April 28, 2020

Joe Stepich
Special Assessment District
Watervliet Charter Township
4959 N M 140, PO Box 384
Watervliet, MI 49098

RE: 2020 Paw Paw Lake Water Quality Monitoring
Scope of Services

Dear Joe,

At your request we have compiled a cost estimate for 2020 water quality monitoring activities on Paw Paw Lake. In short, the protocol is remaining the same as the 2019 water quality monitoring plan. In total, three sample events are proposed to take place between May and October 2020, where sample events capture the early-, mid- and late-season water quality characteristics of Paw Paw Lake. The following paragraphs describe the proposed scope of services provided by Spicer Group and GEI for the upcoming summer season.

TASK 1 – Sample Collection and Analysis

Task 1A. Nutrient and Chlorophyll-a Analysis
Remaining consistent with previous years' water chemistry and lake profiling data, the 12 sample sites that have been used in previous years are proposed to be monitored again in 2020. There are six monitoring sites in the northern lobe (NL 1, NL 2, NL 3, NL 4, NL 5, NL 6) of Paw Paw Lake, and six sites in the main body of the lake (ML 1, ML 2, ML 3, ML 4, ML 5, ML 7), see Figure 1 for a map depicting sample sites. At each of the 12 sites, an epilimnion and a hypolimnion sample will be taken for chemical analysis. The suite of water quality tests proposed for the samples include:

- Nitrate,
- Ammonia,
- Soluble reactive phosphorus,
- Total phosphorus,
- Totals suspended solids, and
- Chlorophyll-a.

Chlorophyll-a and total suspended solids will be collected in the photic zone of the epilimnion. Samples collected in the hypolimnion will be analyzed for soluble reactive phosphorus, total phosphorous, nitrate, ammonia, and total suspended solids. Fibertec, a NELAC and USEPA accredited laboratory, will be providing the laboratory analytical services. Great Lakes Environmental Center (GLEC) in Traverse City, also a NELAC accredited laboratory, will be analyzing the chlorophyll-a samples. Both labs have been used for monitoring Paw Paw Lake samples in previous years to run the respective water quality tests.

Task 1B. General Water Quality Chemistry Analysis
Other general chemistry water quality parameters such as dissolved oxygen, specific conductivity, pH, temperature, visibility, and depth will be monitored with a Quanta Hydrolab multi-parameter probe. At each site (NL 1, NL 2, NL 3, NL 4, NL 5, NL 6, ML 1, ML 2, ML 3, ML 4, ML 5, ML 7) all general water quality parameters listed are measured at one foot in depth, and at one foot off the lake's bottom in order to profile

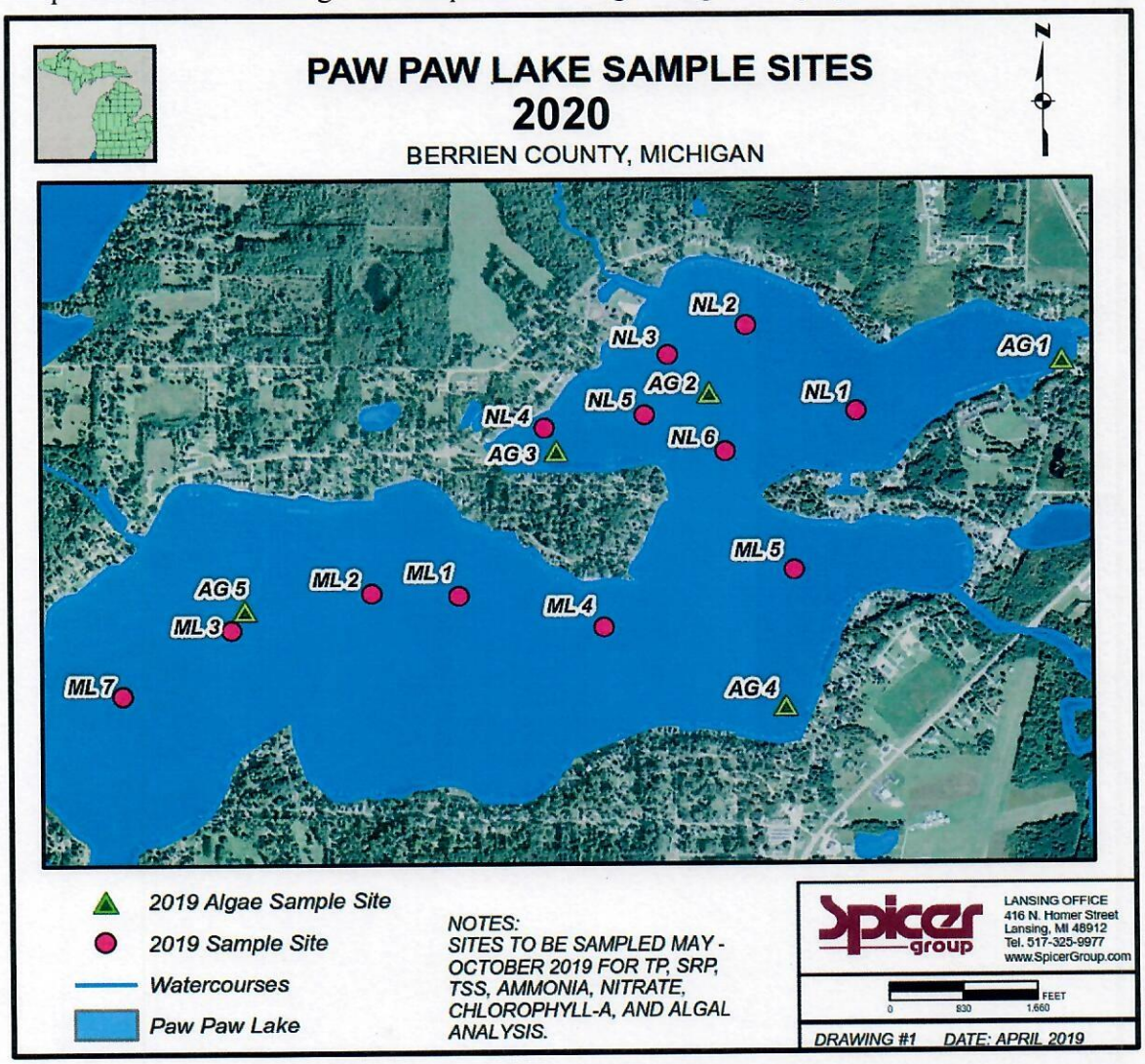
the epilimnion and hypolimnion, respectively. In between the top and the bottom measurements, dissolved oxygen in mg/L, temperature (°F), and depth (ft) are recorded in two-foot increments in order to make a depth profile for each site.

Task 1C. Algal ID and Enumeration and Microcystin Analysis

Algal ID and enumeration data, as well as toxin scans, were collected on Paw Paw Lake during late 2016. There were initially five sites sampled on the lake, which were then reduced to three. During 2017, samples were again only collected at three of the five initial sites.

Therefore, it is proposed that during 2020, three of the five sample sites (AG1, AG2, AG3, AG4, AG5) will be analyzed for Algal ID and enumeration during two of the three sample events. Additionally, the laboratory that provides algal analysis, GreenWater, no longer provides the four-toxin scan run on samples during the 2016 and 2017 monitoring seasons. They do, however, offer microcystin analysis, which are toxins produced by cyanobacteria. Therefore, it is suggested to run this test in place of the former "Four Toxin Scan." If results show major concern and the lake board approves, experts in algal control may be called upon in order to address algae concerns and remediation efforts in Paw Lake.

The map below shows both the general sample sites and algae sample sites proposed for 2020 monitoring:



Task 2 – Reporting and Meetings

Task 2A. Reports
For water quality analysis, it is crucial to keep up-to-date and organized on parameters measured, weather, and comparison of data to previous monitoring events in order to have the best understanding of the environmental health of the waterway. Each monitoring event in 2020 on Paw Lake will be documented in a Field Activity Summary, which is essentially a mini report that includes the weather conditions of the monitoring date, observations and notes regarding the lake, and general water quality measurements. The Field Activity Summaries are included in an appendix of the final report at the end of the year.

Three water quality update sheets will be provided to the Lake Board for distribution after each sample event. The water quality update sheet is intended to be a brief update that keeps riparians up to date on the status of their lake.

Typically, a final, formal update report is written in order to document annual water quality data in detail and is compared to previous years' data. When water quality data from 2020 is compared to data from previous years, decisions can be made in regard to lake improvement efforts for 2020 and the years to follow. The comprehensive report may be used for MDEQ permitting for future projects if needed. However, this formal report is not included in 2020's project work plan.

While the comprehensive report is helpful for those who like to have more information about the project or for permit application purposes, the majority of people do not read the entirety of the report. In order to provide as much useful information about Paw Paw Lake's water quality and what it means in a simplified format, an updated copy of the water quality summary sheet (originally provided in 2017) will be provided at the end of 2020.

Task 2B. Meetings
The following meetings are budgeted for the 2020 season:

- **4 meetings in Watervliet or Coloma** with one Spicer and one GEI representative
- **1 meeting in St. Johns or Lansing** with the entire Spicer/GEI project team

At the meetings, representatives will be present to answer questions, provide recommendations, and to present information and data to the Lake Board.

Deliverables:

A. **3 Water Quality Updates**, in hard copy (multiple) and electronic forms

B. **1 Water Quality Summary Sheet**, in hard copy (multiple) and electronic forms

Reimbursable Expenses:

Reimbursable expenses will be billed when they are incurred or invoiced on an hourly basis. Reimbursable expenses such as laboratory fees, equipment fees, travel, and meetings have been accounted for in this cost estimate. Examples of reimbursable fees include:

A. Equipment rental fees
B. Equipment shipping fees
C. Laboratory fees
D. Deliverables beyond those included above

E. Travel
F. Meetings

Additional Services:
Services not specifically listed in our scope of services are excluded from this letter agreement. We will perform additional services only after you authorize the work. Our fee for those additional services will be determined at the time they are rendered.

Fee Schedule:
Our proposed fee schedule follows. We will submit monthly invoices to you for our basic professional services, additional authorized services, and any reimbursable expenses. Where the fee is a lump sum, the invoice amount will be based on the proportion of work actually completed during the billing period. Where the fee is hourly, the invoice amount will be based on the actual hours spent by our staff on your project billed at the hourly rate of each staff member.

The scope of work outlined in this letter agreement is estimated to be $47,200.00 and is based on hourly fees. Again, the general task outline for the scope of work is listed below:

Task 1 – Sample Collection and Analysis
- Task 1A – Nutrient and Chlorophyll-a Analysis
- Task 1B – General Water Quality Chemistry Analysis
- Task 1C – Algal ID, Enumeration and Toxin Scans

Task 2 – Reporting and Meetings
- Task 2A – Reports
  - 3 Water Quality Updates
  - 1 Water Quality Summary Sheet
  - 1 Paw Paw Lake Comprehensive Water Quality Report
- Task 2B – Meetings
  - 4 Meetings in Watervliet or Coloma with a representative from Spicer and GEI
  - 1 Meeting with entire Spicer/GEI team in St. Johns or Lansing

2020 Paw Lake Water Quality Monitoring Project Estimated Total.....$48,700.00

We deeply appreciate your confidence in our firm and we are looking forward to the continuation of our work with you on this project.

Sincerely,

Emily Short
Project Manager

Larry J. Protasiewicz, P.E.
Principal

SPICER GROUP, INC.
1400 Zeeb Dr.
St. Johns, MI 48879
Phone: (989) 224-2355

Above proposal accepted and approved by Owner:

PAW LAKE IMPROVEMENT PROJECT

By: _____
Joe Stepich

Date: May 6, 2020

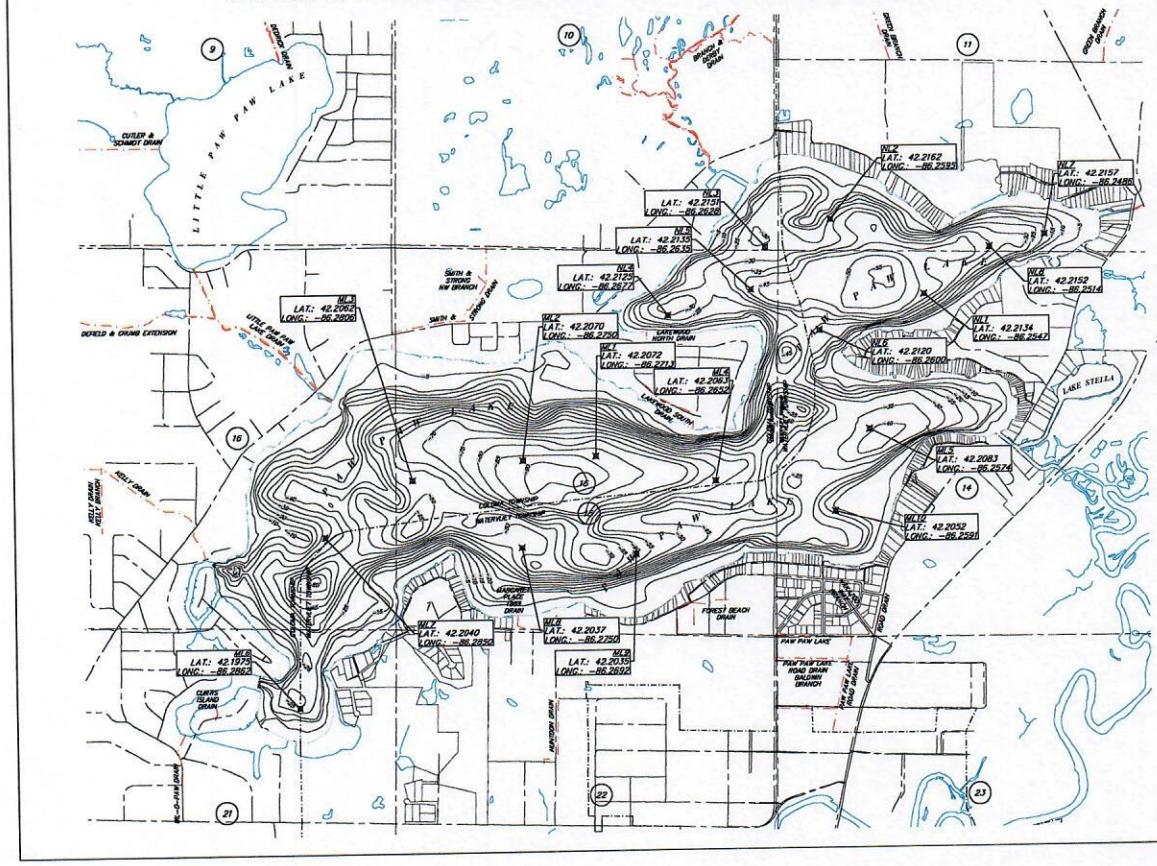
Enclosures:
Spicer Group General Conditions

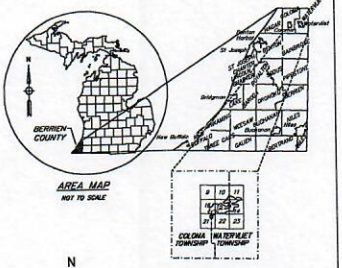
cc: SGI File # 123724SG2016
SMC, Accounting

P:\proj2016\123724SG2016_2016PawPawLakeAeration\ProjectManagement

PAW PAW LAKE
DEPTH CONTOUR MAP

SECTIONS 11 & 14, T.3S.-R.17W., COLOMA TOWNSHIP &
SECTIONS 10, 15-16 & 21-22, T.3S.-R.17W., WATERVLIET TOWNSHIP, BERRIEN COUNTY





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SCALE: 1" = 600'

SEC. 11 & 14, T.3S.-R.17W. WATERVLIET TOWNSHIP AND
SEC. 10, 15-16 & 21 T.3S.-R.17W. COLOMA TOWNSHIP
BERRIEN COUNTY, MICHIGAN

LEGEND

DEPTH CONTOUR

LEGEND

- DEPTH CONTOUR
- ROAD
- OTHER DRAINS
- MUNICIPAL BOUNDARY
- SAMPLING LOCATION

PRELIMINARY

BY	MARK	REVISIONS	DATE

THE VIEWS REPRESENTED BY THIS DRAWING WAS DESIGNED BY THE ENGINEER FOR THIS PROJECT. ANY REUSE OF THE DRAWING FOR ANY OTHER PURPOSE OR PROJECT, OR ALTERATIONS TO THE DRAWING WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY THE ENGINEER FOR SUCH USE, SHALL BE AT USER'S SOLE RISK AND WITHOUT LIABILITY TO THE ENGINEER. USER AGREES TO INDEMNIFY AND HOLD THE ENGINEER HARMLESS FROM ALL CLAIMS, DAMAGES AND EXPENSES ARISING OUT OF SUCH UNAUTHORIZED USE.

PAW PAW LAKE
COLOMA & WATERVLIET TOWNSHIPS
BERRIEN COUNTY, MICHIGAN

SAMPLING LOCATION MAP

Spicer Group

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DE. BY: TAM	CH. BY: WSM	PROJECT NO.
DR. BY: TAM	APP. BY: WSM	11946952011
STDS.		SHEET 1 OF 1
DATE: SEPTEMBER, 2014		FILE NO.
SCALE: AS SHOWN		JDR-2493-01