Des Plaines River Watershed Workgroup

General Membership

02/18/2021 01:30 pm

Virtual Meeting (Meeting ID: 828 0705 5988, Password: 696876)

Agenda

Discussion and Possible Approval of the Following:

1. Introductions and Announcements-
    a. President's Comments
    b. Roll Call
2. Public Comment
3. Approve 08/20/20 General Membership Meeting Minutes (p 3-11)
4. DRWW Business
    a. 2021 Signed Contracts
        i. Midwest Biodiversity Institute 2021 Bioassessment Monitoring (p 12-20)
        ii. Lake County Health Department Water Chemistry Monitoring (p 21-39)
        iii. Lake County Stormwater Management Commission Administrative Agent, GIS, and Technical Coordination Services (p 40-42)
        iv. NARP-North Shore Water Reclamation District Continuous Monitoring Program (p 43-51)
    b. 2021 Draft Contracts
        i. Geosyntec NARP Development Services: Master Professional Services Agreement (p 52-56) and DRWW NARP Scope of Work (p 57-68)
    c. FY2021 Budget (p 69)
    d. 2021 Membership Dues Approval (p 70-71)
    e. Officer Elections (p 72)
        i. President: Al Giertych, Lake County Division of Transportation (Alternate: Mike Zemaitis, Lake County Division of Transportation)
        ii. Vice President: Dave Miller, North Shore Water Reclamation District (Alternate: Chuck Boden, North Shore Water Reclamation District)
        iii. Treasurer: Michael Talbett, Village of Kildeer
        iv. Secretary: Paul Kendzior, Village of Libertyville (Alternate: Brian Kuebker, Village of Libertyville)

v. Member at Large: Jim Anderson, Lake County Forest Preserve District (Alternate: Pati Vitt, Lake County Forest Preserve District)
vi. Monitoring/Water Quality Improvements Committee Chair: Steve Waters, North Shore Water Reclamation District (Alternate: Rob Flood, North Shore Water Reclamation District)
vii. Lakes Committee Chair: Mike Adam, Lake County Health Department (Alternate: Alana Bartolai, Lake County Health Department)

f. Committee Updates
    i. Executive Board (Al Giertych)
    ii. Monitoring/Water Quality Improvements Committee (Steve Waters)

5. Guest Speakers
    a. Rishab Mahajan, *Geosyntec ,* Des Plaines River Watershed Workgroup Nutrient Assessment and Reduction Plan (NARP)
6. Old Business
7. New Business
8. Executive Board and Committee Comments
9. Next General Membership Meeting August 19, 2021 at 01:30 pm
10. Adjourn

3. Meeting Minutes

Des Plaines River Watershed Workgroup

General Membership

08/20/2020 01:30 pm

Virtual Meeting (Meeting ID: 882 3968 3392, Password: 093084)

Meeting Minutes

Discussion and Possible Approval of the Following:

1. **Introductions and Announcements**

   Al Giertych called the meeting to order at 01:31 PM. Jacob Jozefowski performed introductions and announcements.

   a. **Roll Call**

      Roll call was performed. Roll call results are shown in Figure 1.

2. **Public Comment**

   There was no public comment.

3. **Joe Robinson Retirement**

   Joe Robinson retired on 07/16/2020. Joe's work has been crucial for the establishment and success of the Des Plaines River Watershed Workgroup (DRWW).

4. **Approve 02/20/20 General Membership Meeting Minutes**

   Al Giertych motioned to approve the 02/20/2020 General Membership Meeting Minutes as presented. The motion was seconded by Paul Kendzior and passed with unanimous consensus via roll call vote (Figure 1). Dave Brown abstained from voting.

5. **DRWW Business**

   a. **2020 Dues and Budget**

      - **MBI Invoice #1791**

      Al Giertych motioned to ratify MBI Invoice #1791. The motion was seconded by Paul Kendzior and passed with unanimous consensus via roll call vote (Figure 1).

      - **Budget Update**

The total 2020 revenue and carry over is $243,413. The DRWW has received 98.6% of the projected revenue for the 2020 budget. The total expenditures paid is $99,641.17 leaving a remaining balance of $143,771.83.

Paul Kendzior motioned to ratify the Expense-Revenue and budget as presented. The motion was seconded by Al Giertych and approved with unanimous consensus via roll call vote (Figure 1).

- **Amended Dues Structure**

The current DRWW membership dues amount is based on the total land area (33.33%) and wastewater treatment plant (WWTP) effluent volume (66.67%) of each entity/jurisdiction. The Village of Long Grove contacted DRWW with concerns that their dues amount was too high for their population. The DRWW Executive Board proposed a $0.60 per capita cap on dues to address this concern.

Q: How was the $0.60 per capita cap derived?
A: The previous DRWW technical coordinator worked with The Village of Long Grove to determine what a reasonable rate would be.

Q: Would this affect the dues amount for all municipalities?
A: The per capita cap would reduce dues for the Villages of Long Grove, Mettawa, Old Mill Creek and Wadsworth. All other municipalities dues will remain the same because their dues are less than $0.60 per capita.

Q: Should there be a $200 minimum for municipalities, so they are not paying less than Associate and Individual Members?
A: Yes

David Brown motioned to approve the $200 minimum and $0.60 per capita cap for DRWW Agency membership dues to support increased membership. The motion was seconded by Paul Kendzior and approved with unanimous consensus via roll call vote (Figure 1).

b. Officer Elections

- **Dave Miller, *North Shore Water Reclamation District (NSWRD) Executive Director,* for Vice President**

- **Steve Waters, *NSWRD Special Projects Manager,* for Monitoring/Water Quality Improvements Committee Chair**

David Brown motioned to approve Dave Miller as Vice President of the DRWW and Steve Waters as the chair of the DRWW Monitoring/Water Quality Improvements Committee. The motion was seconded by Paul Kendzior and approved with unanimous consensus via roll call vote (Figure 1).

6. Committee Updates

a. Monitoring/Water Quality Improvements Committee (Mike Adam)

The DRWW continues to conduct water quality and bioassessment monitoring. Data from this monitoring is used for the IPS model and MS4 compliance. Bioassessment monitoring was reduced to 16 sites this year. The DRWW is monitoring water quality at 73 sites five times per year; however, the number of parameters assessed has been reduced to only include the most crucial parameters for water quality assessment and permit compliance. The DRWW is also monitoring sestonic chlorophyll *a* at 14 sites and bioassessments are monitoring benthic chlorophyll *a*. There was no sediment sampling this year. The DRWW monitoring focus is shifting towards the Nutrient Assessment Reduction Plan (NARP). The NSWRD has purchased three Sondes for continuous monitoring at Russel Rd., Rt 120 and Rt 22 on the Des Plaines River Mainstem. This data will support NARP development. The DRWW is also considering options to update its monitoring database to allow for more secure storage and effective data exploration/manipulation.

The DRWW created a press release about PAH's, but it was not widely distributed by the press due to other issues such as COVID taking precedence.

b. Lakes Committee (Mike Adam)

The Lakes Committee met less frequently this year because most of the DRWW's focus has been on NARP development and funding. The committees next goal is to create recommendations for the executive board on how to include lakes in some of the future DRWW management activities and projects.

7. Guest Speakers

a. Chris Yoder, *Midwest Biodiversity Institute* - Integrated Prioritization System Tool (IPS) Update

The IPS model is a tool that combines monitoring data and management goals to inform decision making. It allows users to visualize and rank aquatic life uses and impairments and relate them to probable causes of impairment and restorability/susceptibility factors. The IPS tool uses a wider array of parameters than traditional water quality models and compares them to regionally developed stressor thresholds. A power Bi dashboard has been created to allow users to explore the data. The dashboard requires training to use it effectively. Future improvements to the IPS tool may include the addition of social wellbeing measures.

The IPS tool shows that the northern portion of the study area has significant challenges for restorability that are related to habitat modification, altered flow, and non-point source contributions. This causes lingering effects downstream. Full attainment occurs further downstream due to dilution by WTTP effluent flow that tempers the downstream export of upper mainstem impacts.

b. Vincent J. Mosca, *Hey and Associates, Inc.,* Operation and Maintenance of Green Infrastructure Practices

Vincent Mosca provided an overview of green infrastructure design and maintenance. Green infrastructure is regional and site-specific practices that are designed to ameliorate the negative impacts of stormwater runoff.

Project design should start with the selection of realistic objectives. It is important to acknowledge that green infrastructure may not always be the best way to achieve project goals. Selection of best management practices (BMP) should be based on project objectives, not what easily fits. If possible, larger best management practices (BMPs) are typically more effective the multiple small BMPs.

BMP designs should identify the appropriate soil mixture needed to achieve the desired infiltration. Compost should be used with care, as it may result in a net export of nutrients, which is counterproductive to many green infrastructure objectives. Plant selection guidance is typically vague. Planting of different species with different tolerances is generally recommended. Projects should plan to replant after the first growing season. Turf grass can be an option in difficult areas as it does provide some infiltration.

Green infrastructure design should also consider line of sight impacts for public safety, owners aesthetic expectations, if infiltration will result in groundwater contamination, likelihood of trash and debris impacts, and expected chloride load.

BMP maintenance should be considered throughout the design process. Designs should not overburden owners with high maintenance costs. Simpler designs are more likely to be successful and typically have lower maintenance costs. All BMPs should include an operations and maintenance manual that identifies who is responsible for maintenance. Municipal budgets should include a line item for green infrastructure maintenance. If you rely on the general fund you will be competing with multiple other high priority objectives and may not receive needed funds.

Estimates for green infrastructure maintenance cost vary. The quality of BMP installation and vegetation establishment heavily impacts maintenance demand. Maintenance should start as soon as the project is built because remedial work is more expensive than maintained.

Large scale naturalized detention basins maintenance needs include backpack spraying, hand pulling of weeds, and dormant season mowing. Prescribed burns can be used but may be difficult depending on site specific conditions. Maintenance of these basins may cost $2,000-$3,000 per year. Prescribed burns typically start at $2,000 but can be substantially higher.

Small rain garden (150 square yards) maintenance is mostly focused on weed control, which can cost $750-$2,250 per year if using outside help. Vacuuming catchments and pipes may be necessary for some BMPs, potentially multiple times a year, with costs ranging from $200-$300 per maintenance event.

Q: How far away are we from identifying the BMPs that work, are economically feasible, and have contractor support in this region.

A: We know that naturalized detention basins with buffers work. There is still a learning curve and conflicting data about effectiveness for the smaller, more modern practices, such as rooftop gardens and roadside bioswales.

Q: Is there grant funding available for pollinator plants?
A: Comed and Openlands may have grants. There is a group in Kansas named Monarch Watch that may provide pollinator plants to deserving groups.

Q: You mentioned small decentralized BMPs tend to be less effective. Does this include small BMPs that are part of a larger decentralized green infrastructure system? Or does it only apply to small one-off BMPs?
A: It is probably a mix. For example, if you have multiple parking lot bioswales that function as a pretreatment to a larger detention facility, the bioswales tend may not function as well, or be as cost effective, as the naturalized detention basin. This is because the smaller BMPs tend to be maintained less and are subjected to more stressors such as foot traffic, shopping carts, heat radiation from the pavement, chlorides or excess litter/debris. Larger facilities are less likely to be subjected to these stresses.

8. **Old Business**

   There was no old business.

9. **New Business**

   There was no new business.

10. **Next General Membership Meeting February 2020 at 2:00 pm**

11. **Adjourn**

    Al Giertych motioned to adjourn the 08/20/2020 DRWW General Membership Meeting. The motion was approved with unanimous consensus via roll call vote (Figure 1).

Figure 1: DRWW Membership Roll Call Vote Summary. *Y: Yes, N: No, A: Abstain, NP: Not Present, NR: No Response*

Organization	Voting Member	Number of Votes	Attendance	Feb. Meeting Minutes	MBI Invoice	Ratify Financials	Dues Structure	Elections	Adjourn
Applied Technologies, Inc.	-	2	NP	NP	NP	NP	NP	NP	NP
Christopher Burke	Michael Burke	2	Y	Y	Y	Y	Y	Y	NR
City of Lake Forest	Brian Joyce	4	Y	Y	Y	Y	Y	Y	Y
City of Park City	-	4	NP	NP	NP	NP	NP	NP	NP
City of Zion	-	4	NP	NP	NP	NP	NP	NP	NP
Ela Township	Caitlin Burke	4	Y	Y	Y	Y	Y	Y	Y
Freemont Township	Caitlin Burke	4	Y	Y	Y	Y	Y	Y	Y
Hey & Associates	Vincent Mosca	2	Y	Y	Y	Y	Y	Y	Y
Lake County DOT	Al Giertych	8	Y	Y	Y	Y	Y	Y	Y
Lake County Forest Preserve	Nick Huber	6	Y	Y	Y	Y	Y	Y	Y
Lake County Public Works	Joel Sensenig	16	Y	Y	Y	Y	Y	Y	Y
Lake County SMC	Jacob Jozefowski	2	Y	Y	Y	Y	Y	Y	Y
Libertyville Township	Jon Happ	4	Y	Y	Y	Y	Y	Y	NR
North Shore Water Reclamation District	Dave Miller	18	Y	Y	Y	Y	Y	Y	Y
Vernon Hills Park District	James Kin	2	Y	Y	Y	Y	Y	Y	Y
Village of Deer Park	Michael Burke	4	Y	Y	Y	Y	Y	Y	NR
Village of Deerfield	-	4	NP	NP	NP	NP	NP	NP	NP
Village of Grayslake	Emily Grimm	4	Y	Y	Y	Y	Y	Y	NR
Village of Gurnee	Heather Galan	4	Y	Y	Y	Y	Y	Y	Y (in chat)
Village of Hawthorn Woods	Erika Frable	4	Y	Y	Y	Y	Y	Y	Y
Village of Kildeer	Caitlin Burke	4	Y	Y	Y	Y	Y	Y	Y
Village of Lake Zurich	Betty Harrison	4	Y	Y	Y	Y	Y	Y	NR
Village of Libertyville	Paul Kendzior	6	Y	Y	Y	Y	Y	Y	NR

Figure 1: DRWW Membership Roll Call Vote Summary. *Y: Yes, N: No, A: Abstain, NP: Not Present, NR: No Response*

Organization	Voting Member	Number of Votes	Attendance	Feb. Meeting Minutes	MBI Invoice	Ratify Financials	Dues Structure	Elections	Adjourn
Village of Lincolnshire	-	4	NP	NP	NP	NP	NP	NP	NP
Village of Lindenhurst	-	4	NP	NP	NP	NP	NP	NP	NP
Village of Riverwoods	Caitlin Burke	4	Y	Y	Y	Y	Y	Y	Y
Village of Round Lake Beach	Lisa Pugliese	4	Y	Y	Y	Y	Y	Y	Y
Village of Round Lake Park	-	4	NP	NP	NP	NP		NP	NP
Village of Third Lake	-	4	NP	NP	NP	NP	NP	NP	NP
Village of Vernon Hills	Dave Brown	4	Y	A	Y	Y	Y	Y	Y
Sierra Club	Rosemary Heilemann	2	Y	Y	Y	Y	Y	Y	Y
Total Votes Present: 146		**Total Y Votes:**	**116**	**116**	**116**	**116**	**116**	**116**	**88**

Figure 2: Meeting Registration

First Name	Last Name	Email	Organization Name
Austin	McFarlane	amcfarlane@lakecountyil.gov	Lake County
Steve	Waters	stwaters@northshorewrd.org	North Shore Water Reclamation District
Todd	Budnik	tbudnik@lesseragency.com	Not Provided
Tracy	Gastfield	Tracy@vernontownship.com	Vernon Township
Rishab	Mahajan	rmahajan@geosynetec.com	Geosyntec Consultants
David	Brown	DaveB@vhills.org	Vernon Hills
Dave	Miller	DaMiller@NorthShoreWRD.org	North Shore Water Reclamation District
Todd	Peck	tpeck@zionparkdistrict.org	Zion Park District
Erika	Frable	efrable@vhw.org	Village of Hawthorn Woods
Penny	Bouchard	pbouchard@baxterwoodman.com	Baxter&Woodman
Charles	Frank	zsf6116@gmail.com	Sierra Club
Betty	Harrison	betty.harrison@lakezurich.org	Village of Lake Zurich
Kurt	Woolford	kwoolford@lakecountyil.gov	Lake County Stormwater Management Commission
Diane	Legge	diane.legge@crtkl.com	CallisonRTKL
Ray	Roberts	raylr@zion.il.us	City of Zion
Kirsten	James	kjames@heyassoc.com	Hey and Associates, Inc.
Don	Wilson	wilsondonaldm@gmail.com	Not Provided
James	Kim	jamesk@vhparkdistrict.org	Vernon Hills Park District
Lisa	Woolford	lwoolford@ilmenvironments.com	Integrated Lakes Management
Mike	Prusila	michael.prusila@gmail.com	Lake County Stormwater Management Commission
Joanne	Dill	DillJ@mwrd.org	Metropolitan Water Recl. Dist. of Greater Chicago
Harlan	Doland	harlan.m.doland@imegcorp.com	IMEG engineer for the village of Third Lake
Brandon	Janes	bjanes@deerfield.il.us	Village of Deerfield
Lisa	Pugliese	lpugliese@roundlakebeachil.gov	Round Lake Beach
Emily	Grimm	egrimm@baxterwoodman.com	Baxter&Woodman
Brian	ONeill	bjoneill@burnsmcd.com	Burns & McDonnell Engineering, Inc.
Joel	Sensenig	JSensenig@lakecountyil.gov	Lake County Public Works
Ashley	Strelcheck	astrelcheck@lakecountyil.gov	Lake County Stormwater Management Commission
Catherine	Shannon	catshannon9@gmail.com	Diamond Lake Preservation Alliance
Jonathan	Happ	jhapp@libertyvilletownship.us	Libertyville Township
Mike	Warner	mwarner@lakecountyil.gov	Lake County Stormwater Management Commission
Tatiana	Papakos	tatiana.papakos@mbakerintl.com	Not Provided
Mike	Adam	madam@lakecountyil.gov	Lake County
Peter	Kolb	pekolb@ati-ae.com	Applied Technologies Inc.
Rosemary	Heilemann	rosemaryheilemann@gmail.com	Woods & Wetlands Sierra Group
Jacob	Jozefowski	jjozefowski@lakecountyil.gov	Lake County Stormwater Management Commission
Leonard	Dane	ldane@deuchler.com	Deuchler Engineering Corp
Brian	Joyce	joyceb@cityoflakeforest.com	City of Lake Forest
Linda	Tilton	lt@thetiltons.net	Sierra Club
Michael	Burke	michaelburke@cbbel.com	CBBEL
Nick	Huber	nhuber@lcfpd.org	Lake County Forest Preserve District
Chris	Yoder	cyoder@mwbinst.com	Midwest Biodiversity Institute
Heather	Galan	hgalan@village.gurnee.il.us	Village of Gurnee
Faye	Sinnott	Faye.Sinnott@gmail.com	FC/SC Watersheds Partnership
Al	Giertych	agiertych@lakecountyil.gov	Lake County Department of Transportation
Darren	Olson	dolson@cbbel.com	CBBEL

Sarah	Surroz	ssurroz@openlands.org	Openlands
Karenda	Mella	karenda.mella@abbott.com	Abbott
Caitlin	Burke	cburke@gha-engineers.com	Gewalt Hamilton Associates, Inc.
Paul	Kendzior	pkendzior@libertyville.com	Libertyville
Tom	Morthorst	tmorthorst@icloud.com	Village of Third Lake
Vincent	Mosca	vmosca@heyassoc.com	Hey and Associates, Inc.

4.a.i Midwest Biodiversity Institute 2021

TECHNICAL SERVICES AGREEMENT
between the
DES PLAINES RIVER WATERSHED WORKGROUP
and
MIDWEST BIODIVERSITY INSTITUTE
for
2021 BIOASSESSMENT MONITORING

This is an agreement (Agreement) by and between the DES PLAINES RIVER WATERSHED WORKGROUP, 500 West Winchester Road, Libertyville, Illinois 60048 (DRWW) and MIDWEST BIODIVERSITY INSTITUTE P.O. Box 21567, Columbus, OH 43221-0561 (CONTRACTOR).

PURPOSE

The DRWW wishes to engage the Contractor to provide technical services to assist the DRWW in conducting the monitoring program herein called the "bioassessment program" in the Des Plaines River watershed located in central Lake County, Illinois. The bioassessment program will satisfactorily evaluate whether the Des Plaines River watershed within the DRWW service area meets biological criteria that support water quality management goals.

SERVICES

The Contractor will implement the bioassessment program shown in the Scope of Work attachment.

COMPENSATION

The Contractor agrees to perform the Scope of Work and furnish the items included in the Scope of Work for a fee (Agreement Amount) not to exceed $42,531.42.

The DRWW agrees to pay the Contractor for a total project cost not to exceed $42,531.42. The final ten percent of the Agreement Amount shall be retained by the DRWW until the project is successfully completed and all deliverables have been received and approved.

The Contractor shall furnish the DRWW with an itemized invoice no more frequently than on a monthly basis. Invoices shall describe the work completed; show the actual number hours worked by team member; amount of budget remaining; and actual travel and other expenses that have occurred. Payments by the DRWW shall be made within 60 days of receipt of the invoice from the Contractor.

TERMS and CONDITIONS

1. The DRWW may, by written Order, make changes in the scope of work if such changes are within the general scope of the Agreement. If such changes cause an increase or decrease in the Contractor's cost or the time required to complete the project, the parties hereto

shall agree to an adjustment in the Agreement Amount, prior to issuance of the Change Order. Adjustment of the Agreement Amount shall be based on the estimated change in the number of staff hours required plus any changes in the Contractor's expense. The Contractor will not be compensated for additional services performed without an approved Change Order.

2. The DRWW may at any time terminate this Agreement in whole or in part by ten day written or telegraphic notice or verbal notice confirmed in writing. Upon termination for convenience of the DRWW, the DRWW will assume responsibility for services rendered and costs incurred prior to notification. Any and all services, property, publications or materials provided during or resulting from the Contractor shall be the property of the DRWW.

3. This Agreement shall be governed by and construed according to the laws of the State of Illinois.

4. Certificates of insurance shall be provided with the Des Plaines River Watershed Workgroup, Lake County Department of Transportation, Lake County Forest Preserve District, and Lake County Stormwater Management Commission named as Certificate Holders.

5. This Agreement supersedes any and all other agreements, oral or written, between the parties hereto with respect to the subject matter hereof.

6. This agreement shall not be assigned, altered or modified without the express written consent of both parties except as provided in paragraph one above. The Contractor shall not reject any reasonable change proposed in the best interest of the project by DRWW.

NOTICES AND COMMUNICATION

All notices and communications given to either party by the other relative to this agreement shall be addressed to the respective parties as follows:

To the DRWW: Des Plaines River Watershed Workgroup
500 West Winchester Road
Libertyville, Illinois 60048
ATTENTION: Kurt Woolford, Administrative Agent
kwoolford@lakecountyil.gov
Electronic deliverables cc: Jacob Jozefowski,
jjozefowski@lakecountyil.gov

To the Contractor: Midwest Biodiversity Institute
P.O. Box 21561
Columbus, OH 43221-0561
ATTENTION: Chris Yoder, Project Manager
cyoder@mwbinst.com

For the DRWW:

Al Giertych, President, DRWW
Date: 12-18-20

Attest:

DRWW

For the Contractor:

Pete Precario, Executive Director
Midwest Biodiversity Institute

Date: 12/22/2020

Attest:

Midwest Biodiversity Institute

Des Plaines River Watershed Bioassessment Monitoring: Year 4 Analysis and Reporting

Scope of Work for County Fiscal Year 2021
(December 1, 2020-November 30, 2021)

Des Plaines River Watershed Workgroup (DRWW)
Lake County Stormwater Management
500 W. Winchester Rd.
Suite 201
Libertyville, IL 60048

November 16, 2021

Submitted by:

Midwest Biodiversity Institute
P.O. Box 21561
Columbus, OH 43221-0561
www.midwestbiodiversity.org

Des Plaines River Watershed Bioassessment Monitoring: Year 4 Analysis and Reporting

Scope of Work for CFY 2021

Midwest Biodiversity Institute
P.O. Box 21561
Columbus, OH 43221-0561
www.midwestbiodiversity.org
Chris O. Yoder, Project Manager

Introduction

The Midwest Biodiversity Institute (MBI) was selected by the Des Plaines River Watershed Workgroup (DRWW) to perform tasks in support of a biological and water quality assessment of the Des Plaines River watershed in Lake Co., IL beginning in 2016. This County fiscal year 2021 Scope of Work (SOW) is based on meeting a schedule of tasks within a project period of December 1, 2020-November 30, 2021 and within a budget (Appendix A) that supports, data analysis and reporting for Year 4 and completion of the report for Year 4 of the rotating monitoring plan (Appendix B). There is no field work planned for 2021.

The SOW includes tasks and subtasks and adheres to the description of their general sequence within a given project "year" in accordance with a schedule of tasks within a project "year". Because the full cycle of a "year" within the rotating monitoring sequence straddles across two Lake County Fiscal Years (CFY; December 1, 2020-November 30, 2021) work can take place for two different project years within a given CFY. However, with no field work in 2021 the remaining year 4 tasks (3-5) and recalculation of IPS variables (task 6) will be completed in CFY 2021.

A. Project Scope of Work (SOW)

The sequence of tasks for any one "year" of the three years of the rotating monitoring plan generally includes five tasks. However, with no field work scheduled for 2021 tasks 1 and 2 are not part of the CFY 2021 SOW and budget thus only tasks 3-5 are described plus task 6 for recalculation of IPS variables.

Task 3 – Biological Laboratory

This task includes all post-field laboratory tasks including the verification of fish identifications and the processing, sorting, and identification of macroinvertebrates in accordance with the DRWW QAPP and IEPA multihabitat methods. Raw macroinvertebrate samples will be reduced to a 300 organism subsample and identified to the lowest taxonomic level that is practicable. This task will also include fish identification verifications.

Task 4 – Data Management

This is a post-field and post-laboratory task that includes the organization and logging of field and lab sheets, entering data, and proofing of data entry. MBI will utilize its own version of the Ohio ECOS data management system which has been used to support the prior DRWW surveys.

Task 5 – Data Analysis and Reporting

The final task is the production of a comprehensive report detailing the data and the conclusions based on the analyses of that data. This includes the analysis of all field collected data including the analysis of the chemical/physical data, POTW loadings data, calculation of the Illinois fish and macroinvertebrate IBI scores and metrics, and the assignment of causes and sources to any documented biological impairments. The SOW allocates all of the data analysis to the following CFY after all of the data becomes available following lab processing and data management.

The following outline will be used for the report (includes a cover page and table of contents):

Executive Summary
A brief synopsis of the findings of the watershed monitoring including a quantitative description of impairments, major causes and sources if impairment, opportunities for restoration and protection, and recommendations for future monitoring.

Section 1 – Introduction
This will describe the purposes of the monitoring and the goals and objectives of the DRWW for using monitoring data to support water quality decision-making.

Section 2 – Study Area Description
A detailed description of the study area including maps and lists of sites, major pollution sources, dams, and other features that relate to the watershed biological assessment. This will benefit from DRWW input upfront in the process.

Section 3 – Methods
A description and summary of all chemical, physical, and biological methods used to collect the data, data management, and data analysis including the delineation of impairments, and the process used for the assignment of causes and sources.

Section 4 – Results
A comprehensive reporting of chemical, physical, and biological quality using tables and graphs to report the results. This will include an assessment of POTW pollutant loadings, chemical water quality criteria exceedances, exceedances of biologically relevant thresholds, sediment chemical threshold exceedances, analysis of habitat attributes, and reporting fish and macroinvertebrate IBI and metrics results.

Section 5 – Synthesis of Results

This section will report the results of the data analyses and causal assessment conducted under task 5. This where the conclusions about causes and sources are explained including any patterns observed in the study area such as the differences in results observed between POTW influenced and nonpoint source influenced sites and reaches.

The major project products consist of a draft report for DRWW review (November 31) and a final report (December 31).

Task 6 – Integration of 2020 DRWW Data into the NE Illinois IPS

This is a new task for CFY 2021 and involves integrating the 2020 monitoring data into the Northeastern Illinois Integrated Prioritization System (NE IL IPS) that was released for beta testing in early 2020. The NE IL IPS is an outgrowth of the first IPS originally developed for the DuPage River Salt Creek Workgroup in 2010 and its expansion to include the entirety of Northeastern Illinois and the project areas of the Des Plaines Watershed Workgroup (DRWW), North Branch Chicago River Watershed Workgroup (NBWW), and the Lower Des Plaines Watershed Workgroup (LDPWW) occurred in 2020. As a major contributor to the NE Illinois IPS development the data sponsored by DRWW in 2020 will be integrated into the 2020 IPS and thereafter when new data are collected on a recurring basis. Some aspects of the IPS will require iterative updating to refine the thresholds for several IPS variables and to evaluate its effectiveness for application to DRWW interests and needs.

Appendix A. Tasks and Costs for CFY 2021 Upper Des Plaines Year 4 Report & IPS Update

Task	Description	Quote
3 – Biological Laboratory (Year 4 Report)	• Fish vouchers • Macroinvertebrate sample sorting • Macroinvertebrate identifications • Supplies & Lab User Fee	$21,992.31
4 – Data Management (Year 4 Report)	• Data entry & retrieval, QA/QC	$4,613.30
5 – Data Analysis & Report (Year 4 Report)	• Analysis of chemical, biological, and habitat data. • Draft & Final Reports	$9,210.47
6 – Process Data & Update IPS	• Calculate new IPS variables • Utilize in 2020 report • Update Power BI Dashboard	$6,715.34
TOTAL CFY 2021		**$42,531.42**

Appendix B: Rotating Monitoring Design for the Upper Des Plaines River Watershed

DRWW requested an allocation of sites in the Upper Des Plaines River watershed within Lake Co., IL for bioassessment and water quality monitoring in 2017-19. The goal was to allocate roughly one-third of the effort required to sample 70 sites in 2016 to the monitoring planned for 2017, 2018, and 2019. This comprised a three-year rotation through the Upper Des Plaines study area that represents a reasonable return interval in support of DRWW goals and objectives. The allocation of sites to each year needs to meet a target range of sites and also represent a logical spatial aggregation of subwatersheds at the same time. The following describes an aggregation of sites and subwatersheds into a three year rotation:

Year 1 (2017)
Year 1 included the Indian Creek, Aptakisic Creek, and Buffalo Creek subwatersheds plus direct tributaries to the Des Plaines River adjacent those subwatersheds and nested between the mainstem and the subwatershed boundaries (23 sites). Because of high flows in the Des Plaines mainstem in 2017 this year was moved up to 2017.

Year 2 (2018)
The Upper Des Plaines mainstem (18 sites) plus small direct tributaries to the lower one-half of the mainstem (2 sites) was moved to Year 2. This includes two fish sampling passes on the mainstem which is the normal protocol for non-wadeable fish sampling methods. Planned sampling in 2017 was postponed due to persistent elevated flows throughout the 2017 index period.

Year 3 (2019)
Year 3 included the Mill Creek and Bull Creek subwatersheds plus direct tributaries to the Des Plaines River that are nested between those two subwatersheds and the mainstem (30 Sites).

Year 4 (2020)
This year of sampling is intended to focus on supporting DRWW and their members in complying with the requirements of the IEPA Nutrient Assessment and Reduction Program (NARP). The focus of the Year 4 monitoring is on core sites located on the Upper Des Plaines River mainstem (11 sites), Mill Creek (1 site), and the North Fork of Mill Creek (2 sites) and comprises the scope of a biennial monitoring effort going forward. Supplemental biological and habitat sites (6) are included in 2020 to duplicate prior mainstem assessments, address overlapping issues, and to better document attainment of the IEPA General Use for aquatic life that was first observed in 2018. This survey will be repeated on a biennial basis beginning in 2022.

This framework also allows for the addition of supplemental sites in each survey year to account for unsampled streams and to assess ongoing and new restoration projects and other concerns. Detailed study planning takes place in early June of each year in advance of the field sampling so as to allocate the effort in accordance with the annual budgets for each CFY.

2021 TECHNICAL SERVICES AGREEMENT between the
DES PLAINES RIVER WATERSHED WORKGROUP
and
LAKE COUNTY HEALTH DEPARTMENT for
WATER CHEMISTRY MONITORING

This is an agreement (Agreement) by and between the DES PLAINES RIVER WATERSHED WORKGROUP, 500 West Winchester Road, Libertyville, Illinois 60048 (DRWW) and LAKE COUNTY HEALTH DEPARTMENT, 500 West Winchester Road, Libertyville, Illinois 60048 (LCHD).

PURPOSE

The DRWW wishes to engage the LCHD to provide technical services to assist the DRWW in conducting water quality monitoring in the Des Plaines River watershed located in Lake County, Illinois. The water quality monitoring will satisfactorily collect and process water column monitoring samples within the watershed. The DRWW has selected 73 sampling locations within the Des Plaines River watershed in Lake County, Illinois.

SERVICES

LCHD will conduct water quality monitoring by collecting samples, analyzing the samples collected, and providing the data to the DRWW based on the approved DRWW Quality Assurance Project Plan. The Scope of Services to be provided by the LCHD to accomplish the DRWW's objectives for the water column chemistry monitoring is set forth in Attachment A, DRWW Water Column Monitoring, SCOPE OF SERVICES.

COMPENSATION

1. LCHD agrees to perform the Scope of Services and furnish the items included in the Scope of Services for a fee (Agreement Amount) not to exceed $80,535.50 for water quality sampling and analysis according to the rates in Attachment B, Project Budget.

2. The DRWW agrees to pay LCHD for a total project cost not to exceed $80,535.50 using the compensation schedule identified in Attachment B. The final ten percent of the Agreement Amount shall be retained by the DRWW until the project is successfully completed and all deliverables have been received and approved.

3. LCHD shall furnish the DRWW with an itemized invoice monthly. Invoices shall describe the work completed; show the actual number hours worked by team member; and actual travel and other expenses that have occurred. Payments by the DRWW shall be made in accordance with the Illinois Local Prompt Payment Act (50 ILCS 505/1 et. seq.).

SCHEDULE AND DELIVERABLES

All sampling and reporting shall be completed by November 30, 2021. Sampling will be conducted at all sites within one week per month and approximately the same week every month.

Sampling Schedule

- February 2021
- May 2021
- July 2021
- August 2021
- September 2021

Project Deliverables:

- Electronic data deliverables (EDDs) and the sample results in an editable Microsoft Excel file, as specified by the DRWW.
- A final report consisting of a PDF file of all analytical results, analytical methods, chain(s) of custody, and a field log. Any sampling or testing observations which may have affected accuracy will be noted in the report narrative. Any applicable data qualifiers (e.g., matrix spike failure) will also be noted in the project specific comments portion of the report narrative page.

TERMS and CONDITIONS

1. The DRWW may, by written Order, make changes in the scope of work if such changes are within the general scope of the Agreement. If such changes cause an increase or decrease in the LCHD's cost or the time required to complete the project, the parties hereto shall agree to an adjustment in the Agreement Amount, prior to issuance of the Change Order. Adjustment of the Agreement Amount shall be based on the estimated change in the number of staff hours required plus any changes in the LCHD's expense. The LCHD will not be compensated for additional services performed without an approved Change Order.

2. Either party may terminate this Agreement by providing thirty (30) day written notice to the other party. DRWW shall pay LCHD for all qualifying expenses incurred prior to the date of termination. Any and all services or deliverables provided to DRWW by LCHD shall remain the property of DRWW.

3. This Agreement shall be governed by and construed according to the laws of the State of Illinois. Jurisdiction and venue shall be exclusively found in the 19th Judicial Circuit Court, State of Illinois (735 ILCS 5/2-103), or Federal District Court, Northern District, whichever is applicable.

4. This Agreement supersedes any and all other agreements, oral or written, between the parties hereto with respect to the subject matter hereof.

5. This Agreement shall not be assigned, altered or modified without the express written consent of both parties.

NOTICES AND COMMUNICATION

All notices and communications given to either party by the other relative to this Agreement shall be addressed to the respective parties as follows:

To the DRWW: Des Plaines River Watershed Workgroup
500 West Winchester Road
Libertyville, Illinois 60048
ATTENTION: Kurt Woolford, Administrative Agent
kwoolford@lakecountyil.gov and
jjozefowski@lakecountyil.gov

To the LCHD: Lake County Health Department
500 West Winchester Road
Libertyville, Illinois 60048
ATTENTION: Alana Bartolai, Project Manager
ABartolai2@lakecountyil.gov

For the DRWW:

A.T. Giertych

Al Giertych, President
Des Plaines River Watershed Workgroup

Date: 12-29-20

Attest:

Des Plaines River Watershed Workgroup

For the LCHD:

J Nordstrom

Jerry Nordstrom, Director of Business Operations
Lake County Health Department

Date: 12/30/2020

Attest:

Alana Bartolai

Lake County Health Department

ATTACHMENT A

DRWW Water Column Monitoring
SCOPE OF SERVICES

1.Sampling Schedule

1.1 Tier 1, 2, 3 Water Sampling and Analysis

Sampling will be conducted using a three-tier monitoring strategy following the attached Illinois EPA approved Quality Assurance Project Plan (QAPP) (Attachment A). Sampling sites and their associated tier are listed in Attachment C. Tier 1 sites have been identified by the DRWW as the core sites and are to be sampled for water column analyses along with Sestonic Chlorophyll a. Tier 2 and 3 sites will be sampled for water column analyses. Tier 2 and 3 are differentiated, as Tier 3 sites will not be sampled for sediment analyses in future years (sediment sampling will not occur during this contract period). Water quality sampling will occur at 73 sites during the course of one week. The weekly sampling will continue throughout the following months: February, May, July, August and September. These collected samples will be tested for the water quality monitoring parameters listed in Table 1 utilizing agreed upon standard operating procedures and the reporting limits and the laboratory method detection limits (MDLs) listed in table 2 (Test Methods and Reporting Limits). If DRWW assistance is needed in gaining access or permission to sites for monitoring, a three-week notice will be provided by LCHD to DRWW.

It is the goal of the DRWW that this data be available for use by the Illinois EPA, the Illinois Department of Natural Resources, local decision makers, and all other interested parties; therefore, it is essential that the data collected is accurate, precise, cost-effective, and has low variability, making the results of the assessments comparable.

1.2 Field QA/QC samples

For every 20 samples collected, LCHD will also collect a blank and duplicate samples. The blank will be made up in the field by pouring deionized water into the same type of sample containers that are used for the surface water. The deionized water will be laboratory grade water from Lake County Health Department Environmental Laboratory facility. This water will be placed inside a pre-cleaned and certified container.

1.3 Field Parameters

Lake County Health Department is equipped with an YSI field meter. This meter will be utilized for the following analyses in the field:

- Conductivity
- pH
- Temperature

The results of these parameters will be reported after each sampling event and on the final report along with the results of the analyses performed in the laboratory. This meter is calibrated each day prior to sampling.

2.Field Reporting

2.1 Field Log

A field log will be kept each day that samples are collected. The field log will include:

- Name and signature of the field services technician
- Location of sampling site
- Weather and water conditions (if unordinary condition apply)
- Dates and times of sample collection
- GPS location of sampling (in latitude/longitude and state plane) for first event on each site
- Preservatives
- Field measurements
- Descriptions of any unusual conditions at the sample locations
- Chains of Custody
- Indication of duplicate sample location

3.Sample Custody and Handling

3.1 Labeling and Storage

All samples will be placed in non-contaminated containers provided by Lake County Health Department. All containers will be properly labeled. The duplicate sample will be labeled with the sample location and identified as "duplicate". When preservation is required, pre-preserved bottles will be used. Samples will be placed inside a cooler with wet ice until they reach the laboratory.

3.2 Chain of custody

Proper chain of custody documentation will accompany the collected samples. The chain of custody will contain the sample IDs, analyses to be performed, date and time of collection, type and number of containers, preservatives added, date and time of transfers, and the signature of each person involved in custody transfer. The chain of custody will be placed in a water-resistant plastic bag inside each cooler. Indelible ink will be used on the container labels and chain of custody records. A copy of the chain of custody form will be included with the final report.

3.3 Sample preservation

Preservatives will be added to sample bottles prior to sample collection.

4.Project Deliverables

4.1 Final Report

The final report will consist of a PDF file of all analytical results, analytical methods, chain(s) of custody and a field log. Any sampling or testing observations which may have affected accuracy will be noted in the report narrative. Any applicable data qualifiers (e.g., matrix spike failure) will also be noted in the project specific comments portion of the report narrative page.

4.2 Electronic Data Deliverable

An electronic data deliverable (EDD) which includes the sample results in an editable Microsoft Excel file will be included for every report, in the format DRWW specified.

4.3 Turnaround Time

The results for all analytical analyses will be provided no later than 30 business days following the date of collection.

TABLE 1: Water Quality Sampling Parameters

Parameter	Analysis Type (Laboratory or In-Situ)	DRWW Frequency	Tier 1	Tier 2	Tier 3
			Number of Sample Events		
Demand					
Chloride	Laboratory	Feb, Aug	2	2	2
Conductivity	In-Situ	Feb, Aug	2	2	2
pH	In-Situ	Feb, Aug	2	2	2
Total Organic Carbon			0	0	0
Sulfate	Laboratory	Feb, Aug	2	2	2
Total Suspended Solids	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Volatile Suspended Solids			0	0	0
Dissolved Oxygen			0	0	0
Water Temperature	In-Situ	Feb, Aug	2	2	2
Turbidity			0	0	0
Metals					
Total Hardness	Laboratory	Feb, Aug	2	2	2
Iron			0	0	0
Sodium			0	0	0
Arsenic			0	0	0
Manganese			0	0	0
Mercury - Low Level Detection Limit			0	0	0
Copper			0	0	0
Nickel			0	0	0
Zinc			0	0	0
Nutrients					
Ammonia	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Total Nitrates (NO2 + NO3)	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Total Kjeldahl Nitrogen	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Total phosphorus	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Dissolved Reactive Phosphorus	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Sestonic Chlorophyll a	Laboratory	May, July, Aug, Sept	4	0	0
Bacteria					
E. coli	Laboratory	Feb, Aug	2	2	2
Water Organics					
Polychlorinated Biphenyls			0	0	0
Pesticides			0	0	0
Methoxychlor			0	0	0
PNAs			0	0	0
Volatile Organic Compounds			0	0	0

Parameter	Analysis Type (Laboratory or In-Situ)	DRWW Frequency	Tier 1	Tier 2	Tier 3
			Number of Sample Events		
Sediment Metals					
Aluminum			0	0	0
Arsenic			0	0	0
Barium			0	0	0
Beryllium			0	0	0
Boron			0	0	0
Cadmium			0	0	0
Chromium			0	0	0
Cobalt			0	0	0
Copper			0	0	0
Fluoride			0	0	0
Iron			0	0	0
Lead			0	0	0
Manganese			0	0	0
Mercury			0	0	0
Nickel			0	0	0
Potassium			0	0	0
Silver			0	0	0
Sodium			0	0	0
Strontium			0	0	0
Vanadium			0	0	0
Zinc			0	0	0
Sediment Organics					
Polychlorinated Biphenyls			0	0	0
Pesticides			0	0	0
Methoxychlor			0	0	0
PNAs			0	0	0
Total Kjeldahl Nitrogen			0	0	0
Phosphorus			0	0	0
Cyanide			0	0	0
Herbicides (2, 4, D, 2,4,5 TP)			0	0	0
Phenols			0	0	0

TABLE 2: Test Methods and Reporting Limits

Parameter	Method	MDL/Reporting Limit
Demand		
Chloride	325.2, EPA	0.5 mg/L
Conductivity	2510B, SM18th Ed.	2 µmhos/cm
pH	4500-H B, SM18th Ed.	N/A
Sulfate	375.4, EPA	1 mg/L
TSS	2540D, SM18th Ed.	0.2 mg/L

Parameter	Method	MDL/Reporting Limit
VSS	2540E	0.2 mg/L
DO	4500 YSI field meter	0.1 mg/L
Temperature	170.1	°C
Turbidity	180.1	0.1 mg/L
Metals		
Total Hardness	2340 C EDTA. SM18th Ed.	5 mg/L
Iron	200.7, EPA	0.005 mg/L
Sodium	200.7	0.1 mg/L
Arsenic	200.8	0.0008 mg/L
Manganese	200.8	0.002 mg/L
Mercury * (LOW LEVEL DETECTION LIMIT)	245.1, EPA or *1631 low det	0.0002 mg/L or 0.5 Ng/L
Copper	200.8, EPA	0.0005 mg/L
Nickel	200.8	0.0004 mg/L
Zinc	200.8, EPA	0.007 mg/L
Nutrients		
Ammonia	4500 NH3 D, SM18th Ed.	0.1 mg/L
Total Nitrates (NO2 + NO3)	353.2 EPA	0.05 mg/L
Total Kjeldahll Nitrogen	4500 NH3 C, SM18th Ed.	0.5 mg/L
Phosphorous	SM4500- P B 5 and #4500P E	0.01 mg/L
Dissolved reactive Phosphorus	SM4500P E	0.005 mg/L
Chlorophyll a		
Sestonic Chlorophyll a	SM 10200H	4 mg/M^3
Bacteria		
E-coli	9213D	1 CFU/100ml
Water Organics		
PCBs	8082, EPA	0.1 ug/L
Pesticides	8081, EPA	0.025 ug/L
Methoxychlor	8081 EPA	0.25 ug/L
PNAs	8270, EPA	0.1 ug/L
VOCs	8260, EPA	1.0 ug/L
Sediment Organics		
PCBs	8082, EPA	16.7 ug/Kg
Pesticides	8081, EPA	0.833 ug/Kg
Methoxychlor	8081 EPA	0.833 ug/Kg
PNAs	8270, EPA	40 ug/Kg
Herbicides (2,4,D & 2,4,5 TP)	8321	0.004 ug/Kg
Sediment inorganics		
TKN	4500 NH3E	100 mg/Kg
Phosphorus	6010B, EPA	2.3 mg/Kg
Cyanide	9014	0.005 mg/Kg
Phenols	420.1	0.005 mg/Kg
Sediment Metals		
Aluminum	6010B, EPA	2.50 mg/Kg
Arsenic	6010B, EPA	1.15 mg/Kg
Barium	6010B, EPA	0.125 mg/Kg
Beryllium	6010B, EPA	0.0025 mg/Kg
Boron	6010B, EPA	0.05 mg/Kg
Cadmium	6010B, EPA	0.075 mg/Kg
Chromium	6010B, EPA	0.0600 mg/Kg
Cobalt	6010B, EPA	0.625 mg/Kg

Parameter	Method	MDL/Reporting Limit
Copper	6101B EPA	0.150 mg/Kg
Iron	6010B, EPA	0.625 mg/Kg
Lead	6010B, EPA	0.6 mg/Kg
Manganese	6010B, EPA	0.625 mg/Kg
Mercury	245.1	0.02 mg/Kg
Nickel	6010B, EPA	0.235 mg/Kg
Potassium	6010B, EPA	2.5 mg/Kg
Silver	6010B, EPA	0.06 mg/Kg
Sodium	6010B EPA	1.25 mg/Kg
Strontium	6010B, EPA	0.120 mg/Kg
Vanadium	6101B EPA	0.150 mg/Kg
Zinc	6010B, EPA	0.075 mg/Kg
Fluoride	4500	0.05 mg/Kg

STANDARD OPERATING PROCEDURES

Surface Water Collection Procedures: Grab Samples
Updated 12/18/20
Written by: Lake County Health Department

SCOPE AND APPLICATION:

This standard operating procedure document (SOP) has been developed to maintain consistent data collection procedures and to ensure the quality of the data collected. This SOP is applicable to the collection of representative surface water samples from rivers, streams, lakes, or any other surface waters. This procedure is grab sample method that utilizes a high density polyethylene (HDPE) or stainless steel bucket, dip sampler, or direct method grab sampling.

SUMMARY OF METHODS

Sampling situations can vary widely depending on the location and characteristic of the waterbody. Generally, a surface water grab sample is accomplished through the use of one of the following techniques

- Dip sampler
- HDPE bucket (polyethelyene not for collection of organic samples)
- Direct Method

EQUIPMENT AND SUPPLIES

Equipment can vary depending on the location and characteristic of the waterbody but can include the following:

1. Stainless steel or HDPE bucket with rope or dip sampler
2. Deionized rinse water
3. Decontamination equipment and supplies
4. Appropriate sample bottles
5. Cooler with ice packs and/or wet ice
6. Field instrumentation
7. Field Log Book and Sample Chain of Custody
8. Waders/Boots if needed
9. Rubber Gloves if needed
10. Antibacterial soap
11. Sharpie, markers and labels

REAGENTS AND STANDARDS

Reagents may be used for preservation of samples. Preservatives will be specific to the analysis and determined by the laboratory. Cleaning solutions may be used for decontamination of sampling equipment.

PROCEDURE:

Preparation

a. Before samples are collected, sample bottles should be labeled correctly with sampling ID number, Samplers initials, and a space for date and time to be filled in later.
b. Prior to being used for sample collection or holding, all sampling equipment is decontaminated and cleaned. Sample buckets should be scrubbed with solution of soap and water making sure the cleaning detergent is free of phosphates.
c. Coolers and samples bottles should be inspected before samples are collected. If dirt, residual chemicals or any other types of contaminants are present, the sample bottle should be discarded. The coolers should be washed with mild soap and wiped down if any contaminants are present.
d. Determine the sample locations by performing general site survey if possible. Prior knowledge of the locations will aid in determining exact equipment needs and safety considerations

Sample Collection

a. Sample bottles should be kept closed until they are filled.
b. Take sample at specified location. If sampling a river or stream, sample at the middle of the main channel at mid depth. Collect the sample from a representative site on the stream. Try to locate an area where the water is well mixed, and the velocity of flow is great enough that the chance of solids settling is minimal. Depending on the site characteristics, the sampler may use a bucket, pole sampler, or wade in and collect the sample. If samples are taken from a bridge, collect the sample from the upstream side of the structure unless otherwise noted in site description maps.

1. Bucket and Pole Sample Method: The bucket and wide mouth bottle must be cleaned before samples are collected and between sampling sites. The equipment shall be cleaned with phosphate-free detergent and blank water. Blank water should be deionized water. The equipment should be scrubbed with detergent and deionized water before the rinsing steps below are followed. Alternatively, a new bottle may be used for each sample. The following steps should be taken to ensure proper decontamination of the sample equipment:

Step 1 – Blank Water Rinse

- Rinse the inside of the bucket or wide mouth bottle by swirling with blank water.
- Discard the remaining blank water.
- Repeat Step 1.

Step 1a – River Rinse and Field Measurements from Bucket

- Lower the bucket into the stream and fill.
- Discard the contents.

Step 2 – Sample Collection - Bucket

- Lower the bucket to mid-depth at center of flow, do not disturb bottom sediment

Step 3 – Fill Sample Bottles

2. Wading Method

To reduce the chance of disturbing the substrate/sediment the following protocols will be followed. The field technician will wade into stream and collect the sample, standing downstream of the collection point so as not to collect kicked up sediment.

c. A log-sheet/chain of custody should be maintained during sampling and should include the following information:

1. Date and time of sample
2. Signature of collector and transporter
3. Signature of person who relinquished the sample to lab
4. Weather conditions during sampling (i.e., air temperature; cloudy, rain, snow)
5. Time
6. Visual observation of sample
7. Field measurements such as pH

d. Field Measurements:
Field measurements should be performed on site after all sample bottles have been filled. Follow the laboratory and manufacturer's instructions for calibrating, cleaning and using the sonde equipment. All data should be recorded in the field book or field collection sheet.

SAMPLE HANDLING, STORAGE, & PRESERVATION

Once samples have been collected, the following procedures should be followed:

a. Transfer the sample into a suitable, properly labeled sampled container specific for the analysis to be performed.
b. Preserve the sample, if appropriate. Pre-preserved sample containers are preferred for simplicity and convenience. Do not overfill containers if they are pre-preserved
c. Cap the container securely and cool immediately by placing in a sample cooler with wet ice or reusable ice packs.
d. Record all relevant information in the sample log book and collection sheets
e. All samples are placed in a cooler with ice after labeling. Samples are to be transported to the laboratory within the prescribed holding times. All samples will be taken to Lake County Health Department

QUALITY ASSURANCE, QUALITY CONTROL AND DUPLICATE SAMPLES

a. All personnel involved in the sampling collection process must be properly trained and understand the sampling SOP. Any deviations must be recorded in the field book and or on the field collection sheet. The laboratory supervisor must be notified of any deviations from the SOP and evaluate appropriately.
b. All field equipment shall be maintained following manufacturers recommendations. All field equipment shall be inspected, calibrated, and tested prior to sampling events and after the equipment returns from the field. Any problems encountered or maintenance required must be noted in the equipment maintenance log.
c. Field blank and duplicates shall be collected. The laboratory shall adhere to their Quality Assurance Plan for samples received in the lab. Samples will be analyzed by methods and reporting limits as described in Table 1.
    1. Duplicate Samples

Duplicate samples are to be filled from the same round of stream water. Duplicate samples will be taken for all parameters once per 20 samples.

2. Field Blank
   Sample bottles should be filled with blank water (deionized) from unopened blank water containers once per 20 samples.

d. Chain of Custody: Chain of Custody forms must be filled out and accompany all samples to their laboratory. An example chain of custody is included (Figure 1)

CALIBRATION AND STANDARDIZATION

Field meter must be calibrated daily following manufacturers calibration procedures and documented in the field instrument calibration log book

SAFETY PRECAUTIONS

1. Personal Protection:
   Work or disposable gloves are recommended. Hip boots or waders may or may not be required during sample collection.
2. Chemical Hazards:
   Pre-preserved sample containers may contain hazardous chemicals. Handle all samples carefully to minimize exposure
3. Biological Hazards:
   Water samples may contain potential health hazards. Handle all samples carefully to minimize exposure.

INTERFERENCES

The two most common interferences in surface water collection include contamination and improper collection technique

1. Cross contamination can be eliminated by using dedicated or disposable sampling equipment and proper cleaning/decontamination procedures
2. Improper sample collection can occur when using contaminated sampling equipment or poor technique. It is important to collect the sample in the most representative area. Care should be taken to minimize bottom substrate and avoid surface scum or debris.

Figure 1: Chain of Custody LCHD

Chain of Custody

Site Name: _____
Sample Date: _____
Sampled by: _____
Sampled by: _____

LAB

Date Received: _____
Time Received: _____
Received by: _____

#	LOCATION	DEPTH	TIME SAMPLED	LAB#

PARAMETERS	X	COMPLETION DATE	BOTTLE	PRESERVATIVE
NH_3 - N				
NO_3 - N			2L	
TKN				
TP			TP	
SRP				
TOTAL HARDNESS				
TSS			2L	
Cl-			2L	
SULFATE				
E.Coli			120 mL	
pH				
CONDUCTIVITY				
TEMPERATURE				

Comments: DRWW Project

Email reports to: abartolai2@lakecountyil.gov

TABLE 1: LCHD Test Methods and Reporting Limits

Analytical methods used for water quality parameters.

Parameter	***Method***
Temperature	Hydrolab DataSonde® 4a or YSI 6600 Sonde® YSI Exo Sonde®
Dissolved oxygen	Hydrolab DataSonde ®4a or YSI 6600 Sonde® YSI Exo Sonde®
Nitrate and Nitrite nitrogen	USEPA 353.2 rev. 2.0 EPA-600/R-93/100 Colorimetric Automated Cadmium Reduction Method Reporting Limit = 0.05 mg/L
Ammonia nitrogen	Rev SM 21st ed. Electrode method, #4500 NH_3-D Method Reporting Limit = 0.1 mg/L
Total Kjeldahl nitrogen	Rev SM 21st ed, 4500-N_{org} C Semi-Micro Kjeldahl, plus 4500 NH_3-D Method Reporting Limit = 0.5 mg/L
pH	Hydrolab DataSonde® 4a, or YSI 6600 Sonde® or YSI Exo Sonde Electrometric method
Total solids	SM, Method #2540B 1997 Method Reporting Limit 0.04 mg/L
Total suspended solids	SM, Method #2540D 1997 Detection Limit = 1.3 mg/L
Chloride	SM 21st ed, Method #4500C1-D 1997 Method Reporting Limit = 5 mg/L
~~Total volatile solids~~	~~SM, Method #2540E, from total solids plus~~ 2540 G 1997
Conductivity	Hydrolab DataSonde® 4a or YSI 6600 Sonde® YSI Exo Sonde®
Total phosphorus	SM 21st ed, Methods #4500-P B 5 and #4500-P E 1999 Method Reporting Limit = 0.01 mg/L
Soluble reactive phosphorus	SM 21st ed, Methods #4500-P B 1 and #4500-P E 5.Method Reporting Limit = 0.005 mg/L
E.coli	Method: 9213D Method Reporting Limit: 1 CFU/100ml
Total Hardness	Method: 2340 C EDTA Method Reporting Limit: 5 mg/L
Sulfate	Method: 375.4, EPA Method Reporting Limit: 10 mg/L

ATTACHMENT B

LCHD Project Budget – Water Chemistry

2021 Price Quotation

	Tier 1			Tier 2 & 3		Quality Control		TOTAL (Tier 1, 2&3, QC)
Analyte	Quoted Price	Proposed Quantity	Total Tier 1	Proposed Quantity	Total Tier 2 & 3	Proposed Quantity	Total QC	
Demand								
Chloride	$12.00	28	$ 336.00	118	$ 1,416.00	8	$ 96.00	$ 1,848.00
Conductivity*	Field	28						$ -
pH*	Field	28						$ -
Sulfate	$15.00	28	$ 420.00	118	$ 1,770.00	8	$ 120.00	$ 2,310.00
TSS	$15.00	70	$ 1,050.00	295	$ 4,425.00	20	$ 300.00	$ 5,775.00
Temperature*	Field	28						$ -
			$ -		$ -		$ -	$ -
Metals			$ -		$ -		$ -	$ -
Total Hardness	$12.00	28	$ 336.00	118	$ 1,416.00	8	$ 96.00	$ 1,848.00
			$ -		$ -		$ -	$ -
Nutrients			$ -		$ -		$ -	$ -
Ammonia	$12.00	70	$ 840.00	295	$ 3,540.00	20	$ 240.00	$ 4,620.00
Total Nitrates (NO2+NO3)	$12.00	70	$ 840.00	295	$ 3,540.00	20	$ 240.00	$ 4,620.00
TKN	$25.00	70	$ 1,750.00	295	$ 7,375.00	20	$ 500.00	$ 9,625.00
Total Phosphorus	$18.00	70	$ 1,260.00	295	$ 5,310.00	20	$ 360.00	$ 6,930.00
Dissolved Reactive Phosphorus	$15.00	70	$ 1,050.00	295	$ 4,425.00	20	$ 300.00	$ 5,775.00
			$ -		$ -		$ -	$ -
Chlorophyll			$ -		$ -		$ -	$ -
Sestonic Chlorophyll a	$50.00	56	$ 2,800.00	0	$ -	3	$ 150.00	$ 2,950.00
Chlorophyll Shipping	$25.00	4	$ 100.00		$ -		$ -	$ 100.00
Bacteria			$ -		$ -		$ -	$ -
E. Coli	$18.00	28	$ 504.00	118	$ 2,124.00	8	$ 144.00	$ 2,772.00
* denotes field measurement								$ -
Analysis Subtotal			$11,286.00		$35,341.00		$2,546.00	$ 49,173.00
Personnel								$ 24,862.50
Supplies								$ 6,500.00
TOTAL								$ 80,535.50

ATTACHMENT C

2021 List of Sample Sites

DRWW ID	NewORNAREA	Lat	Long	River/Stream Name	Subwatershed	Tier 1	Tier 2	Tier 3	Location	Comment
10-1	31.90	42.4248	-87.9973	North Mill	North Mill Creek	1			Milbourne Road	USGS Site (discontinued)
10-2	29.38	42.4442	-88.0007	North Mill	North Mill Creek		2		Kelly Road	Dam removal site - dam is notched
10-3	20.79	42.4661	-88.0090	North Mill Creek	North Mill Creek		2		Route 173	
10-4	5.64	42.4479	-88.0247	North Mill	North Mill Creek		2		Hastings Creek @ Miller Rd	
10-5	3.91	42.4308	-88.0343	North Mill	North Mill Creek		2		Hastings Creek @ Grass Lake Rd	
10-6	0.99	42.4215	-88.0045	Unnamed Trib to North Mill Creek	North Mill Creek			3	Ust. (W) of Route 45 - need better parking access	
10-7				North Mill	North Mill Creek	1			Edwards Road	Site added in 2019.
11-1	63.80	42.4183	-87.9451	Mill Creek	Mill Creek		2		Dilley's Road	
11-2	58.88	42.4154	-87.9880	Mill Creek	Mill Creek	1			Hunt Club Road	sample at POTW call Austin 847-377-7134 USGS Site
11-3	21.34	42.3989	-87.9824	Mill Creek	Mill Creek		2		Sterns School Road	
11-4	18.33	42.3833	-88.0041	Mill Creek	Mill Creek		2		Route 45	
11-5	9.35	42.3605	-88.0151	Mill Creek	Mill Creek		2		Washington St	
11-6	4.32	42.3350	-88.0397	Mill Creek	Mill Creek		2		Wick Street	
12-1	7.35	42.4835	-87.9128	Newport Drainage Ditch	Newport Drainage Ditch		2		Newport Drainage Ditch @ Gilbourne Ave	
12-2	2.82	42.4581	-87.8968	Newport Drainage Ditch	Newport Drainage Ditch		2		W. 21st Street along Union Pacific RR	
13-1	232.83	42.3438	-87.9411	Des Plaines River	Upper Des Plaines River	1			Hwy 120	USGS Site
13-10	4.02	42.4042	-87.9061	Suburban Country Club Trib	Upper Des Plaines River		2		Suburban Country Club Trib @ Shirley Dr	
13-11	2.37	42.4444	-87.9527	Slocum Corners Creek	Upper Des Plaines River		2		N. Mill Creek Rd.; E. of I-94	
13-12	2.35	42.4023	-87.8949	Suburban County Club Trib	Upper Des Plaines River			3	E. of Northwestern Ave	Removed from chemical analyses in 2019
13-13	1.06	42.3654	-87.9014	Unnamed trib. - Greenleaf Creek	Upper Des Plaines River			3	Swanson Trlgy Conservation Area - 42.3700 -87.9085	
13-14	1.10	42.3480	-87.9570	Unnamed Trib to Belvidere Rd Trib	Upper Des Plaines River			3	Leonard Dr.	
13-15	1.92	42.3259	-87.9784	Bull's Brook	Upper Des Plaines River			3	Almond Rd.	
13-16	253.75	42.3051	-87.9542	Des Plaines River	Upper Des Plaines River		2		Dst. Buckley Rd.	Need to access via Desplaines Trail
13-17	0.84	42.3002	-87.9380	Unnamed Trib to Des Plaines River	Upper Des Plaines River			3	Behind pump station off of Sprucewood Lane	
13-18	234.84	42.3875	-87.9345	Des Plaines River	Upper Des Plaines River	1			40' Above Riffle Structure	Access through Wetlands Research property
13-19				Des Plaines River	Upper Des Plaines River			3	Below Riffle Structure	Access through Wetlands Research property
13-2	225.36	42.3691	-87.9176	Des Plaines River	Upper Des Plaines River	1			McClure Ave	Canoe launch
13-3	220.39	42.3808	-87.9140	Des Plaines River	Upper Des Plaines River	1			Above Hwy 41	
13-4	145.54	42.4288	-87.9304	Des Plaines River	Upper Des Plaines River	1			Wadsworth Road	
13-5	137.29	42.4653	-87.9428	Des Plaines River	Upper Des Plaines River		2		Hwy 173	
13-6	123.67	42.4892	-87.9258	Des Plaines River	Upper Des Plaines River	1			Russel Road	USGS Site
13-7	2.69	42.3184	-87.9617	Bull's Brook @ Rt 21	Upper Des Plaines River		2		N. Milwaukee Ave.	
13-8	3.71	42.3427	-87.9454	Belvidere Rd Tributary	Upper Des Plaines River		2		Belvidere Rd Tributary @ Highway 21 and 120	
13-9	4.08	42.3578	-87.9367	Stone Roller @ Lake Carina	Upper Des Plaines River		2		Stone Roller @ Lake Carina	
14-1	11.67	42.3119	-87.9637	Bull Creek	Bull Creek		2		Hwy 21	
14-2	2.87	42.3061	-87.9690	Bull Creek	Bull Creek		2		Route 137	
14-3	0.99	42.3101	-87.9806	Bull Creek	Bull Creek			3	N. Countryside Drive	
14-4	5.08	42.3025	-88.0008	W. Branch Bull Creek	Bull Creek		2		Northwind Blvd. - access 1600 behind warehouse	
14-5	1.33	42.2793	-88.0028	Bull Creek	Bull Creek			3	Adj. University Drive	call Clay K 847-312-3657
14-6	2.39	42.2877	-88.0229	Bull Creek	Bull Creek		2		Hazelnut Xing	
15-1	36.43	42.1981	-87.9231	Indian Creek	Indian Creek		2		Marriot Inn parking lot - adj. Cranes Landing GC	
15-10	2.22	42.2301	-88.0376	West Branch Indian Creek	Indian Creek			3	Gilmer Rd.	
15-11	1.70	42.2196	-88.0256	Forest Lake Drain	Indian Creek			3	Hawthorne Grove Rd.	
15-12	2.06	42.1969	-88.0399	Gildeer Creek	Indian Creek			3	IL Rt. 22	
15-13	3.43	42.1937	-88.0012	Gildeer Creek	Indian Creek			3	Willowbrook Rd. S. of Half Day Rd.	
15-2	35.02	42.2065	-87.9616	Indian Creek	Indian Creek		2		Sullivan Woods Preserve, North of Creekview Dr.	
15-3	5.07	42.2627	-87.9655	Indian Creek	Indian Creek		2		Gregg's Parkway	
15-4	6.78	42.2044	-87.9750	Indian Creek	Indian Creek		2		Port Clinton Rd at Kildeer Creek	
15-5	17.26	42.2105	-87.9876	Indian Creek	Indian Creek		2		Oakwood Rd.	
15-6	3.66	42.2394	-88.0231	Indian Creek	Indian Creek		2		Washitay Ave	
15-7	2.85	42.1943	-88.0300	Indian Creek	Indian Creek		2		Salem Lake Drive S. of Rt 22	
15-8	9.36	42.2149	-87.9662	Seavey Drainage Ditch	Indian Creek		2		Near Vernon Hills GC	
15-9	2.68	42.2446	-88.0356	Indian Creek	Indian Creek		2		N. Midlothian Rd.	
16-1	358.85	42.3094	-87.8878	Des Plaines River	Lower Des Plaines River	1			Palantine Frontage Rd.	
16-10	2.00	42.2505	-87.9255	Werhane Lake Drain	Lower Des Plaines River			3	St. Marys Rd.	
16-2	323.96	42.1531	-87.9102	Des Plaines River	Lower Des Plaines River		2		E. Lake Cook Rd.	
16-3	314.68	42.1676	-87.9134	Des Plaines River	Lower Des Plaines River	1			Deerfield Rd.	
16-4	273.21	42.2004	-87.9185	Des Plaines River	Lower Des Plaines River	1			Half Day Rd.	USGS Site
16-5	268.06	42.2405	-87.9392	Des Plaines River	Lower Des Plaines River	1			Illinois Route 60 - Town Line Rd.	
16-6	260.11	42.2767	-87.9381	Des Plaines River	Lower Des Plaines River	1			Rockland Rd.	
16-7	266.48	42.2490	-87.9426	Des Plaines River	Lower Des Plaines River		2		Hollister Dam site - adj. to Hollister Intl.	
16-8	268.90	42.2271	-87.9368	Des Plaines River	Lower Des Plaines River		2		Wright Woods Dam site - immediately ust. bike bridge	Dam removal access route - need key
16-9	1.19	42.1709	-87.9069	Unnamed Trib to Des Plaines River	Lower Des Plaines River			3	Timberleaf Lane	
17-1	29.23	42.1218	-87.8960	Buffalo Creek	Buffalo Creek		2		Route 21	
17-2	22.10	42.1519	-87.9692	Lake Cook Rd @ Farington Ditch	Buffalo Creek		2		Lake Cook Rd @ Farington Ditch	
17-3	9.59	42.1609	-87.9907	Buffalo Creek	Buffalo Creek		2		Checker Road	
17-4	8.55	42.1536	-87.9966	Buffalo Creek	Buffalo Creek		2		Lake Cook Rd @ Buffalo Creek Trib	
17-5	1.19	42.1858	-88.0580	Unnamed trib	Buffalo Creek			3	Quentin Rd.	
18-1	5.50	42.1635	-87.9224	Aptakisic	Aptakisic Creek		2		Aspen Road	
18-2	4.94	42.1646	-87.9277	Aptakisic	Aptakisic Creek		2		Pekara Rd, West of Hwy. 21	
18-3	2.26	42.1777	-87.9608	Aptakisic Creek	Aptakisic Creek		2		Copperwood Dr. bike xing	
18-4	1.09	42.1812	-87.9667	Aptakisic Creek	Aptakisic Creek			3	N. Buffalo Grove Rd.	
18-5	0.99	42.1815	-87.9657	Unnamed Trib to Aptakisic Creek	Aptakisic Creek			3	Dst. Aptakapsic Rd., W of N. Buffalo Grove Rd.	

Tier 1 Sites will be established as "core" sites which will receive bi-annual Biological Assessment and continous monitoring.

14 41 18

AGREEMENT between the
DES PLAINES RIVER WATERSHED WORKGROUP
And the
LAKE COUNTY STORMWATER MANAGEMENT COMMISSION
for providing ADMINISTRATIVE AGENT, GIS, and TECHNICAL COORDINATION SERVICES

WHEREAS, the Des Plaines River Watershed Workgroup (DRWW) is an organization formed individually and collectively, pursuant to the Intergovernmental Cooperation Act, 5 ILCS 220/1 et seq.; Article VII, Section 10 of the 1970 Constitution of the State of Illinois; the Local Land Resource Management Planning Act, 50 ILCS 805/1 et seq.; the Illinois Drainage Act, 70 ILCS 605/1 et seq.; and other statutory authority, the Environmental Protection Act, 415 ILCS 5 et seq.; The Green Infrastructure for Clean Water Act, 415 ILCS 56/1 et seq.; and other applicable law; and

WHEREAS, the Lake County Stormwater Management Commission ("SMC") formed pursuant to 55 ILCS 5/5-1062 et seq., providing authority to the Stormwater Management Commission; is desirous of acting as the 'Administrative Agent' for the DRWW and having related organizational mission and objectives; and

WHEREAS, the Administrative Agent duties provided to the DRWW shall include but are not limited to, communication and coordination, membership development, website management, financial accounting, meeting implementation following the Illinois Open Meetings Act requirements, providing Illinois Freedom of Information Act services per that Act's requirements, technical support, providing recommendations and support for purchasing and procurement of contractual services following Illinois Professional Services Selection Act and the Lake County Purchasing Policies when applicable; and

WHEREAS, the parties hereto, by their respective governing boards, find this Agreement to be fair and to the mutual benefit of the parties hereto.

NOW, THEREFORE, the DRWW and the SMC agree, by their authorized representatives, to the following:

1. That the recitals above be and are incorporated by reference as a part of this Agreement.

2. Mutual Agreements. DRWW and SMC agree:

   a) Sub-consultants hired by the DRWW shall be approved by the DRWW Executive Board and invoices received shall be paid by SMC from the DRWW account as part of the administrative services provided under this agreement.
   b) Mutually review the terms of this agreement, at a minimum, within the fourth fiscal quarter of each calendar year, to ensure both the SMC services rendered are meeting expectations of the DRWW and that SMC staff expenses are being remunerated appropriately.

3. DRWW Agreements. DRWW agrees as follows:

   a) The DRWW agrees to allow SMC to perform invoice payments to sub-consultants approved per 2.a) above.

4. SMC Agreements. SMC agrees as follows:

a) SMC agrees each year, starting in January 2021 and annually thereafter, to develop a yearly budget for the DRWW Executive Board approval and three-year budget estimate, based on projected membership dues received and expenses.

b) SMC agrees to provide the Administrative Agent services, effectively and efficiently for an amount estimated at 100 hours, at an average staff cost of $64/hr.

c) SMC agrees to provide financial reporting of revenues and expenditures on a monthly and year-end basis, so that the DRWW may make informed decisions on financial matters, regarding expenses and dues adjustments that may be necessary per the DRWW bylaws.

d) SMC agrees to provide Technical Coordinator services (at approximately 325 hours, to be billed within the not-to-exceed amount of this contract) for the following -

   a. Meeting Attendance: Executive Board, Committees and General Membership meetings

   b. Monitoring Work Plan: Coordinate with SMC administrative support staff, DRWW and subconsultants on development of the monitoring data needs, locations, maps and schedule.

   c. Meeting Support Services: Coordination with the SMC administrative support staff for meetings with the DRWW, including Executive Board meetings, Monitoring/Water Quality Improvements Committee meetings, Lakes Committee meetings, and quarterly meetings of the General Membership. Prepare meeting agendas, meeting minutes; meeting materials and coordination of or provision of presentations.

   d. Website Coordination: Coordination with SMC administrative support staff of website announcements of meeting content, news or other media information. Print material will be generated by SMC.

   e. Educational Outreach and Membership Development: Coordination with SMC administrative support staff of an educational and stakeholder outreach program. Provide strategic leadership regarding potential future group partnerships and members. Coordination with SMC administrative support staff of public notices, press releases, and email announcements to promote the DRWW goals and objectives.

   f. Attendance at Conferences or training sessions: The DRWW may request the Consultant to attend relevant conferences and trainings with respect to the purpose of this Agreement.

   g. Watershed Assessment Activities

      i. Technical Review of Watershed Assessment: Based on the watershed assessment data gathered through watershed planning and monitoring efforts, assist SMC administrative support staff with preliminary technical review of assessment data and provide comments for completeness.

      ii. Review of Watershed Plan Documents: Preliminary review assistance of draft watershed plan documents and provide comments. Provide review assistance of the final draft of the watershed plan prepared by SMC administrative support staff for submittal to the IEPA.

   h. Regulatory and Granting Agency Coordination: Represent the DRWW in coordination with IEPA, USEPA, and other regulatory agencies or granting sources to further the mission and goals of the DRWW, including but not limited to; a nutrient trading program, POTW and MS4 permit conditions and standards, grant opportunities, TMDL issues, and specific water quality parameter concerns.

5. Effective date of agreement: The effective date of this Agreement shall be December 1, 2020.

6. Terms of Agreement:

   a) The terms of this Agreement are valid until November 30th, 2021, after which time the DRWW Executive Board shall; review the work estimate provided by SMC for the upcoming fiscal year in accordance with Item 2.b) and determine an agreed contract funding level within the corresponding fiscal year budget.
   b) Either party may terminate this Agreement upon 30 days written notice to the other party. In the event of such termination, the DRWW shall reimburse the SMC for eligible administrative services made up to the date of notice of termination, up to the maximum not-to-exceed amount of $25,000 for the 2021 fiscal year.
   c) All adjustments, additions, and/or deletions to this Agreement are subject to the written approval of both parties.
   d) This Agreement shall be governed by and construed according to the laws of the State of Illinois.

Agreed and executed by the parties hereto, by their duly authorized representatives, on the date first written above.

Des Plaines River Watershed Workgroup

By:_____

Al Giertych, President

Attest: _____

Michael Talbett, Treasurer

Lake County Stormwater Management Commission

By: _____

Kurt Woolford, Technical Coordinator

Attest:_____

Jacob Jozefowski, DRWW Coordinator

4.a.iv North Shore Water Reclamation District 2021

2020 TECHNICAL SERVICES AGREEMENT between the
DES PLAINES RIVER WATERSHED WORKGROUP
and
NORTH SHORE WATER RECLAMATION DISTRICT for
CONTINUOUS MONITORING PROGRAM

This is an agreement (Agreement) by and between the DES PLAINES RIVER WATERSHED WORKGROUP, 500 West Winchester Road, Libertyville, Illinois 60048 (DRWW) and NORTH SHORE WATER RECLAMATION DISTRICT, 14770 W. Wm. Koepsel Dr., Gurnee, IL 60031 (DISTRICT).

The initial term of this Agreement shall be for a one-year period commencing on June 1, 2020 and extending to May 31, 2021, and shall renew automatically for two successive one year terms through May 31, 2023. All field monitoring shall be completed by May 31st of each contract year and the annual report submitted within two months thereof.

PURPOSE

The DRWW is workgroup consisting of various units of local government, and other groups and individuals that have joined together to study the Des Plaines River watershed. The DISTRICT is a founding member of the DRWW, as well as a current member of the workgroup. The DRWW will require certain monitoring services. In order to conserve the limited funds that are available to the DRWW, it has been determined to be in the best interest of the DRWW to utilize such resources that are available from the workgroups members if a member can provide such services at a lower cost. The DISTRICT has the capability to perform certain monitoring services and is willing to perform such services if the DRWW agrees to contribute to the cost of these monitoring services as provided in this Agreement. The DRWW wishes to engage the DISTRICT to provide technical services to assist the DRWW in conducting continuous monitoring in the Des Plaines River watershed located in Lake County, Illinois. The continuous monitoring program contemplated under this agreement is for the District to collect and process monitoring data for the field parameters specified herein at specified locations within the watershed. The DRWW has selected 3 sampling locations on the main-stem of the Des Plaines River in Lake County, Illinois.

SERVICES

The DISTRICT will conduct continuous monitoring utilizing water probes, analyze and qualify the data collected, and provide the data to the DRWW as more particularly described in the Scope of Services. The Scope of Services to be provided by the DISTRICT for the monitoring program are set forth in Attachment A, "DRWW Continuous Monitoring Program, SCOPE OF SERVICES".

COMPENSATION

1. The DISTRICT agrees to perform the Scope of Services and furnish the specific items included in the Scope of Services for an annual fee (Agreement Amount) not to exceed $26,207 for the monitoring analysis according to the rates in the Project Budget Attachment B. The DISTRICT has calculated the annual fee, based up the purchase of the three Eureka Manta+ 35A multiprobe sondes with sensors at the total cost of $29,000 provided that DRWW will pay for the cost of the sondes over a three year period. The

DRWW shall be obligated to pay the full amount incurred by the DISTRICT for the purchase of the three Eureka Manta+ 35A multiprobe sondes with sensors, including any other sondes sensors that are purchased, in addition to or as replacements, pursuant to the terms of this Agreement, should this Agreement, for any reason, be terminated early or not renewed for the contemplated 3 years. The DISTRICT shall have the right to deduct the cost of the three Eureka Manta+ 35A multiprobe sondes from the DISTRICT's annual dues, if for any reason, DRWW does not reimburse the DISTRICT for said cost and DRWW agrees that the DISTRICT shall have such right to offset DISTRICT's annual dues.

2. The DRWW agrees to pay the DISTRICT for a total project cost not to exceed $78,621.00, with an annualized cost of $26,207.00, using the compensation schedule identified in Attachment B. The final ten percent of the Agreement Amount shall be retained by the DRWW until the project is completed and all deliverables have been received and approved by the DRWW.

3. The DISTRICT shall furnish the DRWW with monthly itemized invoices. Invoices shall describe the work completed; show the actual number hours worked by team member; and actual travel and other expenses that have been incurred. Payments by the DRWW shall be made in accordance with the Illinois Local Prompt Payment Act (50 ILCS 505/1 et seq.).

SCHEDULE AND DELIVERABLES

Schedule:

- Field monitoring to commence on June 8, 2020, or within 14 days after DISTRICT has obtained the three Eureka Manta+ 35A multiprobe sondes with sensors that are necessary to perform such monitoring as contemplated by this Agreement.
- All field monitoring to be completed by May 31st of each contract year and the annual report submitted within two months thereof.

Project Deliverables:

- Monthly continuous monitoring results for the specified field parameters in an editable Microsoft Excel file format.
- An annual report consisting of a pdf file of all continuous monitoring results, and notes from a field log. Any sampling or testing observations which may have affected accuracy will be noted in the report narrative. Any applicable data qualifiers (e.g., probe calibration failure) will also be noted in the project specific comments portion of the report narrative page.

TERMS and CONDITIONS

1. The DRWW may, by written Order, make changes in the scope of work if such changes are within the general scope of the Agreement. If such changes cause an increase or decrease in the DISTRICT's cost or the time required to complete the project, the parties hereto shall agree

to enter into good faith negotiations for any adjustment in the Agreement Amount, prior to issuance of the Change Order. Adjustment of the Agreement Amount shall be based on the estimated change in the number of staff hours required plus any changes in the DISTRICT's expense. The DISTRICT will not be compensated for additional services performed without an approved Change Order.

2. TERMINATION/SUSPENSION. Either party may terminate this Agreement upon 30-days written notice to the other party. Upon termination for convenience of the DRWW, the DRWW shall reimburse DISTRICT for all services rendered and expenses incurred prior to termination, plus any expenses of termination. Any and all services, publications or materials provided to the DRWW by the DISTRICT during the term of the Agreement shall remain the property of the DRWW. Nothing herein shall limit the right of the DISTRICT to retain copies of such publications or such data collected pursuant to this Agreement and the use of such publications or such data by the DISTRICT, without charge.

3. This Agreement shall be construed in accordance with the laws of the State of Illinois and venue shall at all times rest in Nineteenth Judicial Circuit Court of Lake County Illinois. All terms and provisions of this Agreement are subject to the covenant of good faith and fair dealing implied in all Illinois contracts.

4. This Agreement shall not be assigned, altered or modified without the express written consent of both parties.

5. No provision of this Agreement is intended, nor will be interpreted, to provide or create any third party beneficiary rights or other rights of any kind to Authorized Parties or a third party hereto or any other person or entity and all provisions hereof shall be personal and solely between the DRWW and DISTRICT.

6. Any failure or delay by either Party to enforce the provisions of this Agreement shall in no way constitute a waiver by such Party of any contractual right hereunder, unless such waiver is in writing and signed by the waiving Party.

7. Notwithstanding this Agreement, the DISTRICT shall retain all defenses and immunities provided and granted by Local Governmental and Governmental Employees Tort Immunity Act ("Act"). This Agreement shall not be construed as a contract under Section 2-101 of the Act that would abrogate the defenses and immunities granted under the Act.

8. DISCLAIMER OF WARRANTY.
The parties understand and agree that DISTRICT will only be retrieving such data, if any, that has been collected by the three Eureka Manta+ 35A multiprobe sondes, that the DISTRICT has made no recommendation or representation that the sondes, the types of data to be collected or the means or methods used to collect the data are sufficient for the purposes of DRWW. The DISTRICT shall not be responsible nor liable for the failure of any sonde to collect data or for the any sonde to accurately collect data. NEITHER PARTY MAKES AND EACH PARTY EXPRESSLY DISCLAIMS, WAIVES, RELEASES AND RENOUNCES ANY WARRANTY, EXPRESS OR

IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ALL WARRANTIES ARISING FROM ANY COURSE OF DEALING OR PERFORMANCE OR USAGE OF TRADE.

9. DELAYS AND FORCE MAJEURE:
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 Agreement subject to termination for convenience or to renegotiation in the event that DISTRICT's field or technical work is interrupted due to causes outside of its control.

If the costs of materials or other items required by the DISTRICT to perform under this Agreement become unavailable, have increased in cost, and/or are being rationed or limited in distribution then the DISTRICT shall be equitably compensated for the additional costs for labor, equipment, and other charges associated with maintaining its work force and obtaining or maintaining equipment available during the interruption.

10. NOTICES AND COMMUNICATION:

All notices and other communications which are required to be, or which may be, given under this Agreement shall be in writing, and shall be delivered at the addresses set out herein below. Notice may be given by personal delivery, recognized overnight courier or by United States mail in the manner set forth below. Notice shall be deemed to have been duly given (a) if by personal delivery, on the first to occur of the date of actual receipt or refusal of delivery by any person at the intended address, (b) if by overnight courier, on the first (1st) Business Day after being delivered to a nationally-recognized overnight courier, or (c) if by mail, on the second (2nd) Business Day after being deposited in the United States mail, certified or registered mail, return receipt requested, postage prepaid, addressed as follows:

To the DRWW: Des Plaines River Watershed Workgroup
500 West Winchester Road
Libertyville, Illinois 60048
ATTENTION: Mike Warner, Administrative Agent
mwarner@lakecountyil.gov

To the DISTRICT: North Shore Water Reclamation District
Gurnee, IL 60030
ATTENTION: Joseph Robinson, Director of Laboratory Services
Jorobinson@northshorewrd.org

For the DRWW:

Al Giertych, President
DRWW

Date: 6/4/20

Attest:

DRWW

For the DISTRICT:

Preston P. Carter, President
North Shore Water Reclamation District

Date: 6-10-20

Attest:

NSWRD

ATTACHMENT A

DRWW Continuous Monitoring Program
SCOPE OF SERVICES

1. Sampling Schedule

1.1 Annual Continuous Monitoring Program

DISTRICT will install three sondes for continuous monitoring along the mainstem of the Des Plaines river at DRWW monitoring sites 13-6, 13-1 and 16-5. Continuous monitoring will begin in June, 2020 with monthly downloading and reporting of specified field parameters occurring throughout the term of the Agreement. The sondes will be configured to collect data every 30 minutes, and each probe will be calibrated at a minimum of once each month.

1.2 Field Parameters

North Shore Water Reclamation District will procure and utilize three Eureka Manta+ 35A multiprobe water sondes for this project. These meters will be equipped with the following sensors:

- Conductivity
- pH
- Temperature
- Dissolved Oxygen
- Turbidity
- Chlorophyll a

The results of these parameters will be reported monthly and included in the annual report along with the associated field notes. These meters shall be calibrated monthly.

2. Field Reporting

2.1 Field Log

A field log will be kept each day that the sondes are accessed. The field log will include:

- Name and signature of the field services technician;
- Location of sampling site;
- Weather and water conditions (if unordinary condition apply);
- Dates and times of sonde maintenance and calibration;

- GPS location of sampling (in latitude/longitude and state plane) for first event on each site;
- Field measurements;
- Descriptions of any unusual conditions at the sample location.

3. Project Deliverables

3.1 Monthly Monitoring Results

Continuous monitoring results for the specified field parameters in an editable Microsoft Excel file format. Continuous monitoring results will be submitted within 3 weeks of the completion of monthly monitoring.

3.2 Annual Report

The annual report will consist of a PDF file of all analytical results and the field log. Any sampling or testing observations which may have affected accuracy will be noted in the report narrative. Any applicable data qualifiers will also be noted in the project specific comments portion of the report narrative page. The annual report will be submitted within two months of the final field event.

ATTACHMENT B

Project Budget – Continuous Monitoring

Capital Costs: Three Eureka Manta+ 35A multiprobe sondes with sensors $29,000 / 3 years = $9667 (Annualized cost for sondes based on 3-year project commitment)

Labor Costs; 1 x per month for calibration, cleaning and deployment: 2 people x 6-hours x 12 months = 144 hours

1 x per month for data downloading: 1-person x 4-hours x 12 months = 48 hours

1 x per month data management: 1-person x 6-hours x 12 months = 72 hours

Total hours = 264 @ $60.00 per hour = $15,840.00 / year

Annual Project Fee –

Capital Costs =	$ 9,667.00
Labor Costs =	$15,840.00
Transportation Costs:	$ 700.00
Total Annual Cost:	$ 26,207.00

AMENDMENT NO. 1 to
2020 TECHNICAL SERVICES AGREEMENT between the
DES PLAINES RIVER WATERSHED WORKGROUP
and
NORTH SHORE WATER RECLAMATION DISTRICT. for
CONTINUOUS MONITORING PROGRAM

This Amendment is by and between:

Des Plaines River Watershed Workgroup (DRWW)
500 West Winchester Road
Libertyville, IL 60048

and

North Shore Water Reclamation District (NSWRD).
14770 W. Wm. Koepsel Dr.
Gurnee, IL 60031

Who agree to amend the original Agreement, as follows:

COMPENSATION

3. The DISTRICT shall furnish the DRWW with ~~monthly~~ quarterly (fiscal year) itemized invoices.

SCHEDULE AND DELIVERABLES

- ~~Monthly~~ Quarterly (fiscal year) continuous monitoring results for the specified field parameters in an editable Microsoft Excel file format.

ATTACHMENT A: PROJECT DELIVERABLES

3.1 ~~Monthly~~ Quarterly Monitoring Results
Continuous monitoring results for the specified field parameters in an editable Microsoft Excel file format. Continuous monitoring results will be submitted quarterly (fiscal year)~~within 3 weeks of the completion of monthly monitoring~~.

The proposed amendments are intended to reduce administrative burden for both the DRWW and NSWRD.

APPROVED FOR DRWW

By: A. T. Giertych

Printed Name: A. T. Giertych

Title: DRWW Executive Board

Date: 12/18/20

APPROVED FOR NSWRD

Signature: Stephen J. Drew

Printed Name: Stephen J. Drew

Title: President

Date: January 13, 2021

4.b.i pt.1 Master Professional Services Agreement

MASTER PROFESSIONAL SERVICES AGREEMENT
BETWEEN
GEOSYNTEC CONSULTANTS, INC.
AND
Des Plaines River Watershed Workgroup

This Master Professional Services Agreement ("Agreement") is made effective February 18, 2021 by and Des Plaines River Watershed Workgroup (DRWW) ("Client") and Geosyntec Consultants, Inc. and its subsidiaries and affiliates[1] (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 and if known to Client, Client shall 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 the rate shown on the rate schedule in effect at the time of actual testimony at depositions, trials, or hearings. 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 sixty (60) 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.

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 sixty (60) days from the date of the invoice. Payment

[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.

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 sixty (60) 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 one year 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, Geosyntec shall indemnify and hold harmless Client (and its 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 Geosyntec's negligent acts or omissions. Geosyntec shall indemnify, defend, and hold harmless the Client 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 $250,000 or the amount paid to Geosyntec under the applicable Service Order. 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 Employer's Liability	Statutory - $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 an authorized 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.

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 or any other party identified in the Reports 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. ASSIGNMENTAND 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 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:

Des Plaines River Watershed Workgroup (DRWW)	Geosyntec Consultants, Inc.
By: _____	By: _____
Name: Al Giertych	Name:
Title: DRWW President	Title:
Date of Signature:	Date of Signature:

4.b.i pt.1 NARP Scope of Work

Geosyntec consultants

1420 Kensington Road, Suite 103
Oak Brook, Illinois 60523
PH 630.203.3340
FAX 630.203.3341
www.geosyntec.com

February 11, 2021

Al Giertych
President
Des Plaines River Watershed Workgroup
500 W. Winchester Road, Suite 201
Libertyville, IL 60048
agiertych@lakecountyil.gov

Subject: **DRWW Nutrient Assessment Reduction Plan (NARP) Development Services**

Dear Al:

Thank you for the opportunity to provide consulting services to develop the Nutrient Assessment Reduction Plan (NARP) Workplan for the Des Plaines River Watershed Workgroup (DRWW). Based on our understanding of the project, Geosyntec Consultants, Inc. (Geosyntec) has developed this scope of work to address the objectives detailed in the DRWW's Request for Proposal (RFP) and our proposed approach from our January 13, 2021 submittal.

Project Understanding

The DRWW is a diverse coalition of stakeholders formed to address the water quality impairments in the Des Plaines River and its tributaries. Participants in the group include POTWs, MS4s, Forest Preserve Districts, and environmental groups. The workgroup has developed and implemented a comprehensive monitoring program for collecting chemical, physical, and biological data to accurately identify the quality of stream and river ecosystems as well as stressors associated with non-attainment of water quality standards and designated uses. This data has been utilized by the DRWW members to meet their monitoring requirements for POTW and MS4 NPDES permits. The data will be used to assess the environmental stressors contributing to biological impairments using the Integrated Prioritization System (IPS), a tool developed by Midwest Biodiversity Institute.

There are eight major POTWs in the Upper Des Plaines River watershed. These POTWs anticipate getting special conditions in their NPDES permits to develop a NARP by December 31, 2023. These conditions are a result of discharging to stream segments listed as impaired for DO and TP or at risk of eutrophication. Additionally, Illinois' general permit for MS4s requires that the permittee's discharges, alone or in combination with other sources, do not cause or contribute to violations of water quality standards. The MS4 permits further require that their stormwater programs be reviewed in accordance with TMDLs or

other approved watershed management plans (i.e., NARPs). Illinois EPA also recognizes that other measures (such as dam removal, stream restoration, riparian buffers, or constructed wetlands) may be needed to eliminate impairments. Illinois EPA has therefore encouraged POTWs to develop NARPs on a watershed-wide basis with input from key stakeholders such as MS4s. As a result, the DRWW is undertaking the development of the NARP for the Upper Des Plaines River watershed. The NARP needs to identify phosphorus reductions (from both point and non-point sources) and other measures to eliminate the phosphorus-related water quality impairments in the watershed. The NARP must be completed by December 31, 2023.

Geosyntec developed the DRWW NARP workplan working with the DRWW to identify the scope, schedule, and cost to develop the NARP. The following objectives were defined for the workplan:

- Establish watershed-specific water quality targets
- Determine phosphorus reductions needed to achieve site-specific water quality targets or if targets are infeasible
- Identify mechanisms to facilitate cost-effective NARP implementation

Scope of Work

Geosyntec has teamed with Kieser & Associates, LLC (K&A) and The Conservation Fund (The Fund) to develop the DRWW NARP. The Geosyntec Team proposes the following scope of work to develop the DRWW 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 NPDES special conditions and DRWW's objectives.

Phase 1: Conduct Data Analysis

Objective

The objective is to analyze the recent data collected by DRWW and other entities in the watershed to supplement the findings from the data analysis conducted for development of the NARP workplan.

Approach

The Geosyntec Team will combine the recent data with the data sets we already analyzed as part of the preliminary NARP workplan development. The Geosyntec Team can perform this phase cost effectively by leveraging our experience from the preliminary NARP workplan development. The datasets that will be analyzed include:

- Instream water quality monitoring data collected by DRWW in 2019 and 2020
- Continuous Sonde data collected by North Shore Water Reclamation District in 2020
- POTW effluent flow and water quality data for 2019 and 2020

Activities

- Review the recent field data to help ensure the data makes sense, does not contain erroneous values, is consistent with the system understanding that already exists, and is appropriate for supporting the modeling or for comparison to model results. Any issues will be brought to the DRWW's attention along with suggestions for resolution.
- Conduct a **kickoff meeting** for information transfer, establishing communication logistics, defining DRWW
- members' collective and individual interests and concerns.
- Prepare longitudinal plots of DO, nutrients and chlorophyll-a (sestonic and benthic algae) along the mainstem Des Plaines River to develop an understanding of the relationships between sestonic algae, benthic algae, dissolved oxygen, and phosphorus and to confirm the growing season.
- Analyze long-term rainfall and flow data to identify time periods of critical low flows in the Des Plaines River.
- Develop a presentation summarizing the data analysis results.
- Conduct a **meeting** to present the results of data analysis.
- Document the data analysis results within a chapter of the NARP report.

Assumptions

- DRWW's data will be provided in an electronic format, meets the appropriate quality assurance/quality control (QA/QC) guidelines, and is of sufficient quality for use in the project.
- The meeting will be attended virtually by two Geosyntec personnel.

Deliverables

- Presentation slides and summary presenting the data review
- Report chapter in the NARP document summarizing the data analysis

Phase 2: Develop Modeling Tools

Objective

This objective is to develop the modeling tools to support the development of the DRWW NARP including identifying phosphorus load reductions and other measures to eliminate impairments in the Des Plaines River (NARP Objective 2) and developing site-specific water quality targets under Phase 3.

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 Des Plaines River. The linked model will be developed using the platforms specified in the Request for Proposals - SWAT for the watershed platform and QUAL2kw for the instream model. The Geosyntec Team has successfully developed watershed and instream models for several clients in the Great Lakes Region such as FRSG and CMAP, and others across the nation.

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

- Elevation: LiDAR Data for Lake 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 SWAT model has been developed primarily as an agricultural assessment tool, which may present select challenges for accurately calibrating to urban watersheds. For this project, calibration efforts will focus heavily on model values pertaining to urban land-use areas. Care will be taken to ensure the model can adequately represent the hydrograph timing that results from the flashy nature of stormwater runoff in urban areas. Specifically, curve number values will be examined and adjusted as needed to ensure surface runoff is representative. Soil values in the model will be adjusted to ensure that subsurface flow is not over-represented.

The watershed model will include the specific lakes of interest identified in the NARP workplan, which may have a substantial impact on stream water quality. 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 Des Plaines River tributaries.

The instream model of the Des Plaines River and relevant tributaries will be developed using the QUAL2kw modeling platform. The QUAL2kw model is a time variable one-dimensional model that is capable of simulating nutrient dynamics and their impact on phytoplankton and DO in the Des Plaines River. The data sets that will be utilized for instream model include, at minimum:

- Cross-section data: Lake County
- Upstream Flow: U.S. Geological Survey measured flow at gage 05527800 Des Plaines River at Russell, IL
- Upstream water quality: DRWW discrete and continuous Sonde measured data

The instream model will include the hydraulics and water quality to simulate hydraulics (flow, velocity and depth) and water quality (nutrients, chlorophyll-a, benthic algae, dissolved oxygen, and temperature). The instream model will also include the mainstem Des Plaines River and the tributaries which receive discharges from POTWs. These include:

- Hasting Creek downstream of Hasting Lake (receives effluent from Lindenhurst Sanitary District Sewage Treatment Plant or STP)
- Rasmussen Lake (downstream of Lindenhurst Sanitary District STP)
- North Mill Creek downstream of Rasmussen Lake (downstream of Lindenhurst Sanitary District STP)
- Mill Creek downstream of confluence with North Mill Creek (receives effluent discharge from Mill Creek Water Reclamation Facility)

The instream model will be calibrated to datasets defined in NARP workplan and additional data analyzed under Phase 1 to help ensure the model is representative of existing conditions. The Geosyntec Team has already developed an initial segmentation for the mainstem Des Plaines River as part of our RFP response dated January 13, 2021. This initial segmentation will be refined during the project based on input from the DRWW.

Based on the approach described above, the following is a description of sub-phases to accomplish the objectives of this phase.

Sub-Phase 2A: SWAT Model Development

Activities

- Acquire and review the necessary data and studies for the SWAT model development from DRWW, MS4s, Lake County, and other publicly available sources (including previously published SWAT model runs for the Des Plaines watershed).
- Review MS4 studies to discern implemented stormwater policies which might affect runoff contributions (e.g., on-site stormwater retention).
- Process datsets such as landuse and elevation data for SWAT model setup.
- Delineate the DRWW watershed into subwatersheds using the 2018 Lake County topography data.
- Conduct QA/QC of the SWAT model input files (peer and senior reviews).
- Develop a SWAT model for the watershed.
- Calibrate the hydrology for the SWAT model to match available flow data.
- Validate hydrology for the SWAT model for a different timeframe.
- Conduct preliminary water quality calibration for the SWAT model to match available instream water quality loading data in the tributaries.
- Conduct a sensitivity analysis to identify which SWAT 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/validation 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 DRWW.
- Document the watershed model development and calibration in a portion of a report chapter.

Assumptions

- One virtual meeting will be conducted to present the initial watershed model development, and calibration/validation. Three Geosyntec Team members will participate.
- The SWAT model will accurately simulate the flow and concentrations for the tributaries with the adjustments to account for the urbanized nature of the watershed.
- Calibration of the SWAT model to lake water quality is not required.

Deliverables

- A calibrated SWAT model for the Upper Des Plaines River watershed.
- Presentation slides and meeting presenting the watershed model development and calibration/validation.
- A report chapter summarizing the SWAT model development and calibration process.

Sub Phase 2B: QUAL2kw Model Development

Activities

- Process SWAT model output for incorporating into the QUAL2kw model.
- Process other datasets to develop QUAL2kw 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).
- Refine the preliminary segmentation for the mainstem Des Plaines River and develop segementation for included tributary segments.
- Conduct QA/QC of the insteam model output files (peer and senior reviews).
- Calibrate the instream model to field collected, instream data.
- Validate the instream model for a different timeframe.
- Conduct a sensitivity analysis to identify which QUAL2kw model input parameters are the largest sources of potential uncertainty in the model results.
- Develop a presentation documenting the final calibration of the SWAT model and development of the instream model.
- Conduct a **meeting** with the DRWW to present the final calibration of the SWAT model and development of the instream model.
- Develop a presentation documenting the calibration of the instream model.
- Conduct a **meeting** with the DRWW to present the calibration of the instream model.

Assumptions

- Two virtual meetings will be conducted to present the final SWAT calibration and QUAL2kw model development and calibration. Three Geosyntec Team members will participate.
- The QUAL2kw model will not be calibrated to Rasmussen Lake water quality.
- The criteria by which the model calibration will be judged will be agreed upon between Geosyntec and DRWW.

Deliverables

- A calibrated QUAL2kw model for the Des Plaines River mainstem.
- Presentation slides and meeting presenting the final SWAT model calibration and instream model development.
- Presentation slides and meeting presenting the final calibration of the QUAL2kw model.
- A report chapter describing the instream model development.

Phase 3: Watershed Management Scenarios

Objective

The objective 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 DRWW 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 DRWW staff to streamline these scenarios based on model sensitivity to provide the cost-effective benefit to the DRWW NARP.

After analyzing the combinations of potential watershed management actions, the model results will be evaluated to identify the potential site-specific nutrient targets. 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 DRWW 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 numeric nutrient criteria to protect that use. The Geosyntec Team will also utilize the models developed in Phase 3 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 3 will be leveraged to provide inputs for the flow regime (flow flashiness of stream) and water quality to supplement the monitoring data. Geosyntec's experience on local watershed-based planning in northeastern Illinois will be valuable here. This phase will utilize the QUAL2Kw model pre- and post-processing tools already developed by Geosyntec for efficiency and provide model results that can be used with the IPS tool.

Activities

- Develop a list of recommended watershed management measures to eliminate the phosphorus-related impairments.
- Conduct a meeting with DRWW to discuss the proposed suite of measures and refine the list of measures based on DRWW 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 (if feasible).
- Conduct a **meeting** with the DRWW to present the model scenario results, recommendations, and conclusions.

Assumptions

- A total of six watershed management scenarios for eliminating phosphorus related impairments will be evaluated.
- DRWW will make the final determination of the selected scenario or scenarios that are ultimately chosen to meet the NARP conditions.
- A single virtual meeting will be conducted to present the findings. Three Geosyntec Team members will participate.
- Development of a UAA is outside of this scope of work.

Deliverables

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

Phase 4: Implementation Plan and Schedule

Objective

The objective of this phase is to identify delivery mechanisms for cost-effective implementation measures identified in Phase 3 (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 Des Plaines River. The Team will work with the DRWW to develop a project timeline that serves the best interests of the DRWW members and stakeholders while addressing the requirements of the NPDES permits. The Geosyntec Team will leverage the Lake County Green Infrastructure Model and Strategy[1] and partnership

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

opportunities with area stakeholders to identify potential green infrastructure opportunities in the Des Plaines River 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 Program (CIP) for Lake County and other DRWW members. The implementation plan will provide a comparative cost analysis to examine 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 WQT 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 include 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 federal programs such as the USDA's Regional Conservation Partnership Program or Conservation Collaboration Grant program; US EPA's Gulf of Mexico Division Farmer to Farmer grant program; and 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 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 DRWW 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 DRWW 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 County and other DRWW 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 DRWW.
- Develop cost estimates and means to implement the projects with assistance from the DRWW.
- Identify the list of stakeholders the DRWW 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 DRWW to discuss the draft implementation schedule.

- Refine the draft implementation plan and schedule based on input from the DRWW members.
- Conduct a series of meetings with stakeholders to discuss the Draft NARP.
- Revise the Draft NARP based on input from various stakeholders and DRWW.
- Conduct an in-person meeting to discuss the Revised NARP and obtain feedback.
- Finalize the Phase 1 NARP.

Outcomes & Deliverables

- Draft NARP
- Revised NARP
- Final Phase 1 NARP

Assumptions

- The draft Phase 1 NARP will undergo two rounds of review before being finalized.
- DRWW will provide one set of consolidated review comments on each draft report.
- A total of two (2) in-person meetings with the DRWW are budgeted under this phase.

Key Personnel

The key personnel proposed for development of the DRWW NARP are shown in Figure 1 below. As indicated in our January 13, 2021 RFP Response, Rishab Mahajan, PE, CFM, CPSWQ will serve as Project Manager. Adrienne Nemura will serve as Project Director.

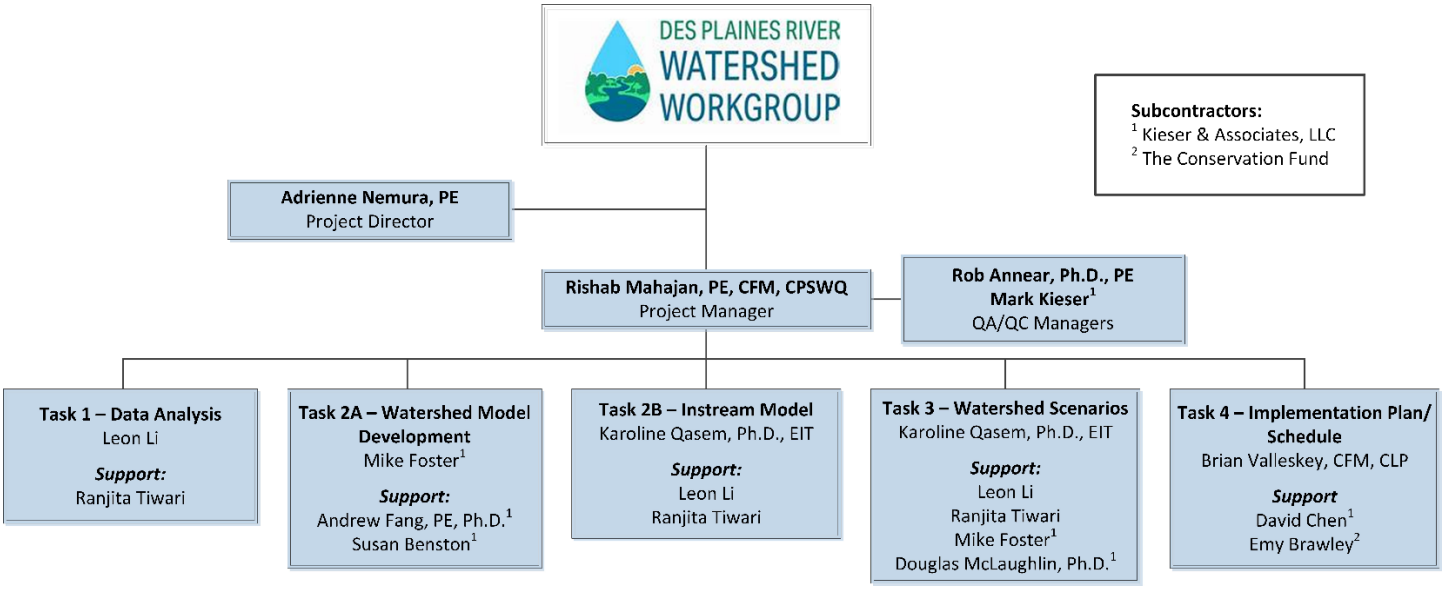

Figure 1: Proposed Project Team and Key Personnel

Schedule and Key Phases

It is assumed that the project will start around March 1, 2021. The proposed schedule is shown in Figure 2. Meetings are shown as circles and milestones shown as stars. The schedule includes time for review by the DRWW staff on various interim deliverables in the project. Phase 1 will occur within a month of the project kickoff meeting. The development of watershed model and instream models under Phase 2 will occur from April 2021 to July 2022. Phase 3 will be undertaken from August 2022 to December 2022. Phase 4 will occur from January 2023 to September 2023, culminating in the final NARP document which will be submitted to Illinois EPA.

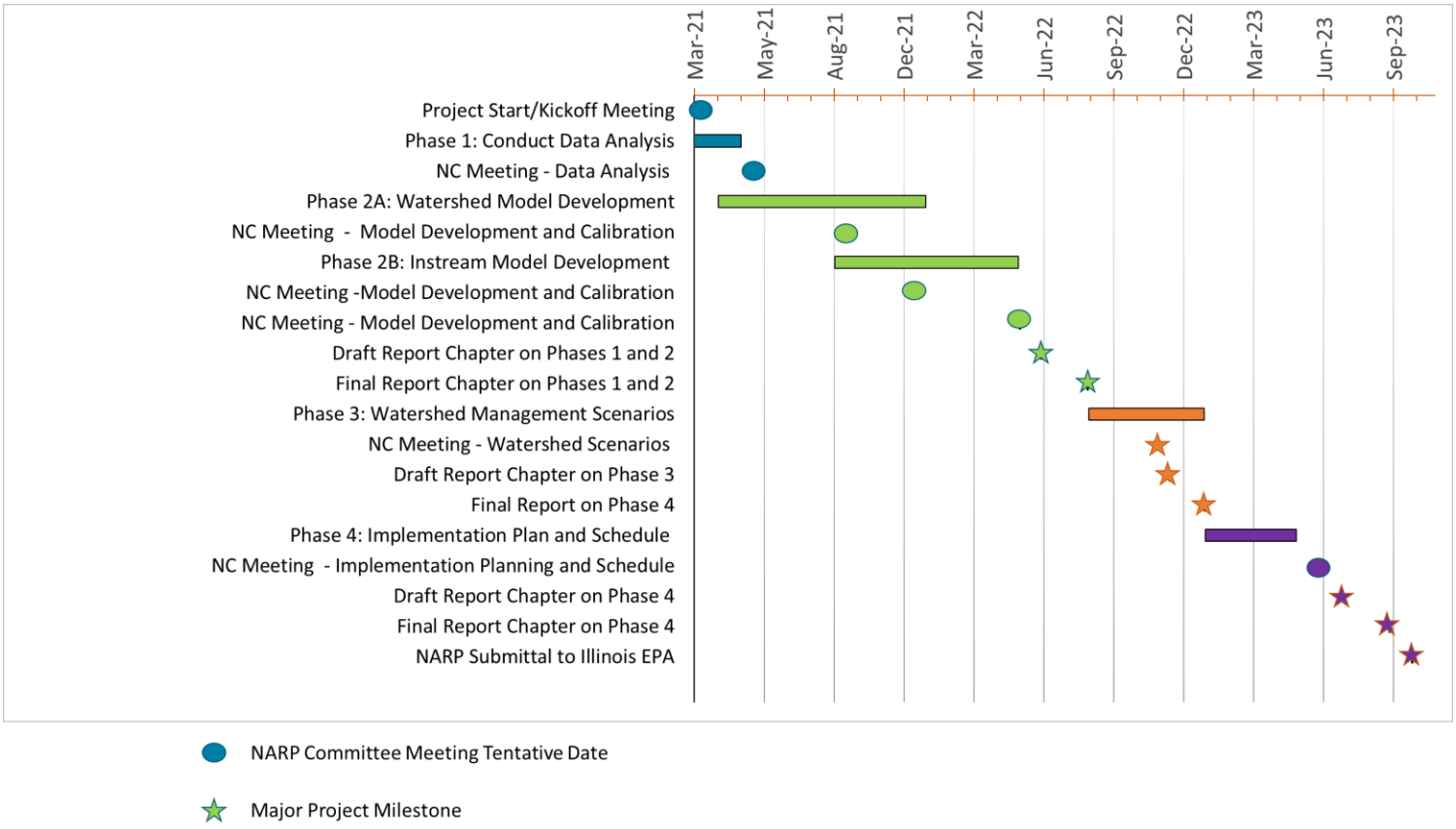

Figure 2: Proposed Schedule for the Des Plaines River Watershed Workgroup NARP

Compensation

Compensation for the work described above will be on a time and materials basis at the project level. Geosyntec's proposed rate schedule is presented below. Our cost estimate for the services described in this proposal is **$310,000** as shown in Table 1. This estimate will not be exceeded without written approval from the DRWW We will invoice monthly based on services provided.

Table 1: Cost Estimate for Developing the DRWW NARP

Phase*	Description	2021	2022	2023	Total Budget
1	Conduct Data Analysis	$9,400			$9,400
2	Develop Modeling Tools	$90,300	$83,500		$173,800
3	Watershed Management Scenarios		$27,900	$23,000	$50,900
4	Implementation Plan and Schedule			$75,900	$75,900
Total Proposed Budget		**$99,700**	**$111,400**	**$98,900**	**$310,00**

* Implementation of each phase is subject to appropriation of sufficient funds by the DRWW Executive Board by each year.

Closure

By its signature below and/or authorizing Geosyntec to proceed in accordance with this Proposal, the Des Plaines River Watershed Workgroup accepts and agrees to the Services, Schedule and Compensation described above and in the attached terms and conditions (Attachment 1).

Al Giertych — Date
President
Des Plaines River Watershed Workgroup

Matt Bardol, P.E. — Date
Senior
Geosyntec Consultants, Inc.

ATTACHMENTS (1)

4.c DRWW FY2021 Budget

FY2021 Des Plaines River Watershed Workgroup Budget (December thru November)	Projected FY2020	Actual FY2020	Projected FY2021
REVENUE/Description			
Dues/Membership dues	$ 240,000	$245,246.00	$273,973.92
Expendable Carryover Addition	$ 6,967	$20,085.85	$61,011.55
Other State Funds/Illinois EPA 319 Grant			
Interest		$89.17	
Other (FPD/LCDOT)	-		
Total Revenue	**$ 246,967**	**$265,421.02**	**$334,985.47**
EXPENSES/Description			
2020 MBI - 1/3 WATERSHED SAMPLING	**-**	**-**	
2020 MBI - New Sampling	**$ 83,007.64**	**$ 84,753.87**	
2020 SubLabs - New Sampling	**$ 83,736.00**	**$ 83,736.00**	
2020 SMC Administrative/GIS/Tech Support	**$ 25,000.00**	**$ 25,000.00**	
2020 NARP Tasks-NSWRD	**$ 26,207.00**	**$ 10,919.60**	
2021 MBI Sampling			**$ 42,531.42**
2021 LCHD Sampling			**$ 80,535.50**
2021 SMC Administrative/GIS/Tech Support			**$ 25,000.00**
2021 NARP Tasks-NSWRD			**$ 26,207.00**
2021 NARP Tasks-Geosyntec			**$ 99,700.00**
Expenses	**$ 217,951**	**$ 204,409.47**	**$ 273,973.92**
Projected Unexpended Carryover	$ 29,016	$61,011.55	$61,011.55

4.d 2021 DRWW Membership Dues Approval

DRWW FY2021 Dues			
Agency Member	**2020**	**2021 NARP Special Assessment ***	**Total 2021 Dues**
City of Lake Forest	$283	$35	**$319**
City of Park City	$397	$49	**$447**
City of Zion	$1,193	$148	**$1,341**
Ela Township	$236	$29	**$265**
Fremont Township	$264	$33	**$297**
Lake County (Unincorporated & DOT)	$25,000	$3,112	**$28,112**
Lake County Forest Preserve District	$12,941	$1,611	**$14,552**
Lake County Public Works	$60,000	$7,469	**$67,469**
Libertyville Township	$2,583	$322	**$2,905**
North Shore Sanitary District	$83,126	$10,347	**$93,473**
Vernon Township	$1,782	$222	**$2,004**
Village of Deer Park	$1,127	$140	**$1,267**
Village of Deerfield	$231	$29	**$260**
Village of Grayslake	$5,286	$658	**$5,944**
Village of Gurnee	$6,736	$838	**$7,574**
Village of Hawthorn Woods	$2,906	$362	**$3,268**
Village of Kildeer	$2,297	$286	**$2,583**
Village of Lake Zurich	$1,613	$201	**$1,814**
Village of Libertyville	$14,488	$1,803	**$16,292**
Village of Lincolnshire	$1,847	$230	**$2,076**
Village of Lindenhurst	$7,595	$945	**$8,540**
Village of Long Grove	$4,965	$618	**$5,583**
Village of Riverwoods	$1,288	$160	**$1,448**
Village of Round Lake Beach	$512	$64	**$576**
Village of Round Lake Park	$228	$28	**$256**
Village of Third Lake	$602	$75	**$677**
Village of Vernon Hills	$4,120	$513	**$4,632**

*2021 NARP Special Assessment is 12.4% of agency base dues.

DES PLAINES RIVER WATERSHED WORKGROUP

Thank you for your participation and support to make the Des Plaines River Watershed Workgroup (DRWW) a success! We have had another productive year which is highlighted on the attached "2020 Annual Accomplishments." Our mission includes keeping our membership compliant with regulatory requirements and our goal is to improve water quality so that waterbodies, such as the Des Plaines River, can be removed from the Illinois Environmental Protection Agency's (Illinois EPA) impaired list.

Waterbodies within the Des Plaines River watershed have been identified by the Illinois EPA as impaired for multiple pollutants. Most of these waterbodies also do not meet Illinois EPA's designated uses of aquatic life, primary contact, and fish consumption. Additionally, nutrient-rich waters from our watershed are contributing to the dead zone in the Gulf of Mexico.

In lieu of imposing more stringent MS4 permit limits upon communities and costly upgrades to publicly owned treatment works in attempting to correct these problems, Illinois EPA supports solving local water quality issues with a watershed-based approach through workgroups such as the DRWW.

Your continued participation and support are necessary to make the DRWW a continued success. Annual dues are needed to sustain the work effort toward better water quality. The annual dues invoice for your organization is attached. The 2021 DRWW annual agency membership dues include a Nutrient Assessment and Reduction Plan (NARP) special assessment fee, which was approved by the General Membership on February 18, 2021. This fee will result in an 11.07% increase from base membership dues. Similar special assessment fees are anticipated in 2022 and 2023. The NARP is a regulatory required plan which will establish site specific instream water quality targets for dissolved oxygen, chlorophyll a, total phosphorus, dissolved reactive phosphorus and nitrogen. The NARP will also determine point and non-point source pollution reductions needed to achieve site specific water quality targets and identify mechanisms to facilitate a cost-effective NARP implementation.

Annual dues are used to implement and conduct a comprehensive, watershed-wide monitoring program and modeling, which will be the basis for implementing water quality improvements, and to cover technical and administrative support.

The DRWW will only be accepting online payments at https://lakecountyil-energovpub.tylerhost.net/Apps/selfservice/LakeCountyILCSS_Prod#/payinvoice **for membership dues this year.**

Please contact Jacob Jozefowski (Email: jjozefowski@lakecountyil.gov, Phone: 847-377-7717) with any questions, comments, or concerns.

Sincerely,

A. T. Giertych

Al Giertych
President, DRWW

4.e

DES PLAINES RIVER WATERSHED WORKGROUP

February 1, 2021

In accordance with Article VI of the Des Plaines River Watershed Workgroup, the following nominees for the 2021-2022 DRWW Executive Board Election are:

- **President:** Al Giertych, Lake County Division of Transportation (Alternate: Mike Zemaitis, Lake County Division of Transportation)
- **Vice President:** Dave Miller, North Shore Water Reclamation District (Alternate: Chuck Boden, North Shore Water Reclamation District)
- **Treasurer:** Michael Talbett, Village of Kildeer
- **Secretary:** Paul Kendzior, Village of Libertyville (Alternate: Brian Kuebker, Village of Libertyville)
- **Member at Large:** Jim Anderson, Lake County Forest Preserve District (Alternate: Pati Vitt, Lake County Forest Preserve District)
- **Monitoring/Water Quality Improvements Committee Chair:** Steve Waters, North Shore Water Reclamation District (Alternate: Rob Flood, North Shore Water Reclamation District)
- **Lakes Committee Chair:** Mike Adam, Lake County Health Department (Alternate: Alana Bartolai, Lake County Health Department)

Sincerely,

A. T. Giertych

Al Giertych
President, DRWW
Lake County Division of Transportation