

2019 TECHNICAL SERVICES AGREEMENT between the
NORTH BRANCH WATERSHED WORKGROUP
and
NORTH SHORE WATER RECLAMATION DISTRICT for
WATER CHEMISTRY MONITORING

1. This is an agreement (Agreement) by and between the NORTH BRANCH WATERSHED WORKGROUP, 500 West Winchester Road, Libertyville, Illinois 60048 (NBWW) and NORTH SHORE WATER RECLAMATION DISTRICT, 14770 W. Wm. Koepsel Drive, P.O. Box 750, Gurnee, Illinois 60031 (DISTRICT).

PURPOSE

The NBWW wishes to engage the District to provide technical services to assist the NBWW in conducting water chemistry monitoring within the North Branch of the Chicago River watershed (Watershed) located in Lake and Cook Counties, Illinois. The water chemistry monitoring consists of the collection and analyses of water column samples and the analyses of sediment samples collected by others within the Watershed. The NBWW has selected 25 sampling locations within the North Branch of the Chicago River watershed in Lake and Cook Counties, Illinois.

SERVICES

The District will perform the water chemistry monitoring by collecting and analyzing water column samples and analyzing sediment samples collected by others and providing the analytical data to the NBWW in accordance with the IEPA-approved NBWW Quality Assurance Project Plan (QAPP). The detailed Scope of Services to be provided by the District to accomplish the NBWW's objectives for the water chemistry monitoring is further described in Attachment A, 2019 North Branch Watershed Workgroup (NBWW) Water Chemistry Scope of Work.

COMPENSATION

1. The District 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 \$35,518.00 for water column sampling and analysis and \$10,946.25 for sediment analysis, for a total not to exceed fee of \$46,464.25 in accordance with the unit price rates identified in Attachment B – Project Budget.
2. The District shall bill the NBWW monthly, with net payment due in accordance with the Illinois Local Prompt Payment Act (50 ILCS 505/1 et seq.). Itemized invoices shall be submitted detailing the work completed during the current billing period.
3. The District will notify NBWW if scope changes require modifications to the Agreement Amount. Services relative to scope changes will not be initiated without authorization from NBWW.

SCHEDULE AND DELIVERABLES

Generally, sampling will be conducted at the appropriate sites in accordance with the Sampling Schedule below within a single week per month and approximately the same week every month.

Sampling Schedule

- February 2019
- May 2019
- July 2019
- August 2019
- September 2019
- October 2019

Project Deliverables:

- Electronic data deliverables (EDDs) and the sample results in an editable Microsoft Excel file.
- 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 NBWW 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 an adjustment in the Agreement Amount, prior to issuance of the Change Order. Adjustment of the Agreement Amount shall be based on the unit price rates identified in Attachment B – Project Budget. The District will not perform additional services without an approved Change Order.
2. Either party may terminate this Agreement by providing thirty (30) day written notice to the other party. NBWW shall pay District for all expenses incurred prior to the date of termination. Any and all services or deliverables provided to the NBWW by the District shall remain the property of the NBWW.
3. This Agreement shall be governed by and construed according to the laws of the State of Illinois.
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 NBWW: North Branch Chicago 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
14770 W. Wm. Koepsel Drive
P.O. Box 750
Gurnee, IL 60031
ATTENTION: Joe Robinson, Laboratory Director
jorobinson@northshorewrd.org

For the North Branch Watershed Workgroup:

Attest:

Brandon Janes, President
North Branch Watershed Workgroup

North Branch Watershed Workgroup

Date

For the North Shore Water Reclamation District:

Attest:

Daniel M. Pierce, President
North Shore Water Reclamation District

North Shore Water Reclamation District

Date

ATTACHMENT A

2019 North Branch Watershed Workgroup (NBWW) Water Chemistry Scope of Work

- The North Branch Watershed Workgroup (NBWW) proposes to contract with the North Shore Water Reclamation District (NSWRD) to perform 2019 water chemistry monitoring in the North Branch of the Chicago River watershed located in Lake and Cook Counties, Illinois by collecting and analyzing water column samples and analyzing sediment samples collected by others and providing the analytical data to the NBWW in accordance with the IEPA-approved NBWW Quality Assurance Project Plan (QAPP). The water chemistry monitoring plan outlined in this 2019 Scope of Work (SOW) will support the NBWW's biological assessment program and aid the NBWW's evaluation whether the North Branch Chicago River watershed meets criteria that support water quality goals.
- **Sampling Schedule**

Tier 1, 2, & 3 Water Column Sampling and Analysis

- Water column sampling and analysis will begin in February 2019, after Technical Services Agreement approval. The North Shore Water Reclamation District's (NSWRD) Laboratory will sample twenty-five (25) Tier 1 and 2 sites over a one week period. The sampling will occur during the following months: February, May, August and October 2019. NSWRD will sample fourteen (14) Tier 3 sites in July and September. Sample collection will follow methods outlined in the NSWRD Surface Water Collection Procedures (Attachment C). Samples will be analyzed for the water quality monitoring parameters listed in Table 1. All sample analyses will follow methods listed in Table 2 and the NSWRD Standard Operating Procedures (SOPs) outlined in the NSWRD Quality Assurance Project Plan. The reporting limits and the laboratory method detection limits (MDLs) are listed in Table 2 (Test Methods and Reporting Limits).
- **Field QA/QC Samples**
- For every 20 samples collected, NSWRD 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 NSWRD Lab reagent grade water. This water will be placed inside a pre-cleaned container.

Table 1: Parameters and Frequency of Water Column Sampling 2019

Parameter	NBWW Frequency	Tier 1	Tier 2
		Number of Sample Events	
Chloride	February, May, August, October	4	4
Conductivity	February, May, August, October	4	4
pH	February, May, August, October	4	4
TSS	February, May, August, October	4	4
Volatile Suspended Solids	February, May, August, October	4	4
DO	February, May, August, October	4	4
Temperature	February, May, August, October	4	4
BOD5	February, May, August, October	4	4
Arsenic	August, under low flow conditions	1	0
Calcium	August, under low flow conditions	1	0
Magnesium	August, under low flow conditions	1	0
Sodium	August, under low flow conditions	1	0
Barium	August, under low flow conditions	1	0
Cadmium	August, under low flow conditions	1	0
Chromium	August, under low flow conditions	1	0
Iron	August, under low flow conditions	1	0
Lead	August, under low flow conditions	1	0
Mercury low level	August, under low flow conditions	1	0
Copper	August, under low flow conditions	1	0
Nickel	August, under low flow conditions	1	0
Silver	August, under low flow conditions	1	0
Zinc	August, under low flow conditions	1	0
Ammonia	February, May, August, October	4	4
Total Nitrates (NO ₂ +NO ₃)	February, May, August, October	4	4
TKN	February, May, August, October	4	4
Total phosphorus	February, May, August, October	4	4
Chlorophyll a	May, August, October	3	3
E. coli	February, May, August, October	4	4
PCBs	August, under low flow conditions	1	0
Pesticides	August, under low flow conditions	1	0
PNAs	August, under low flow conditions	1	0
VOCs	August, under low flow conditions	1	0

Parameter	NBWW Frequency	Tier 3
		Number of Sample Events
Chloride	July, September	2
Conductivity	July, September	2
DO	July, September	2
Temperature	July, September	2
pH	July, September	2
BOD5	July, September	2
Total Nitrates (NO2+NO3)	July, September	2
Total phosphorus	July, September	2
Chlorophyll a	July, September	2
E. coli	July, September	2

Table 2: Test Methods and Reporting Limits

Parameter	Method	MDL/Reporting Limit
Demand		
BOD5	SM5210B	2 mg/L
DO	YSI field meter	0.1 mg/L
Chloride	SM 4500-Cl ⁻ E	5 mg/L
Conductivity	YSI field meter	1 umhos/cm
pH	Orion field meter	0.1 units
Temperature	170.1	0.1°C
TSS	SM 2450D	1 mg/L
TVSS	SM 2540E	1 mg/L
Metals		
Arsenic	200.8, EPA	1.0 ug/L
Barium	200.8, EPA	2.5 ug/L
Cadium	200.8, EPA	0.50 ug/L
Calcium	SM 3111B	0.50 mg/L
Chromium	200.8, EPA	5.0 ug/L
Copper	200.8, EPA	2.0 ug/L
Iron	200.8, EPA	100 ug/L
Lead	200.8, EPA	0.5 ug/L
Magnesium	SM 3111B	0.50 mg/L
Mercury (LOW LEVEL)	1631	0.50 ng/L
Nickel	200.8, EPA	2.0 ug/L
Silver	200.8, EPA	0.50 ug/L
Sodium	SM 3111B	0.50 mg/L
Zinc	200.8, EPA	20 ug/L
Nutrients		
Ammonia	SM4500 NH3 D	0.1 mg/L
Chlorophyll a	445/446, EPA	
Phosphorous, Total	EPA 365.1, Re. 2.0	0.041 mg/L

TKN	SM 4500N _{org} C	0.40 mg/L
Total Nitrates (NO ₂ + NO ₃)	EPA 353.2 Rev 2.0	0.10 mg/L
Bacteria		
E-coli	9223B	1CFU/100ml
Water Organics		
PCBs	SW846 8082	0.4 ug/L
Pesticides	SW846 8081	0.04 ug/L/ 0.08 Tech Chlordane
PNA's	SW846 8270	1.0 ug/L
VOC's	SW846 8260	0.50 - 100 ug/L

Table 2 (continued) : Test Methods and Reporting Limits

	Method	MDL/Reporting Limit
Sediment Organics		
PCBs	SW848 8082	37-96 ug/kg, dry
Pesticides	SW848 8081	56-190 ug/kg, dry (toxaphene 550-1900; tech chlordane 200-750)
PNA's/Hexachlorobenzene	SW848 8270	220-4000 ug/kg, dry
Herbicides (2, 4, D & 2, 4, 5 TP)	SW846 8151	760-2000 ug/kg, dry
VOC's	SW848 8260	67 ug/kg, dry
Sediment inorganics		
Cyanide (LOW LEVEL)	9014	2.9 mg/kg, dry
Phenols	9066	2.9 mg/kg, dry
Phosphorus	4500 P E	82 mg/kg, dry
TKN	4500 NH ₃ H	225 mg/kg, dry
Sediment Metals		
Aluminum	SW846 6010B	110 mg/kg, dry
Arsenic	SW846 6010B	5.3 mg/kg, dry
Barium	SW846 6010B	5.3 mg/kg, dry
Beryllium	SW846 6010B	2.1 mg/kg, dry
Boron	SW846 6010B	26 mg/kg, dry
Cadmium	SW846 6010B	1.1 mg/kg, dry
Chromium	SW846 6010B	5.3 mg/kg, dry
Cobalt	SW846 6010B	2.6 mg/kg, dry
Copper	SW846 6010B	5.3 mg/kg, dry
Iron	SW846 6010B	110 mg/kg, dry
Lead	SW846 6010B	2.6 mg/kg, dry
Manganese	SW846 6010B	5.33 mg/kg, dry
Mercury	SW846 7471B	95 mg/kg, dry
Nickel	SW846 6010B	5.3 mg/kg, dry
Potassium	SW846 6010B	260 mg/kg, dry
Silver	SW846 6010B	2.6 mg/kg, dry
Sodium	SW846 6010B	530 mg/kg, dry

Strontium	SW846 6010B	2.6 mg/kg, dry
Vanadium	SW846 6010B	2.6 mg/kg, dry
Zinc	SW846 6010B	11 mg/kg, dry

Field Parameters

NSWRD shall perform onsite field analysis for the following parameters:

- Conductivity
- pH
- Temperature
- Dissolved Oxygen

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. The field meters shall be calibrated on a daily basis.

Field Reporting

Field Log

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

- Name and signature of the person collecting the samples
- Location and sampling site
- Weather information
- Dates and times of sample collection
- Field measurements
- Descriptions of any unusual conditions at the sample locations
- Chains of Custody
- Indication of duplicate sample location

Sample Custody and Handling

Labeling and Storage

All samples will be placed in appropriate containers provided by NSWRD. 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.

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. Upon receipt at the laboratory, sample temperature will be recorded on the chain of custody form. A copy of the chain of custody form will be included with the final report.

Sample Preservation

When necessary, preservatives will be added to sample bottles prior to sample collection. The preservative added will be indicated on the sample bottle.

Sediment Analysis

Sediment samples collected by NBWW's bioassessment contractor will be submitted to and analyzed by NSWRD one time per year for the parameters listed in Table 3: Parameters and Frequency of Sediment Sampling. The reporting limits and the laboratory method detection limits (MDLs) are listed in Table 2 (Test Methods and Reporting Limits). NSWRD will analyze 14 sediment samples provided by NBWW's bioassessment contractor in 2019. NBWW shall be responsible to ensure its bioassessment contractor complies with all requirements of the QAPP and as specified herein in the collection, storage, preservation and transfer of sediment samples to NSWRD.

Project Deliverables

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.

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.

Turnaround Time

The results for all analytical analyses will be provided no later than 20 business days following the date of collection.

Table 3: Parameters and Frequency of Sediment Sampling 2019

Parameter	NBWW Frequency	Tier 1	Tier 2
		Number of Sample Events	
Sediment Metals			
Aluminum	Concurrent with bioassessment	1	1
Arsenic	Concurrent with bioassessment	1	1
Barium	Concurrent with bioassessment	1	1
Beryllium	Concurrent with bioassessment	1	1
Boron	Concurrent with bioassessment	1	1
Cadmium	Concurrent with bioassessment	1	1
Chromium	Concurrent with bioassessment	1	1
Cobalt	Concurrent with bioassessment	1	1
Copper	Concurrent with bioassessment	1	1
Flouride	Concurrent with bioassessment	1	1
Iron	Concurrent with bioassessment	1	1
Lead	Concurrent with bioassessment	1	1
Manganese	Concurrent with bioassessment	1	1
Mercury	Concurrent with bioassessment	1	1
Nickel	Concurrent with bioassessment	1	1
Potassium	Concurrent with bioassessment	1	1
Silver	Concurrent with bioassessment	1	1
Sodium	Concurrent with bioassessment	1	1
Strontium	Concurrent with bioassessment	1	1
Vanadium	Concurrent with bioassessment	1	1
Zinc	Concurrent with bioassessment	1	1
Sediment Organics			
PCBs	Concurrent with bioassessment	1	1
Pesticides	Concurrent with bioassessment	1	1
VOCs/Hexachlorobenzene	Concurrent with bioassessment	1	1
PNAs	Concurrent with bioassessment	1	1
TKN	Concurrent with bioassessment	1	1
Phosphorus	Concurrent with bioassessment	1	1
Cyanide (low level)	Concurrent with bioassessment	1	1
Herbicide (2, 4, D, 2, 4, 5, TP)	Concurrent with bioassessment	1	1
Phenols	Concurrent with bioassessment	1	1

*Sediment sampling does not include a Tier 3.

Rev 12/31/2018

2019 YEAR SEDIMENT PRICE QUOTATIONSediment Metals

	Quoted Price	Proposed Quantity	Total Tier 1
Metals (19)	\$ 89.25	15	\$ 1,338.75
Mercury	\$ 26.25	15	\$ 393.75
		Total	\$ 1,732.50

Sediment Organics

PCBs/Pesticides	\$ 168.00	15	\$ 2,520.00
VOC's	\$ 94.50	15	\$ 1,417.50
SVOC's (PNA's)	\$ 105.00	15	\$ 1,575.00
TKN	\$ 36.75	15	\$ 551.25
Phosphorus	\$ 21.00	15	\$ 315.00
Cyanide (low)	\$ 31.50	15	\$ 472.50
Herbicides (2,4,D, 2,4,5 TP)	\$ 131.25	15	\$ 1,968.75
Phenols	\$ 26.25	15	\$ 393.75
		Total	\$ 9,213.75

Note 1: Quantity of samples is estimated

Analysis Subtotal \$ 10,946.25

Note 2: Field Duplicate QC sample billed as actual sample (14 sites plus one duplicate)

Grand Total \$ 10,946.25Note 3: If Low Level Hg (1631) is needed
\$120/sample

Quotation Accepted By:

Signature

Title

Name (Print)

Date

ATTACHMENT C



Protecting Lake Michigan & Our Watersheds

**North Shore Water
Reclamation District**

Procedure	FLD-RIV
Revision No.	0
Org. Date:	04/13/18
Rev. Date	

TITLE:

Surface Water Collection Procedures

WRITTEN BY:

Robert Flood

APPROVED BY:

The use of this SOP is governed by the North Shore Water Reclamation District's Quality Assurance Manual and associated Quality SOPs. Implementation of this SOP must always comply with the requirements of the Quality Assurance Manual and the Quality SOPs.

SCOPE AND APPLICATION:

This SOP is applicable to the collection of representative surface water samples from rivers, streams, lakes or any other surface waters. This procedure is a grab sample method that utilizes a stainless steel bucket or dip sampler to collect a surface water grab sample.

SUMMARY OF METHOD:

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

- Dip sampler
- Stainless steel or polyethylene bucket (polyethylene not for collection of organic samples)
- Direct method

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 cross contamination and improper collection technique.

1. Cross contamination can be eliminated through the use of dedicated or disposable sampling equipment or 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 disturbance and avoid surface scum or debris.

EQUIPMENT AND SUPPLIES:

1. Stainless steel bucket with rope or dip sampler
2. Deionized rinse water
3. Decontamination equipment and supplies
3. Appropriate sample bottles
4. Cooler with ice packs
5. Field Instrumentation
5. Field Log Book and Sample Chain of Custody

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.

SAMPLE PRESERVATION, CONTAINERS, HANDLING AND STORAGE:

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

1. Transfer the sample into a suitable, properly labeled sample container specific for the analysis to be performed.
2. Preserve the sample, if appropriate. Pre-preserved sample containers are preferred for simplicity and convenience. Do not overfill containers if they are pre-preserved.

3. Cap the container securely and cool immediately by placing in a sample cooler with wet ice or reusable ice packs.
4. Record all relevant information in the sample log book and NSWRD Field Collection Sheets.
5. Deliver samples to the laboratory and follow NSWRD chain of custody procedures. See the appropriate section of the NSWRD Laboratory QAP for additional guidance.

QUALITY CONTROL:

All personnel involved in the sample 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.

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 book.

CALIBRATION AND STANDARDIZATION:

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

PROCEDURE:

Prior to being used for sample collection or holding, all sampling equipment is decontaminated and cleaned following procedures outlined in the NSWRD Laboratory Quality Assurance Project Plan.

1. Preparation
 - a. Determine the sample locations by performing a general site survey if possible. Prior knowledge of the locations will aid in determining exact equipment needs and safety considerations. Sample sites may need to be adjusted based on access, property boundaries or obstructions.
 - b. Determine the equipment needs and make sure everything is in working order.
2. Sample Collection
 - a. Take sample at the 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. Lower the sampling device into the stream. When it is properly positioned, activate the bucket to collect a sample by tipping the bucket gently. Avoid top floating debris if possible. It is important not to disturb the bottom substrate during the collection process. If excess dirt, gravel, or other foreign material is collected, discard the sample, and repeat the sampling. Once the sample has been collected, fill each sample bottle to the appropriate mark taking care not to overfill pre-preserved bottles.

- b. Field measurements should be performed on site after all of the sample bottles have been filled.
- c. Record collection date, time and field measurements in the field book and/or field collection sheet.

REFERENCES:

1. North Shore Water Reclamation District Quality Assurance Plan
2. Standard Methods for the Examination of Water and Wastewater, 22nd ed, 2012.