

**Des Plaines River Watershed Bioassessment Monitoring:
Year 4 Field Sampling/Year 3 Analysis and Reporting/Year 2 Report**

Scope of Work for County Fiscal Year 2020
(January 1 – December 31, 2020)

Des Plaines River Watershed Workgroup (DRWW)
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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 2020 Scope of Work (SOW) is based on meeting a schedule of tasks within a project period of December 1, 2019-November 30, 2020 and within a budget (Appendix A) that supports completion of the Year 2 report, data analysis and reporting for Year 3 and mobilization, study planning, and field work for Year 4 of the rotating monitoring plan (Appendix B).

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” (Figure 1). Because the full cycle of a “year” within the rotating monitoring sequence straddles across two Lake County Fiscal Years (CFY; December 1, 2019-November 30, 2020) work takes place for two different project years within a given CFY. For example, as of December 1, 2019 there are three tasks remaining from Year 3 for which tasks 1-2 were completed by December 1, 2019. The remaining year 3 tasks (3-5) will be completed in CFY 2020 in addition to the commencement and completion of tasks 1-2 and for year 4 being accomplished during the remainder of CFY 2020, both comprising the budget for CFY 2020.

A. Project Scope of Work (SOW)

The sequence of tasks for any one “year” of the three years of the rotating monitoring plan includes the following:

Task 1 – Mobilization & Planning

This task involves mobilizing and planning for the Year 4 bioassessment in accordance with the DRWW 2017-20 monitoring rotation that was developed in January 2017 (Appendix B) following the comprehensive assessment of the entire watershed in 2016. The 2020 sampling will be for Year 4 and focuses on 14 core and 6 supplemental sites in the Upper Des Plaines River mainstem (17 sites), Mill Creek (1 site), and the North Fork of Mill Creek (2 sites) for a

MBI Des Plaines River Rotating Watershed Bioassessment Monitoring Tasks & Sequence

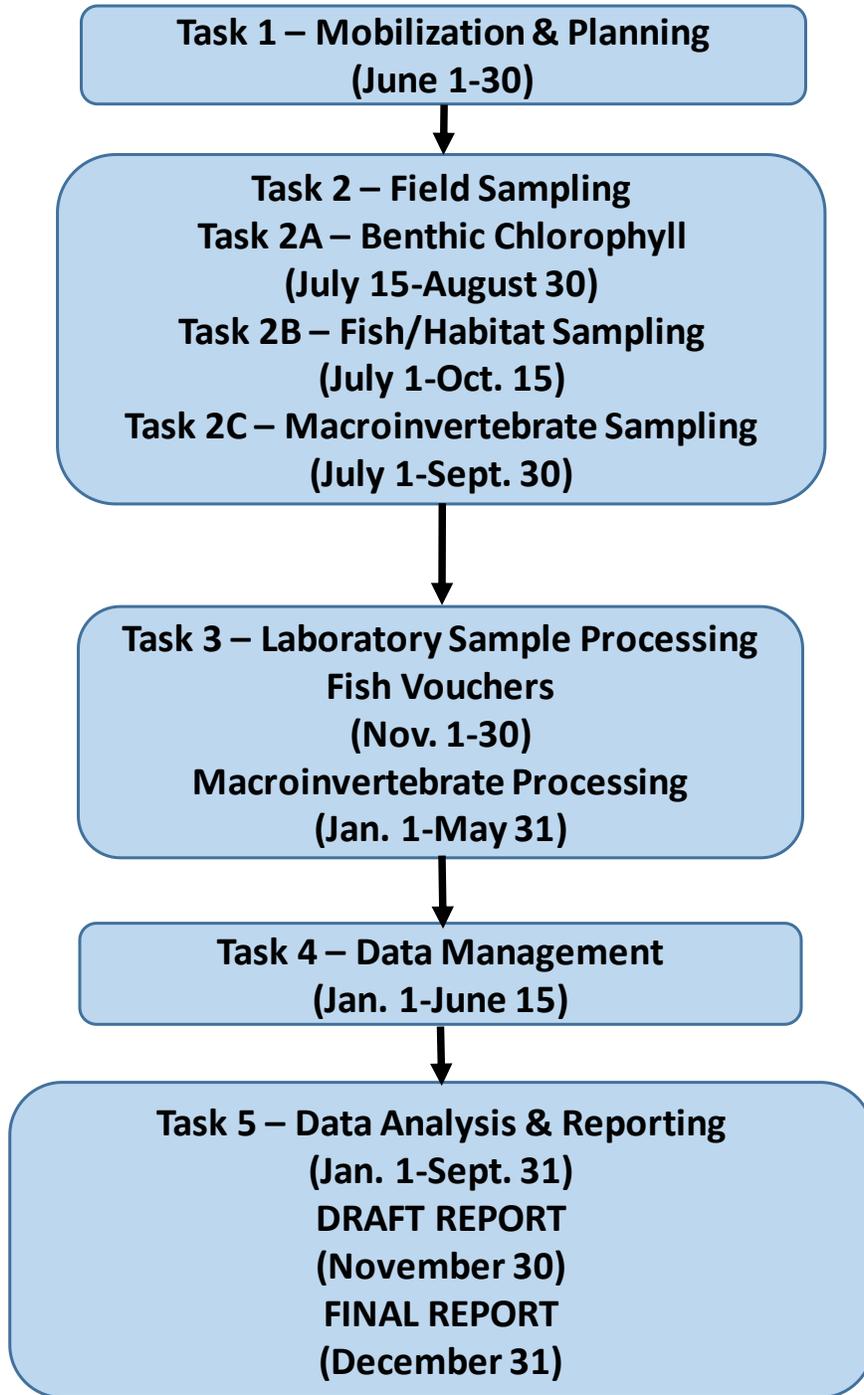


Figure 1. Flow chart of the schedule and sequence of tasks and subtasks for any one “year” of the Des Plaines River Bioassessment rotating monitoring approach.

total of 20 biological and habitat sites. Benthic chlorophyll a samples will be collected from the 14 core sites to coincide with Datasonde and water chemistry samples collected by DRWW.

Task 2 – Field Sampling

This task includes all of the activities focused on the collection and processing of the field collected samples and includes three subtasks – 2A Benthic Chlorophyll, 2B – Fish and Habitat Sampling, and 2C – Macroinvertebrate Sampling. All sites will be sampled for biota and habitat and core sites for benthic chlorophyll a (Figure 1). Each subtask is described as follows:

Task 2A – Benthic Chlorophyll a Sampling and Analysis

Benthic chlorophyll α samples will be collected at the 14 core sampling locations in the Upper Des Plaines River mainstem (11 sites), Mill Creek (1 site), and the North Fork of Mill Creek (2 sites). MBI will ship the samples to a contract laboratory the costs for which are part of the project budget. Along with the Datasonde and water chemistry data that is to be provided by DRWW this will support the combined assessment of nutrient effects in Year 4.

Task 2B – Fish/Habitat Sampling

This includes the sampling of the fish assemblage in accordance with the QAPP and within a seasonal index period of July 1-October 15 at assigned sites for a given year. Habitat will be assessed at the same sites and using the QHEI. Data management and laboratory processing will follow as a post-field season task.

Task 2C – Macroinvertebrate Sampling

Macroinvertebrate sampling will likewise be conducted under the specifications of the DRWW QAPP and within a seasonal index period of July 1-September 30. A site description that documents the details of the Illinois EPA multihabitat method will be recorded at each site. The collections will coincide with the first of the fish sampling passes in July or August with resampling of 10% of the sites during the second fish sampling passes.

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. Fish identification verifications generally take place prior to November 30 and macroinvertebrate sample processing extends into the following CFY.

Task 4 – Data Management

This is both a post-field and post-laboratory task that includes the organization and logging of field and lab sheets, entering data, and proofing 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. This task extends into the next CFY.

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 – Completion of Year 2 Report

This task covers the production of the draft and final Year 2 report that includes the Upper Des Plaines River mainstem sampled in 2018.

Appendix A. 2020 DRWW Bioassessment Budget Summary

Task	Description	Quote
1 - Mobilization & Planning (Year 4 Bioassessment)	<ul style="list-style-type: none"> • Pre-field planning • Mobilize crews 	\$3,908.48
2 – Field Sampling (Year 4 Bioassessment)	<ul style="list-style-type: none"> • Benthic Chlorophyll a (includes lab analysis & shipping) – 14 sites • Fish/habitat sampling – 20 sites • Macroinvertebrate sampling – 20 sites 	\$34,638.36
3 – Biological Laboratory (Year 3 Report)	<ul style="list-style-type: none"> • Fish vouchers • Macroinvertebrate sample sorting • Macroinvertebrate identifications 	\$23,720.01
4 – Data Management (Year 3 Report)	<ul style="list-style-type: none"> • Data entry & retrieval, QA/QC 	\$3,954.79
5 – Data Analysis & Report (Year 3 Report)	<ul style="list-style-type: none"> • Analysis of chemical, biological, and habitat data. • Draft & Final Reports 	\$9,554.92
SUBTOTALS (Year 4 Bioassessment) (Year 3 Analysis & Report)		\$76,255.93 (\$37,229.72) (\$39,026.21)
6 – Remaining 2018 Task	<ul style="list-style-type: none"> • Complete Year 2 Report 	\$6,751.71
AMENDED TOTAL CFY 2020		\$83,007.64

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 annual allocation also allows for the addition of supplemental sites within each survey year to account for unsampled streams and to match up with 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.