address: 1045 Hackberry Road, Deerfield, Illinois 60015
Telephone #: 847-719-7447
Email Address: bjanes@deerfield.il.us

For Geosyntec:

Name: Matt Bardol
Address: 1420 Kensington Road, Suite 103
Telephone #: 630-432-5675
Email Address: mbardol@geosyntec.com

Scope of Services, Schedule and Compensation:

Geosyntec will perform the services (“Services”) at Client’s site located at North Branch Chicago River Watershed (“Project Site”), in accordance with the Scope, Schedule and Compensation set forth in Geosyntec’s offer to render services dated June 1, 2022 – November 30, 2022 (“Offer”) and/or as described on separate pages attached to this Service Order as Exhibit A and incorporated herein. For time and materials compensation, if a rate schedule is not included in the Offer or attached hereto, Geosyntec’s standard rates in effect as of the Effective Date above shall apply.

Basis of Compensation:

- on a time and materials basis subject to a budget of \$154,305 which will not be exceeded without Client’s advance written consent.
- on a lump sum basis in the amount of _____, subject to mutually acceptable equitable adjustments as the Services are amended.
- on a fixed unit price basis in accordance with Geosyntec’s price schedule as set forth in its Offer or in Exhibit A.

Additional Terms and Conditions:

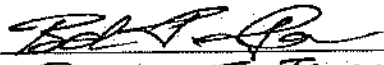
This Service Order applies to June 1, 2022 - November 30, 2022 (FY2022). An updated service order will be approved by the NBWW Executive Board prior to expending the next fiscal year funds (FY2023, FY2024). Fiscal Year 2023 and 2024 are subject to change based on the monitoring results of Fiscal Year 2022. This Service Order serves as the initial year of work for an approval to provide services to the NBWW from June 1, 2022 – December 31, 2024, subject to yearly funding availability.

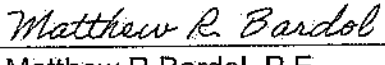
See Attachments below.

IN WITNESS WHEREOF, the Parties hereby accept the terms of this Service Order as executed by their duly authorized representatives, as follows:

North Branch Chicago River Watershed Workgroup

Geosyntec Consultants, Inc.

By: 
Name: BRANDON J. JAMES, PE
Title: SUPERINTENDENT
Date of Signature: 6/27/2022

By: 
Name: Matthew R Bardol, P.E.
Title: Senior Principal
Date of Signature: 6/24/2022

List of Attachments: Appendix A – Scope of Work

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Attachment 1: Geosyntec Consultants 2022 Rate Schedule

Attachment 2: Master Professional Services Agreement Between Geosyntec Consultants, Inc. and North Branch Watershed Workgroup (NBWW) dated January 22, 2021

Appendix A

Geosyntec's Offer to Render Services, Proposal, Quotation or Written Scope of Work, Schedule and Rate Sheet

Appendix A: Geosyntec Scope of Work

Scope of Work

Geosyntec has teamed with the Illinois Institute of Technology (IIT) to develop the NBWW NARP. The Geosyntec Team proposes the following scope of work to develop the North Branch Chicago River Watershed Workgroup (NBWW) Nutrient Assessment Reduction Plan (NARP). The methodology and results of each phase will be documented in the NARP report, for submittal to the Illinois EPA to meet the NARP National Pollutant Discharge Elimination System (NPDES) special conditions and NBWW's objectives. Project management tasks will be included in each phase of the NARP.

Phase 1: Conduct Targeted Data Collection and Data Analysis

Objective

The objective of this phase is to determine the underlying cause of water quality impairments in the North Branch Chicago River (NBCR) streams (NARP objective 1).

Approach

The Geosyntec Team will collect continuous and discrete water quality at instream locations as per the targeted monitoring plan described in the NARP workplan. The data collection will take place over a three-month period targeting low flow summer conditions, which are ideal for growth of algae. The collected data will be analyzed to assess whether the DO impairments are due to high phosphorus levels or other causes such as SOD and low reaeration in the NBCR streams. Geosyntec will analyze the data using this methodology to identify NBCR stream reaches with phosphorus-related impairments.

Activities

- Conduct a **kickoff meeting** for information transfer, establishing communication logistics, and defining NBWW's preferred means of interaction as the progress proceeds.
- Document members' collective and individual interests and concerns.
- Develop a **Quality Assurance Project Plan (QAPP)** to document the data collection methodology.
- Submit the QAPP to NBWW for review.
- Address comments from NBWW on the QAPP and submit to Illinois EPA for approval.
- Finalize the QAPP by addressing the comments from Illinois EPA.
- Deploy YSI EXO sondes or equivalent sondes at eight locations identified to collect continuous water quality monitoring data for dissolved oxygen (DO), temperature, pH, and conductivity.

- Conduct visits every two weeks to the sonde locations for a period of three (3) months to download the data, change batteries, clean the sondes, conduct any necessary calibrations, and complete the field logs.
- Install specialized chambers for measurement of sediment oxygen demand (SOD) during one of the visits.
- Collect water quality grab samples every two weeks at eight locations. The grab samples will be analyzed for the following parameters: Carbonaceous Biochemical Oxygen Demand (CBOD), Total Phosphorus (TP), Dissolved Reactive Phosphorus, Total Nitrogen, Ammonia, Nitrate-Nitrite, Total Kjeldahl Nitrogen, Sestonic Chlorophyll-*a*.
- Collect river bottom samples to analyze for benthic algae.
- Conduct **Quality Assurance/Quality Control (QA/QC)** to flag any erroneous values and assess consistency with the system understanding that already exists. Any issues will be brought to the NBWW's attention along with suggestions for resolution.
- Prepare longitudinal plots of DO, nutrients and chlorophyll-a (sestonic and benthic) along the NBCR and its three tributaries to develop an understanding of the relationships between sestonic algae, benthic algae dissolved oxygen, and phosphorus and to confirm the growing season.
- Review the data to test the hypothesis that non-nutrient factors (described above) are responsible for low DO observed in certain NBCR streams.
- **Determine which path (Outcome A or Outcome B)**, as described in the NBWW workplan, needs to be taken for development of NBWW Workplan.
- Develop a presentation summarizing the data analysis results.
- Conduct a **meeting** with NBWW to present the results of data analysis.
- Incorporate feedback with NBWW and conduct a meeting with Illinois EPA to present the results of data analysis.
- Document the data analysis results within a **chapter of the NARP report**.

Deliverables

- Monthly progress reports documenting the work done and any QA/QC issues in the data collection.
- Presentation slides and summary presenting the data review.
- Report chapter in the NARP document summarizing the data analysis.

Assumptions

- The draft QAPP will undergo one round of review with NBWW before being submitted to Illinois.
- The revised QAPP undergoes one round of review with Illinois EPA before being finalized.
- One meeting with NBWW and one meeting with Illinois EPA is budgeted under this task. The meetings will be attended by up to two Geosyntec personnel.

Work will occur in FY2022 (unless QAPP approval from IEPA delays monitoring efforts, work may extend into FY2023)

Phase 2: Develop Modeling Tools

Objective

The objective of this phase is to develop the modeling tools to support the development of the NBWW NARP including identifying phosphorus load reductions and other measures to eliminate phosphorus-related impairments in the NBCR streams (NARP Objective 2).

Sub-Phase 2A: SWMM Model Development

Approach

The Geosyntec Team will develop and utilize a linked watershed and instream model to simulate the impact of nutrients on instream water quality in NBCR. The linked modeling framework will be developed for the portion of the watershed that includes stream reaches determined to have phosphorus-related impairments under Phase 2. The linked model will be developed using the platforms specified in the NARP workplan - SWMM for the watershed model and WASP for the instream model.

The watershed model will be developed using the following input datasets, at a minimum:

- Elevation: LiDAR Data for Lake/Cook County.
- Soil Survey: United States Department of Agriculture Web Soil Survey.
- Land Use: 2015 Chicago Metropolitan Agency for Planning land use data.
- Rainfall: Lake County.

The watershed model will be used to develop the timeseries of flow and load estimates for nutrients and sediments from non-point sources. The watershed model will be calibrated to match the flow and water quality data in the NBCR and its tributaries.

Activities

- Acquire and review the necessary data and studies for the SWMM model development from NBWW, municipal separate storm sewer systems (MS4s), Lake County, and other publicly available sources.
- Conduct a review of the County Stormwater Ordinance which all the communities implement
- Process datasets such as landuse and elevation data for SWMM model setup.
- Delineate the NBCR watershed into subwatersheds using the 2018 Lake County topography data.
- Conduct QA/QC of the SWMM model input files (peer and senior reviews).
- Develop a **SWMM model** for the watershed.
- Calibrate the hydrology for the SWMM model to match available flow data.
- Conduct preliminary water quality calibration for the SWMM model to match available instream water quality loading data in the tributaries.
- Conduct a sensitivity analysis to identify which SWMM model input parameters are the largest sources of potential uncertainty in the model results to understand implications on watershed implementation scenarios.

- Develop a presentation describing the watershed model development and calibration results.
- Conduct a **meeting** to present the results of the initial watershed model development and calibration/validation results.
- Update the model based on the feedback received from NBWW.
- Document the watershed model development and calibration in a **report chapter**.

Deliverables

- A calibrated SWMM model for the NBCR watershed.
- Presentation slides and meeting presenting the watershed model development and calibration.
- A report chapter summarizing the SWMM model development and calibration process.

Assumptions

- One meeting will be conducted to present the watershed model development and calibration/validation. Up to two Geosyntec personnel will participate virtually.

Phase 2B: WASP Model Development

The instream model of the phosphorus-impaired reaches of the NBCR and relevant tributaries will be developed using the WASP modeling platform. The WASP model is a time variable one-dimensional model that is capable of simulating nutrient dynamics and their impact on phytoplankton and DO in receiving waters. The data sets that will be utilized for instream model include, at minimum:

- Cross-section data: Lake County.
- Upstream water quality: NBWW discrete and continuous Sonde measured data.

The instream model will include the capability to simulate hydraulics (flow, velocity and depth) and water quality (nutrients, chlorophyll-*a*, sestonic algae, benthic algae, DO, and temperature). The reach segments that will be included in the instream model will depend on the outcome of Phase 1. These are listed below:

- Outcome A: Skokie River downstream of the Skokie Lagoons and mainstem NBCR to station WF19.
- Outcome B: West Fork, Skokie River downstream of the Skokie Lagoons and mainstem NBCR to station WF19.

The instream model will be calibrated to datasets collected under Phase 1 to help ensure the model is representative of existing conditions.

Activities

- Process SWMM model output for incorporating into the WASP model.
- Process other datasets to develop WASP model inputs including cross-section data, point source flow and water quality data.
- Conduct QA/QC of the instream model input files (peer and senior reviews).
- Develop the segmentation for the NBCR and other relevant tributaries.

- Conduct QA/QC of the instream model output files (peer and senior reviews).
- Calibrate the **instream model** to field collected, instream data under Phase 1.
- Conduct a sensitivity analysis to identify which WASP model input parameters are the largest sources of potential uncertainty in the model results.
- Develop a presentation documenting the development and calibration of the WASP model.
- Develop a presentation documenting the calibration of the instream model.
- Conduct a **meeting** with the NBWW to present the calibration of the instream model.
- Update the model based on the feedback received from NBWW.
- Document the instream model development and calibration in a **report chapter**.

Deliverables

- A calibrated WASP model for the modeled reaches.
- Presentation slides and meeting presenting and instream model development.
- Presentation slides and meeting presenting the final calibration of the WASP model.
- A report chapter describing the instream model development.

Assumptions

- One meeting will be conducted to present the WASP model development and calibration. Up to two Geosyntec Team members will participate.
- Presentation slides and meeting presenting the development and calibration of WASP model.
- A report chapter describing the development of the WASP model.

Phase 3 work will occur in FY2023.

[Phase 3: Watershed Management Scenarios](#)

Objective

This objective of this phase is to explore and identify point and non-point source phosphorus reductions and other measures to eliminate the phosphorus-related impairments and achieve site-specific water quality targets (NARP Objective 2).

Approach

The Geosyntec Team will work with the NBWW to develop a list of recommended measures to address the phosphorus-related impairments. The recommended measures will be evaluated using the modeling tools developed under Phase 2. The scenarios used in the model simulations to evaluate the recommended measures will include baseline conditions, point source load reductions, non-point source load reductions, other measures, and combinations of potential watershed management scenarios. The

Geosyntec Team will work with the NBWW to streamline these scenarios based on model sensitivity to provide the cost-effective benefit to the NBWW NARP.

After analyzing the combinations of potential watershed management actions, the model results will be evaluated to identify the potential site-specific nutrient targets (or recommended NNC). This will include consideration of magnitude, duration, and frequency which is necessary for specifying water quality criteria. The team will also note whether there are information gaps that should be addressed before the targets can be used as water quality criteria. One potential outcome is that there are no combinations of feasible and cost-effective measures to eliminate all of the phosphorus-related impairments. In this case, the Geosyntec Team will help the NBWW understand how to indicate that a Use Attainability Analysis (UAA) should be conducted in the future. The outcome of the UAA would be to establish the highest attainable use and NNC to protect that use.

The Geosyntec Team will also utilize the models developed in Phase 2 to help inform the IPS tool to better identify projects for improving the biological health of the streams. The IPS tool requires inputs, which are based on monitoring data and additional information. The models developed under Phase 2 will be leveraged to provide inputs for the flow regime (flow flashiness of stream) and water quality to supplement the monitoring data.

Activities

- Develop a list of recommended watershed management measures to eliminate the phosphorus-related impairments.
- Conduct a **meeting** with NBWW to discuss the proposed suite of measures and refine the list of measures based on NBWW input.
- Identify a critical time period for baseline conditions.
- Develop a baseline model for the identified critical time period.
- Customize the model pre-processor tool for the baseline model and catalog files to efficiently develop and assess alternative scenarios.
- Generate the necessary input files using the model pre-processor for the development of the model scenarios.
- Conduct QA/QC of the model scenario input files.
- Simulate and post-process the model scenario results.
- Evaluate potential site-specific water quality targets and the potential need for a UAA.
- Determine the phosphorus reductions from point and non-point sources and other measures needed to eliminate the phosphorus-related water quality impairments.
- Process the model scenario results to be incorporated into the IPS tool.
- Develop a **technical presentation** describing the model scenario results.
- Provide recommendations for combining scenarios or running any additional model scenarios.

- Develop recommended site-specific nutrient targets or numeric nutrient criteria (if feasible).
- Conduct a **meeting** with the NBWW to present the model scenario results, recommendations, and conclusions.
- Document the work done under this phase in a **report chapter**.

Deliverables

- Presentation slides summarizing the results of this phase.
- Report chapter documenting the methodology and results of this phase.

Assumptions

- A total of six watershed management scenarios for eliminating phosphorus-related impairments will be evaluated.
- NBWW will make the final determination of the selected scenario or scenarios that are ultimately chosen to meet the NARP conditions.
- Two meetings will be conducted under this phase to present the findings. Three Geosyntec Team members will participate.
- Development of a Use Attainability Analysis is outside of this scope of work.

Work will occur in FY2023 and FY2023.

Phase 4: Implementation Plan and Schedule

Objective

The objective of this phase is to plan for facilitating cost-effective implementation of measures identified under Phase 3 to reduce phosphorus loadings and ultimately developing a plan to track success of those proposed measures (NARP Objective 3).

Approach

The Geosyntec Team will identify specific implementation projects based on the results of Phase 3 which will individually and cumulatively help achieve the desired water quality changes in the NBCR and its tributaries. The Team will work with the NBWW to develop a project timeline that serves the best interests of the NBWW members and stakeholders while addressing the requirements of the NPDES permits. The Geosyntec Team will leverage the watershed-based plan (currently under development) and the Lake County Green Infrastructure Model and Strategy¹ and partnership opportunities with area stakeholders to identify potential green infrastructure opportunities in the NBCR watershed.

A draft implementation plan and schedule will be developed for the recommended implementation projects. These projects will be developed considering the budget allocations in the Capital Improvement

¹ The Conservation Fund. Green Infrastructure Model and Strategy for Lake County, Illinois

Program (CIP) for Lake and Cook Counties and the results of the IPS tool. The implementation plan will provide a comparative cost analysis to examine the relative costs, benefits, and feasibility of various alternatives. If non-point source treatment suggests reduced compliance costs, the implementation plan and schedule will also include the feasibility of a water quality trading program in the watershed. The plan will also identify other potential financing vehicles to support eliminating the phosphorus-related impairments. Depending on the recommended implementation strategies, potential additional sources of funding will be identified to leverage local resources including national and local philanthropic foundations investing in green infrastructure solutions; corporate ESG (Environmental, Social, and Governance) commitments around carbon, water quality, and habitat; mitigation opportunities; and relevant federal programs including FEMA's Building Resilient Infrastructure and Communities (BRIC) program. We will also conduct a comprehensive inventory of aligned stakeholder activity within the watershed along with associated funding sources and identify opportunities to develop innovative partnerships to reduce compliance costs and/or generate additional voluntary action.

The plan will also identify other measures that support eliminating the phosphorus-related impairments. Stakeholders with the potential to implement these other projects (e.g. habitat enhancement or other) will be identified and interviews will be conducted to discuss potential implementation of projects.

The Geosyntec Team will work with the NBWW to develop a long-term schedule for facilitating the NARP implementation plan. The draft implementation plan and schedule will then be compiled in a draft NARP report and combined with the results from the phases above.

Activities

- Develop a list of implementation projects to be undertaken by the NBWW members to address the phosphorus-related impairments, including a reasonable timeline and planning-level cost estimates.
- Integrate this list of projects with any significant Lake and Cook Counties and other NBWW members projects, developments, or other undertakings to ensure optimal investment of resources and capital.
- Compile the list of prioritized projects into a workable implementation schedule agreeable to the NBWW.
- Develop cost estimates and means to implement the projects with assistance from the NBWW.
- Identify the list of stakeholders that the NBWW can work with to implement the other measures to address the phosphorus-related impairments.
- Document the implementation plan and schedule in a **report chapter** of the NARP.
- Develop a long-term adaptive management plan to document the benefits of implemented projects, track the impact of proposed projects, and adjust the NARP as needed.
- Conduct a **meeting** with the NBWW to discuss the draft implementation schedule.
- Refine the draft implementation plan and schedule based on input from the NBWW members.

- Conduct a series of **meetings** with stakeholders to discuss the Draft NARP.
- Develop a **Draft NARP report** and submit it to the NBWW.
- Revise the Draft NARP based on input from various stakeholders and NBWW.
- Submit the Revised NARP to Illinois EPA for review.
- Finalize the NARP by addressing comments from Illinois EPA.

Outcomes & Deliverables

- Draft NARP
- Revised NARP
- Final NARP

Assumptions

- The Draft NARP will undergo two rounds of review before being finalized.
- NBWW will provide one set of consolidated review comments on each draft report.
- A total of two (2) in-person meetings with the NBWW are budgeted under this phase.

Work will occur in FY2024

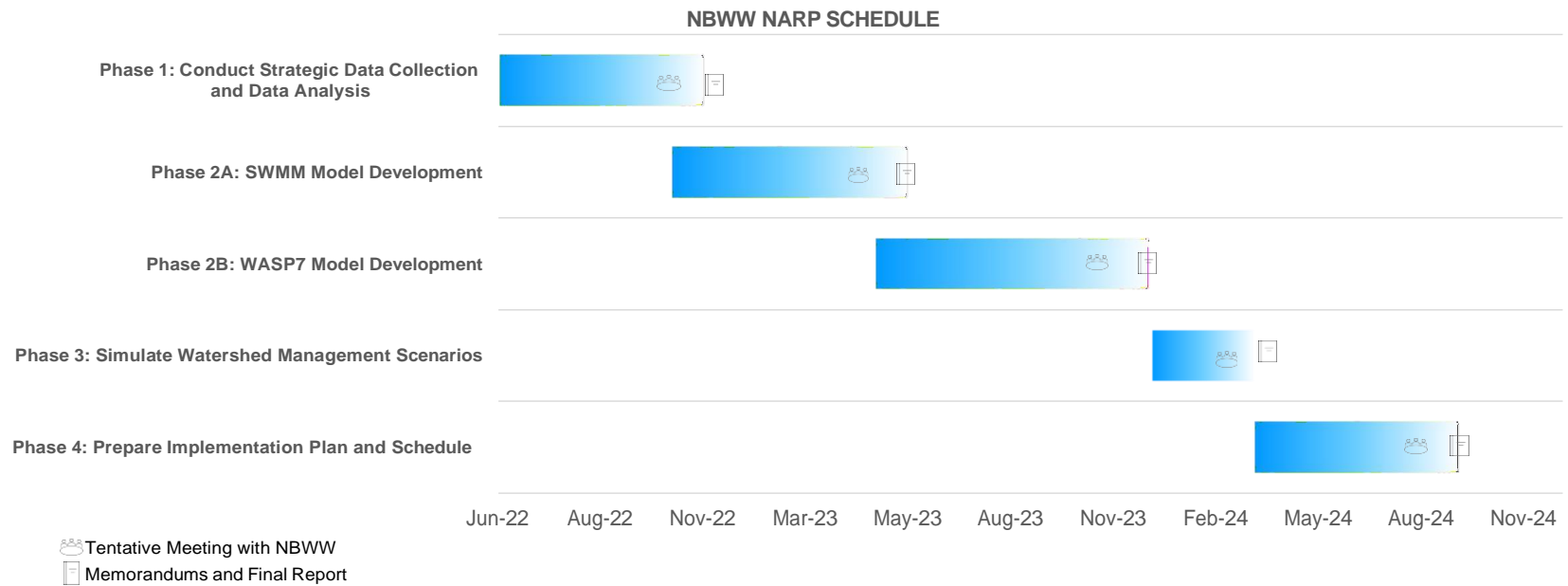
Schedule

Figure 1 provides the proposed schedule. Meetings are scheduled to coincide with NBWW meetings to the greatest extent but are subject to change based on the availability of the NBWW Executive Board, membership, and Geosyntec staff.

Compensation

The **tables** below show the phased cost estimate for Outcomes A and B based on the proposed schedule. Costs are broken down by each NBWW fiscal year from December 1st to November 30th. Geosyntec understands that implementation of each phase is subject to appropriation of sufficient funds by the NBWW Executive Board each year. Geosyntec is willing to extend the NBWW NARP contract and costs to December 31, 2025 with no additional costs pending the 2022 monitoring results (if required).

Figure 1. Project Schedule for the NBWW NARP



Geosyntec Revised Budget Only – 6/20/2022

Outcome A – Targeted Approach for NBWW NARP (NARP Workplan Hypothesis Correct based on FY2022 Monitoring Data)

PHASE	DESCRIPTION	2022	2023	2024	TOTAL
1	Conduct Targeted Data Collection and Data Analysis	\$154,305	\$0	\$0	\$154,305
2	Develop Modeling Tools	\$0	\$116,000	\$0	\$116,000
3	Watershed Management Scenarios	\$0	\$0	\$50,800	\$50,800
4	Implementation Plan and Schedule	\$0	\$0	\$39,500	\$39,500
Total Budget Estimate:		\$154,305	\$116,000	\$90,300	\$360,605

Outcome B - Skokie & West Fork Subwatershed NBWW NARP (NARP Workplan Hypothesis Incorrect based on FY2022 Monitoring Data)

PHASE	DESCRIPTION	2022	2023	2024	TOTAL
1	Conduct Targeted Data Collection and Data Analysis	\$154,305	\$0	\$0	\$154,305
2	Develop Modeling Tools	\$0	\$261,300	\$0	\$261,300
3	Watershed Management Scenarios	\$0	\$0	\$114,600	\$114,600
4	Implementation Plan and Schedule	\$0	\$0	\$60,000	\$60,000
Total Budget Estimate:		\$154,305	\$261,300	\$174,600	\$590,205



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ATTACHMENTS (2)

Attachment 1: Geosyntec 2022 Rate Schedule

Attachment 2: Master Professional Services Agreement Between Geosyntec Consultants, Inc. and North Branch Watershed Workgroup (NBWW) dated January 22, 2021

GEOSYNTEC CONSULTANTS 2022 RATE SCHEDULE

	<u>Rate/Hour</u>
Staff Professional	\$136
Senior Staff Professional	\$159
Professional	\$180
Project Professional	\$203
Senior Professional	\$230
Principal	\$250
Senior Principal	\$269
Technician I	\$ 70
Technician II	\$ 74
Senior Technician I	\$ 83
Senior Technician II	\$ 89
Site Manager I	\$ 98
Site Manager II	\$108
Construction Manager I	\$120
Construction Manager II	\$130
Senior Designer	\$170
Designer	\$140
Senior Drafter/Senior CADD Operator	\$125
Drafter/CADD Operator/Artist	\$110
Project Administrator	\$ 70
Clerical	\$ 58
Direct Expenses	Cost plus 10%
Subcontract Services	Cost plus 12%
Technology/Communications Fee	3% of Professional Fees
Specialized Computer Applications (per hour)	\$ 12
Personal Automobile (per mile)	Current Gov't Rate
Photocopies (per page)	\$.08

Rates are provided on a confidential basis and are client and project specific.

Unless otherwise agreed, rates will be adjusted annually based on a minimum of the Producer Price Index
for Engineering Services (PPI).

Rates for field equipment, health and safety equipment, and graphical supplies presented upon request.

Construction management fee presented upon request.

MASTER PROFESSIONAL SERVICES AGREEMENT
BETWEEN
GEOSYNTEC CONSULTANTS, INC.
AND
North Branch Chicago River Watershed Workgroup (NBWW)

This Master Professional Services Agreement ("Agreement") is made effective January 22, 2021 by and between NBWW ("Client") and Geosyntec Consultants, Inc. and its subsidiaries and affiliates¹ (collectively "Geosyntec"). The Client and Geosyntec are referred to herein individually as "Party" and collectively as "Parties".

NOW, THEREFORE, in consideration of the promises set forth below, the Parties hereby agree as follows:

1. SERVICE ORDERS: The services to be provided by Geosyntec pursuant to this Agreement ("Services") shall be described in written orders ("Service Orders") agreed to by the Parties. Service Orders shall set forth the Services, schedule and budgeted fees and expenses for the Services. If Services are to be rendered in connection with a specific location, the Service Order shall also describe the site ("Project Site"). The terms and conditions of this Agreement shall apply to and be incorporated into each Service Order and any Purchase Order, or other document issued by Client and to all Services to be rendered. Any terms introduced or proposed by Client which are not expressly incorporated into this Agreement or a Service Order are rejected.

2. CLIENT RESPONSIBILITY: Client shall provide Geosyntec, in writing, all information relating to Client's requirements for the Project in a timely manner, give Geosyntec prompt written notice of any suspected deficiency in the Services and with reasonable promptness to avoid impacts to the progress of the project ("Project"), provide Geosyntec with approvals and decisions. When the Services include on-site activities, Client shall also correctly identify the location of subsurface structures, such as pipes, tanks, cables, and utilities and notify Geosyntec of any potential hazardous substances or other health and safety hazards or conditions known to Client existing on or near the Project Site. Client shall be responsible for obtaining all necessary permits required to execute the Services and Project work. If included in the Services, Geosyntec will assist Client with permit applications, however all impacts and obligations will be the responsibility of the Client, and Geosyntec shall not be liable for any delays related to obtaining permits, whether caused by the Client, regulatory bodies, or other third parties. In addition, Client agrees to hold Geosyntec harmless from any claim related to or arising from circumstances, acts or omissions in connection with the Project Site which occurred prior to Geosyntec providing any Services under this Agreement.

3. COMPENSATION, INVOICING AND PAYMENT: The method of compensation shall be identified in the Service Order. When the method of compensation is on a time and materials basis, Geosyntec shall submit invoices to Client reflecting the number of hours worked multiplied by the hourly rate reflected in Geosyntec's rate schedule, along with any expenses for reimbursement. The rates and rate schedule for projects lasting more than one year may be adjusted annually. The rates are inclusive of all taxes except such value added, sales, service or withholding taxes that are imposed by some jurisdictions, and which shall be explicitly identified. Any such applicable taxes will be added to the invoice and shall be paid by the Client. Geosyntec shall not be liable for taxes imposed outside the U.S., Canada, Australia, Ireland, and the United Kingdom. Where compensation is subject to a "not to exceed" budget such limit shall only apply to the total approved budget. Any amount allocated to a task or milestone may be exceeded without Client authorization as long as the total budget limit is not exceeded. Rates for days of actual testimony at depositions, trials, or hearings will be two times the rate shown on the rate schedule. All costs incurred and time spent by Geosyntec responding to subpoenas related to litigation which Geosyntec is not a named party shall be reimbursable in accordance with Geosyntec's then current rate schedule.

Geosyntec shall periodically submit invoices to Client and Client shall pay each invoice in accordance with any applicable prompt payment legislation within thirty (30) days of the date of the invoice. Payment shall not be conditioned upon Client's receipt of payment from any other parties. If Client objects to all or any portion of any invoice, Client shall notify Geosyntec in writing of the objection within fifteen (15) calendar days from the date of the invoice, give reasons for the objection, and pay that portion of the invoice not in dispute.

Geosyntec may invoice Client for any expense authorized by the Client exceeding \$5,000 before the expense has been incurred by Geosyntec. Client shall pay the greater of an additional charge of one percent (1%) of the amount of the invoice per month or the maximum percentage allowed by law for any payment received by Geosyntec more than thirty (30) days from the date of the invoice.

¹ The defined term "Geosyntec" refers to Geosyntec Consultants, Inc., except where Services are rendered in Michigan it refers to Geosyntec Consultants of Michigan, Inc.; in New York it refers to B&B Engineers and Geologists of New York, P.C.; in Puerto Rico it refers to Geosyntec Consultants of Puerto Rico, P.C.; in North Carolina it refers to Geosyntec Consultants of NC, P.C.; in Canada it refers to Geosyntec Consultants International, Inc.; in the United Kingdom it refers to Geosyntec Consultants, Ltd.; and in Australia it refers to Geosyntec Consultants Pty Ltd. The applicable entity shall be identified on the Service Order. Client may be billed by Geosyntec Consultants, Inc. on behalf of the affiliate.

Attachment 2

Payment thereafter shall first be applied to accrued interest and then to the unpaid principal. The additional charge shall not apply to any disputed portion of any invoice resolved in favor of Client. In the event of a legal action brought by Geosyntec against Client for invoice amounts not paid, attorneys' fees, court costs, and other related expenses shall be paid to the prevailing party by the other Party. No deductions shall be made from Geosyntec's compensation on account of penalty, liquidated damages or other sums withheld from payments to Client or others, or on account of the cost of changes in the Services.

In addition to the above, if payment of Geosyntec invoices is not maintained on a thirty (30) day current basis, Geosyntec may, by ten (10) days written notice to Client, suspend further performance and withhold any and all deliverables and data from Client until such invoice payments are restored to a current basis. If the Project Site is located in a jurisdiction which requires Geosyntec to pay any subcontractors within a stated period of time, the Client shall make payment to Geosyntec within five (5) days prior to the lapse of such time period.

4. CHANGES: In the event services beyond those specified in the Services Order are provided by Geosyntec or requested by the Client, the Parties shall negotiate an adjustment to the scope, schedule or fee, and the Service Order shall be equitably adjusted to represent such changes.

5. RECOGNITION OF RISK: Client recognizes that services and opinions relating to environmental, geologic, and geotechnical conditions are based on limited data and that actual conditions may vary from those encountered at the times and locations where data are obtained, and that the limited data results and uncertainty with respect to the interpretation of these conditions, despite the use of due professional care. In addition, any estimate of costs prepared by Geosyntec represents judgment as a design professional and is supplied for the general guidance of the Client. Since Geosyntec has no control over the cost of labor and material, or over competitive bidding or market conditions, Geosyntec does not guarantee the accuracy of such estimates as compared to Contractor bids or actual cost to the Client. Accordingly, any estimates, forecasts and predictions provided as part of the Services are presented solely on the basis of the assumptions accompanying the estimates, forecasts and predictions.

6. STANDARD OF CARE: Geosyntec shall render its Services in a manner consistent with the level of care and skill ordinarily exercised by other firms rendering the same services under similar circumstances at the time the Services are performed. The representations provided herein are provided expressly in lieu of all other warranties or conditions, express or implied. All statutory or implied warranties and conditions including but not limited to those of merchantability and fitness for a purpose are hereby expressly negated and excluded. Should an error or omission become apparent in the Services during the term of the Agreement or within ninety (90) days following the completion of the Services, Geosyntec's liability shall be limited to the correction of the error or omission and shall be contingent upon Geosyntec being notified promptly.

7. INDEMNIFICATION: To the fullest extent permitted by law, the Parties shall indemnify and hold harmless each other (and each of their respective officers, directors, shareholders, partners, employees, and representatives) from and against all claims, demands, causes of actions, suits, based upon or arising from allegations of illness, injuries to persons, destruction of or damage to property, costs, expenses, legal or otherwise, to the extent arising out of the indemnifying Party's negligent acts or omissions. In addition, the Parties shall indemnify, defend, and hold harmless the other party against all loss, cost, expense, royalties, claims for damages or liability in law or in equity, including without limitation, attorney fees, court costs, and other litigation expenses that may at any time arise or be set up for any infringement (or alleged infringement) of any patent, copyright, trade secret, or other proprietary right of any person or entity in consequence of the use by indemnifying Party of any documents or materials.

8. LIMITATION OF LIABILITY: To the fullest extent permitted by law, the liability of Geosyntec, its employees, agents, and subcontractors for claims of loss, injury, death, damage, or expense incurred by the Client, including, without limitation, third party claims for contribution and indemnification, arising out of or relating to Services rendered or obligations imposed under this Agreement or any Service Order issued, shall not exceed, in the aggregate, the greater of \$100,000 or the amount paid to Geosyntec under the applicable Service Order. The Client shall indemnify and defend Geosyntec against any third party claims against Geosyntec exceeding the limitation of liability. In addition, neither Party shall be entitled to recover consequential damages, including, without limitation, loss of use or loss of profits, from the other Party, their employees, representatives, agents, subsidiaries, affiliates, successors or assigns. The foregoing limitations of liability shall apply regardless of whether the allegation is based on a theory of breach of contract, negligence or other wrongful act, but shall not apply if caused by gross negligence or willful misconduct.

9. **INSURANCE:** Geosyntec shall maintain during the term of this Agreement the following minimum insurance coverage:

- | | | |
|-------|---|-------------------------------------|
| (i) | Workers' Compensation | Statutory |
| | Employer's Liability | - \$1,000,000 per occurrence |
| (ii) | Commercial General Liability or
Public Liability Insurance | - \$1,000,000 per occurrence |
| (iii) | Comprehensive Automobile Liability | - \$1,000,000 combined single limit |
| (iv) | Professional Liability | - \$1,000,000 per claim |

Geosyntec shall provide Client with an insurance certificate upon Client's request.

10. **DISPUTES:** The Parties agree to promptly resolve their differences through good faith negotiations as a condition precedent to filing a formal claim. In the event disputes remain following such good faith negotiations between the Parties, the remaining dispute shall be submitted to a senior representative of each Party who shall have the authority to enter into an agreement to resolve the dispute ("Representative"). The Representatives shall not have been directly involved in the performance of the Services and shall negotiate in good faith. If the Representatives are unable to resolve the dispute within three weeks or within such longer time period as the Representatives may agree, the dispute shall be mediated by an independent third-party agreed to by both parties. Any disputes or portions thereof remaining following mediation shall be determined by remedies at law or equity, as they may be available, subject to the limitations in this Agreement. Any applicable statute of limitations on any claim in any way related to Agreement shall commence to run and alleged cause of action shall be deemed to have accrued no later than the date of either Geosyntec's final invoice or termination of this Agreement by either Party. Both Parties agree that the applicable statute of limitations for any claims in any way related to this Agreement shall be shortened to a period not longer than two years, unless a shorter statute of limitations would otherwise apply.

11. **RIGHT OF ENTRY:** Client grants to Geosyntec, and, if the Project Site is not owned by Client, will provide that permission for a right of entry from time to time for Geosyntec, its employees, agents, and subcontractors for the purpose of providing the Services. If Geosyntec is required to enter into agreements with third parties to obtain access to property to perform the Services, such agreements must be consistent with the obligations imposed on Geosyntec under this Agreement and the compensation, Schedule and terms and conditions of this Agreement shall be subject to an equitable adjustment to reflect additional obligations imposed thereunder. If the provisions of any written access agreement between Client and the property owner require the Client's agents, such as Geosyntec, to name the property owner as an additional insured, those provisions shall be incorporated into this Agreement. Client shall indemnify and defend Geosyntec for any liabilities or claims that may result from a right of entry agreement with legal obligations imposed upon Geosyntec greater than those in this Agreement.

12. **PROJECT SITE RESPONSIBILITIES:** If included in the Services, Geosyntec shall visit the Project Site as needed to complete the Services. Construction observation responsibilities will occur at appropriate intervals to allow Geosyntec to become generally familiar with the progress, and quality of work the contractor's, to determine if the work is proceeding in general accordance with the contract documents. Visits to the Project Site and observations made by Geosyntec shall not make Geosyntec responsible for, nor relieve the construction contractor(s) of the full responsibility for all construction means, methods, techniques, sequences, and procedures necessary for coordinating and completing all portions of the work under the construction contract(s) and for all safety precautions incidental thereto. Geosyntec shall incur no liability for unforeseen costs and/or claims relating to the Services that arise from Project Site conditions that differ from anticipated conditions, including without limitation for any subsurface conditions or systems and/or utility configurations.

13. **HAZARDOUS SUBSTANCES:** "Hazardous Substances" shall refer to any hazardous, toxic, or dangerous substance that cannot be introduced back into the environment under existing law without additional treatment. In the event that Geosyntec encounters unanticipated Hazardous Substances, it may suspend work for safety reasons until mutually agreeable arrangements are made, including but not limited to amendments to this Agreement. Solely upon Client's request, Geosyntec may assist Client in identifying options for off-site treatment, storage or disposal of the Hazardous Substances. Geosyntec will not make any independent determination relating to the selection of a treatment, storage, or disposal facility nor subcontract such activities through transporters or others. Client shall sign all necessary manifests for the disposal of Hazardous Substances. In the event Parties mutually agree that Geosyntec will sign manifests, Geosyntec will only sign as agent on behalf of Client, and Geosyntec will not be a generator, transporter, or disposer of the Hazardous Substances. Client shall indemnify, defend, and hold harmless Geosyntec against any claim or loss resulting from such signing and from Geosyntec's handling of Hazardous Substances.

14. **CONFIDENTIALITY:** Geosyntec will maintain as confidential the provisions of this Agreement and any business information that is not generally known to, and cannot be readily ascertained by others, and which a reasonable person under the circumstances would consider confidential and will not release, distribute, or publish same or Geosyntec's test results to any third party without prior permission from Client, unless required by law, order of a court or regulatory body of competent jurisdiction. Such release

will occur only after prior notice to Client.

15. INTELLECTUAL PROPERTY AND USE OF DOCUMENTS: Provided that Geosyntec has been fully paid for the Services, Client shall have a perpetual, non-transferable license and right to use the documents, maps, photographs, drawings, and specifications resulting from Geosyntec's efforts on the Project. Except where necessary to give effect to the foregoing limited license, Geosyntec is not granting Client any license for Geosyntec's patents, patent applications, patent disclosures, inventions and improvements (whether patentable or not), copyrights, copyrightable works (including computer programs), trade secrets, trademarks, service marks, know-how, database rights, or any other form of intellectual property created, developed, or conceived outside the performance of Services. Geosyntec shall have the right to retain copies of all such materials. Work products delivered in electronic form are subject to anomalies, errors, misinterpretation, deterioration, and unauthorized modification, or may be draft or incomplete work products, electronic documents provided by Geosyntec are furnished solely for convenience and only those professional work products in hard-copy format bearing Geosyntec's signature or professional stamp may be relied upon by Client or other recipients approved in writing. Geosyntec may rely upon data provided by Client or other third parties without independent verification unless otherwise provided in the Service Order. If the Services include the use of a GIS database Client acknowledges that any changes to the information contained in the database will result in different results. The Client will be solely responsible for any modifications to the database made by Client.

Geosyntec is performing the Services under this Agreement solely for Client and solely with respect to the Project, and not for any other party or purpose. No party other than Client shall be entitled to rely on any reports or recommendations provided by Geosyntec as part of the Services ("Reports") without Geosyntec's separate written consent, and Geosyntec shall have no liability for the use of any Reports by any party for any purpose other than the Project. Client will indemnify, defend and hold Geosyntec harmless from any claims by third parties arising from the use of any Reports.

16. DELAYS AND FORCE MAJEURE: Geosyntec shall not be responsible for any delays resulting from actions or inactions of the Client or third parties. In the event that Geosyntec field or technical work is interrupted due to causes reasonably outside of its control, Geosyntec's schedule for performance and compensation shall be equitably adjusted (in accordance with Geosyntec's current Rate Schedule) for the additional labor, equipment, time, and other charges associated with maintaining its work force and equipment available during the interruption, and for such similar charges that are incurred by Geosyntec for demobilization and subsequent remobilization.

Except for the foregoing provision, neither Party shall hold the other responsible for damages or delays in performance caused by force majeure, acts of God, or other events beyond the reasonable control of the other Party. Delays within the scope of this Section which cumulatively exceed forty-five (45) days shall, at the option of either Party, make the applicable Service Order subject to termination for convenience or to renegotiation.

17. SUSPENSION/TERMINATION: If a Service Order or Geosyntec's Services are suspended by the Client for more than thirty (30) days, upon resumption of Services the Client shall compensate Geosyntec for expenses incurred as a result of the suspension and resumption of Services and Geosyntec's schedule and fees for the remainder of the Services shall be equitably adjusted. If the Services are suspended for more than ninety days, consecutive or in the aggregate, Geosyntec may terminate the Service Order upon giving not less than five (5) days written notice to the Client.

Either Party can terminate this Agreement for cause if the other commits a material and uncured breach of this Agreement, including untimely payment, or becomes insolvent, has a receiver appointed, or makes a general assignment for the benefit of creditors. Termination for cause shall be effective five (5) calendar days after receipt of a written notice of termination, unless a later date is specified in the notice of termination. The notice of termination for cause shall contain specific reasons for termination, and both Parties shall cooperate in good faith to cure the causes for termination stated in the notice of termination. Termination for cause shall not be effective if reasonable action to cure the breach has been taken before the effective date of the termination. Client shall pay Geosyntec upon invoice for services performed and charges incurred prior to suspension or termination, plus suspension and termination charges. Termination charges shall include, without limitation, the putting of Project documents and analyses in order and all other related charges incurred which are directly attributable to termination. In the event of termination for cause, the Parties shall have their remedies at law as to other rights and obligations between them, subject to the other terms and conditions of this Agreement.

18. ASSIGNMENT AND THIRD PARTY RIGHTS: Neither Party to this Agreement shall assign its duties and obligations hereunder without the prior written consent of the other Party. This Agreement shall not create any rights or benefits to Parties other than Client and Geosyntec.

19. VALIDITY, SEVERABILITY AND GOVERNING LAW: The provisions of this Agreement shall be enforced to the fullest extent permitted by law. If any provision of this Agreement is found to be invalid or unenforceable, the provision shall be construed and applied in a way that comes as close as possible to expressing the intention of the Parties with regard to the provisions and that saves the validity and enforceability of the provision. This Agreement shall be governed by the laws of the place of the Project Site unless

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expressly provided otherwise in the Service Order. In the event that any provision or portion of this Agreement is held to be unenforceable or invalid the remaining provisions or portions shall remain in full force and effect.


20. INTEGRATED WRITING: This Agreement constitutes a final and complete repository of the agreements between Client and Geosyntec. It supersedes all prior or contemporaneous communications, representations, or agreements, whether oral or written, relating to the subject matter of this Agreement. Modifications to the terms and conditions of this Agreement shall not be binding unless made in writing and agreed to by both Parties. Any written authorization or notice to proceed given by the Client to Geosyntec regarding Services shall be incorporated into the relevant Service Order and shall have the effect of attaching this Agreement to the authorized Services.

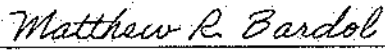
21. NOTICES, SIGNATURES AND AUTHORIZED REPRESENTATIVES: The following signatories of this Agreement are the authorized representatives of Client and Geosyntec for the execution of this Agreement. Each Service Order shall set forth the name and address of the respective authorized representatives of the Parties for the administration of that Service Order. Any information or notices required or permitted under this Agreement or any Service Order shall be deemed to have been sufficiently given if in writing and delivered to the authorized representative identified in the applicable Service Order. Notice given by mail may also be transmitted electronically at the time of mailing.

IN WITNESS WHEREOF, the Parties hereby consent to the use and enforceability of electronic signatures in the course of their doing business and they have caused this Agreement to be executed by their duly authorized representatives, as follows:

North Branch Chicago River Watershed Workgroup

Geosyntec Consultants, Inc.

By: 
Name: BRANDON J. JAMES, PE
Title: SUPERINTENDENT
Date of Signature: 6/27/2022

By: 
Name: Matthew R Bardol, P.E.
Title: Senior Principal
Date of Signature: 6/24/2022