



Office of Administration

PO Box 885
1087 Newell
White Cloud, Michigan 49349
Phone: (231) 689-7234
Fax: (231) 689-7205

Sent Via E-mail
rripstra@peoplepc.com

October 15, 2019

Mr. Robert Ripstra
1613 Charlevois
Troy, MI 48085

Dear Mr. Ripstra:

Re: Freedom of Information Act FOIA #19-097C
Granted

Newaygo County received your Freedom of Information Act ("FOIA") request dated October 7, 2019.

1. July 15, 2019 Hess Lake Board Approved Meeting Minutes

The County has granted your request.

2. September 23, 2019 Hess Lake Board Meeting Agenda & Draft Copy of Meeting Minutes and handouts

The County has granted your request.

The County has determined that the total cost of processing and finalizing this request is \$ 11.41. (See attached Detailed Itemization Sheet.) The County estimates that it will provide the documents to you within 5 business days of receiving the fee.

Since your request has been denied in part, you have the right to (1) submit to the head of the public body a written appeal that specifically states the word "appeal" and identifies the reason or reasons for the reversal of the disclosure denial or (2) seek judicial review of this decision, as stated in Section 10 of the Michigan Freedom of Information Act, MCL 15.240 (see attachment). Further, you have the right to seek attorney fees and damages as provided in Section 10 (see attachment) if the court determines that the County has not complied with this section and orders disclosure of all or a portion of the public record.

Please be advised that the County's FOIA Policies and Procedures and written summary are available on the County's website at: www.countyofnewaygo.com.

Should you have any questions, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "CW", with a long horizontal flourish extending to the right.

Christopher Wren
County Administrator/FOIA Coordinator

Hess Lake Improvement Board
Regular Meeting
September 23, 2019
10:00 a.m.

-AGENDA-

1. Call to Order
2. Approval of Agenda
3. Approval of the minutes of the 7/15/2019 Meeting Minutes
4. Public Comment-2 minutes
5. Treasurers Report
6. Old Business
 - Spraying contract*
7. New Business:
 - *2020 Meeting Dates*
 - *Assessments*
 - *Hess Lake Board Vacancy*
8. Correspondence/Bills
 - *\$200.00 (Newaygo County Secretarial Work)*
 - *\$3,552.33 (Savin Lake Services)*
 - *\$4,020.98 (Savin Lake Services)*
 - *\$215.53 (Hess Lake Aeration System Electric bill)*
9. Public Comment – 2 minutes
10. Miscellaneous
11. Adjournment

DRAFT
UNAPPROVED Minutes
Hess Lake Improvement Board
September 23, 2019
10:00 A.M.

Board Members Present: Rosen, Twing, Lipner, Bosowski

Board Members Absent: DeLaat

Also Present: Matt Novotny-Savin Lake Services, Erick Elgin-MSU Extension,
Bart Calvi, Nancy Calvi, Betty Pennington

1. The meeting was called to order at 10:03 a.m. by Rosen

2. Agenda:

Motion by Lipner, seconded by Bosowski to approve the agenda. All ayes.
Motion carried.

3. Approval of Minutes of 7/15/2019 Meeting

Motion by Lipner, seconded by Bosowski to approve the minutes of the
7/15/2019 meeting. All ayes. Motion Carried.

4. Public Comment: (2 minutes)

Wheeler Drain was asked about. Twing stated that one resident was permitted and
did dig in front of their house to the original bottom.

5. Financial Report:

Motion by Bosowski, seconded by Lipner to approve Treasurers Report as
submitted. All ayes. Motion carried.

6. Old Business:

There was a discussion about the spraying contract and the consensus was to let it
automatically renew this year and to look at it again next year. No vote was
needed.

7. New Business:

Motion by Bosowski, seconded by Lipner to set meeting dates for 2019 as
follows:

May 18th, July 13th, September 21st all at 10:00am

Motion by Lipner, seconded Bosowski to keep 2020 assessments the same as 2019 in the amount of \$45,000.00 All ayes. Motion carried.

There was a discussion on who and how the open board seat from Brooks Township will be appointed.

8. Correspondence/Bills

Motion by Lipner, seconded by Bosowski to pay all bills including the \$4500 half payment to Dr. Jude. All ayes. Motion carried.

9. Public Comment (2 minutes)

Please see Miscellaneous, most public comment flowed into Miscellaneous and will be documented as such.

The public requested to know when they would see the fish report and it was stated that not until after the May 18th, 2020 meeting.

10. Miscellaneous

There was a discussion of using systemic treatment of milfoil rather than contact. The Hess Lake Board hasn't been using it because they had so few weeds they thought they wanted some vegetation, which Erick Elgin considered a smart approach.

There was a discussion of what the EGLE requirements for the aeration system are.

There was a discussion of the muck pellets effectiveness and studies and what is being studied. There was also talks of how to test in Hess Lake the changes in muck depth. Matt recommended some systemic treatment and there was a general discussion of what needs there are in the lake and quantity for treatment. Erick discussed looking into planting Kara and maybe trying to do a test in this county.

There was a discussion of Point Intercept Survey being done, it would help determine plant activity better. The board is going to get costs from Savin and Progressive.

A discussion of different systemic treatments and the pros and cons of different products was had along with discussing the possibility of using mechanical tools in Hess Lake. Matt didn't see any benefit. The impact to wildlife if using ProcellaCOR was discussed.

Motion Bosowski, seconded by Lipner to pre-approve Twing to pay up to \$5000.00 to Savin if needed. All ayes. Motion carried.

Motion by Lipner, seconded by Bosowski to give Twing authority to approve systemic treatment in the Spring after consulting with Tony Groves from Progressive AE. The possibility of using ProcellaCOR on 5-10 acres was discussed.

11. Adjournment

Motion by Twing, seconded by Lipner to adjourn the meeting. All ayes. Motion carried.

Meeting adjourned at 11:32 a.m.

Dale E. Twing, Secretary

**Financial Report for Hess Lake Improvement Board
For 09/23/2019 Meeting**

Revenues and Expenses from 10/01/2018-09/04/2019

REVENUES	
Special Assessments	\$45,000.00
Total Revenues	\$45,000.00

EXPENSES	
Contracted Work	
Progressive	\$10,000.00
Savin Lake Services	\$13,886.85
Secretarial	\$200.00
Postage/Copying	\$1.08
Printing/Publishing	\$66.38
DEQ Permit Fees	\$2,000.00
Utilities	\$1,096.34
Per Diem	\$450.00
Total Expenses	\$27,700.65

Beginning Balance	\$38,596.39
Revenues	\$45,000.00
Expenses	-\$27,700.65
Total Cash on Hand	\$55,895.74



INVOICE

Newaygo County Drain Commission
306 S. North St.
White Cloud, MI 49349
Phone 231-689-7214 Fax 231-689-7266

DATE: September 4, 2019
INVOICE # HLB 2019

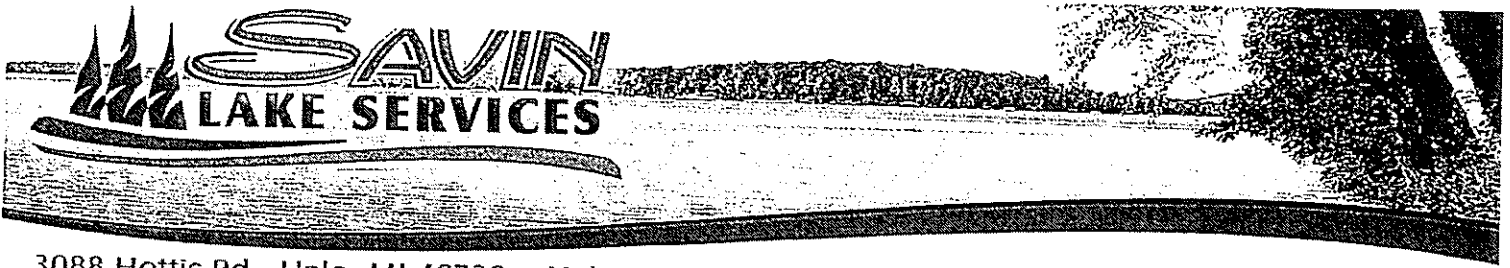
Bill To:
Hess Lake Improvement Board

DESCRIPTION	AMOUNT
FY 2018-2019 Secretarial Work	\$ 200.00
TOTAL	\$ 200.00

Make all checks payable to **Newaygo County**
If you have any questions concerning this invoice, please contact our office.

THANK YOU !

7 OF 20



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

Invoice

BILL TO

Hess Lake Improvement Board
C/O Newaygo County Drain
Commissioner
306 S. North St.
White Cloud, MI 49349

INVOICE # 4802
DATE 07/11/2019
DUE DATE 08/10/2019
TERMS Net 30

ACTIVITY	DESCRIPTION	QTY	RATE	AMOUNT
Lake Services	Diquat - Non Native Plants	17.50	202.99	3,552.33

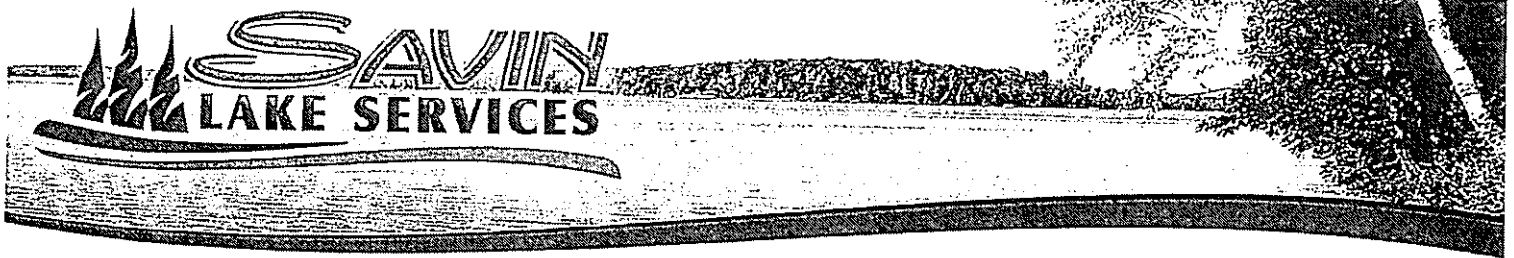
Thank you for your business! Please remit payment to the above address.

BALANCE DUE

\$3,552.33

Preserving Our Lakes Today for Our Generations Tomorrow
www.LakeAndPond.com

8 OF 20



3088 Hottis Rd. Hale, MI 48739 Hale: 989.728.2200 Clare: 989.386.0600 Fax: 989.516.5900

INVOICE

BILL TO

Hess Lake Improvement Board
C/O Newaygo County Drain
Commissioner
306 S. North St.
White Cloud, MI 49349

Newaygo County
Drain Commissioner

SEP 03 2019

Soil Erosion
Received

INVOICE # 4904

DATE 08/30/2019

DUE DATE 09/29/2019

TERMS Net 30

ACTIVITY	DESCRIPTION	QTY	RATE	AMOUNT
Lake Services	Lily Pad Treatment	3	71.64	214.92
Lake Services	Diquat	18.75	202.99	3,806.06
	For Treatment on 08/13/2019			

Thank you for your business! Please remit payment to the above address.

BALANCE DUE

\$4,020.98

Preserving Our Lakes Today for Our Generations Tomorrow

www.LakeAndPond.com

9 OF 20

Newaygo County
Drain Commissioner

AUG 22 2019

Soil Erosion
Received

Aeration Account

August 20, 2019

Hess Lake Improvement Board

C/O Newaygo County Drain Commissioner- Mr. Dale Twing

306 S North Street P.O. Box 885

White Cloud MI 49349

Mr. Twing

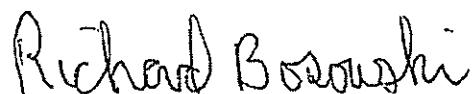
Hess Lake Aeration System Electric Bill

1249 Hess Lake Drive Grant MI 49327

For September the cost is \$215.53 based on the billing starting July 12 thru August 11, 2019.

Please mail to my home at 2215 North Stewart Road Charlotte MI 48813.

Sincerely,



Richard Bosowski

Aeration Account

Newaygo County
Drain Commissioner

SEP 19 2019

Soil Erosion
Received

September 17, 2019

Hess Lake Improvement Board

C/O Newaygo County Drain Commissioner-Mr. Dale Twing

306 North Street P.O. Box 885

White Cloud MI 49349

This bill is
NOT included on
the financial
report!

Mr. Twing

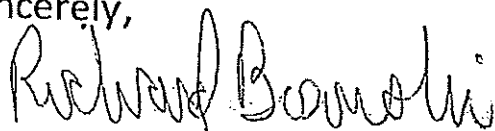
Hess Lake Aeration System Electric Bill

1249 Hess Lake Drive Grant MI 49327

For October the cost is \$215.53 based on the billing starting August 12
thru September 10, 2019.

Please mail to my home at 2215 North Stewart Road Charlotte MI
48813.

Sincerely,



Richard Bosowski

11 OF 20

Freshwater Physicians Inc.

5293 Daniel • Brighton, MI 48114

INVOICE

To: Tony Groves re: Hess Lake

CO:
Tony Groves
Progressive AE
1811 4 Mile Road NE
Grand Rapids, MI 49525

Invoice No. 14091419
Date: 20 September 2019
Invoice amount: \$4,300

Remit to : Freshwater Physicians, Inc.
5293 Daniel
Brighton, Michigan 48114

Details

RE: We conducted a limnological, algae, zooplankton, benthos, plant, and a fishery survey of Hess Lake during April and August 2019. A preliminary report was submitted on the results of the study so far on 20 September 2019. This invoice is for the first half of the cost of the study (\$4,300) which is now due, since we conducted the study and provided a preliminary report.

***TOTALS**

\$4,300

Preliminary report on the status of the water quality, algae, zooplankton, and fish populations of Hess Lake, 2019

David J. Jude, Freshwater Physicians, Inc. 14 September 2019

Introduction

We conducted a study of the water quality, algae, zooplankton, and fish populations of Hess Lake during July and August 2019. This is a summary and some commentary on the data we currently have in hand; a more detailed report will be provided this winter.

Water Quality

We collected water temperature and dissolved oxygen data at two sites in Hess Lake, one deep spot and another on the SW end of the lake along with nutrient samples, which were shipped to the laboratory but no data have been sent back at this date. The water transparency data showed very turbid conditions with readings around 2.8 ft. The dissolved oxygen data were at moderate levels in surface water at both stations during July, with some degradation of dissolved on the bottom at both. Conditions could have been worse in July, since conditions were very windy during sampling. These winds probably mixed the surface waters providing elevated dissolved oxygen conditions at this time. During August, at station A (listed as 29 ft on the map, but we could only find 20 ft), there was a stratified condition and low dissolved oxygen on the bottom, probably again higher than it would have been without windy conditions and the long fetch of the lake elevating dissolved oxygen. At station B, which is more isolated and somewhat shallower, we found anoxia on the bottom.

Algae

Algae samples were collected during July and August at the deep station; samples will be shipped to Minnesota for analysis and data returned for the final report. There was a visible blue-green algae bloom ongoing during our August study.

Zooplankton

The zooplankton samples from July and August were preserved and will be analyzed when our analyst can arrange to examine the samples.

Fish

We set three trap nets, two gill nets, and seined at three sites around the lake. We had difficulty locating good sites for seining, since most of the shoreline has been hardened by riprap, sheet piling, or other structures. There were 13 species of fishes collected during our studies (Table 1); some largemouth bass scales were donated by Terry Roelofs, for which we are thankful.

Table 1. Compilation of the data from trap nets, gill nets, and seines in Hess Lake, 2019. In total, 253 fishes were saved (the rest were released) for age and diet analyses.

Species	Sample size	Size range (in)
Black crappie	9	2.7-10.8
Bluegill	20	1.4-4.8
Banded killifish	1	2.7
Bluntnose minnow	39	1.4-3.3
Channel catfish	92	8.4-10.4
Common carp	4	21.3-23.4
Golden shiner	11	2.9-7.1
Johnny darter	10	1.8-2.2
Largemouth bass	40	2.1-14.9+
Pumpkinseed	2	3.2-3.5
Brook silversides	13	2.4-2.8
White sucker	2	9.7-10.7
Yellow perch	11	2.9-5.7

We collected scales, length, weight, sex, and diet information on 13 species of fishes. The biggest surprise was the presence of channel catfish, which saturated our gill nets. Someone probably stocked these fish in the lake previously. These fish were apparently from a good year class produced 1 or 2 yr ago; fish ranged from 8.4-10.4 inches and represent a future with a large number of hungry fishes as they grow bigger and turn their predation on fish. Fishers we spoke with said there were large individuals in the lake. All of the individuals we examined that had food in their stomachs were eating mostly phantom midges *Chaoborus*, some chironomids, and sometimes a mass of plant material with green algae filamentous strands. Phantom midges live in or on the bottom muds and stay on the bottom during the day and rise to the surface at night to eat zooplankton and other invertebrates. They are usually not present in lakes with well oxygenated water, since fish eat them readily. Hence, the degraded dissolved oxygen conditions measured at the deep holes probably favors this insect.

We collected 40 largemouth bass that ranged in size from 2.1 to 14.9 in and we received more scale samples from larger fish. Apparently there is a good bass fishery in the lake and the presence of many YOY (young-of-the-year) fishes in our seine hauls and the gravelly and sandy substrate in some areas has favored good reproduction of this species, despite the degraded water quality and low visibility of the water.

Yellow perch ranged in size from 2.9 to 5.7 inches, which is a small size range, indicating that there are not too many large perch in the lake. We would have captured larger individuals if they were common, since we set two gill nets in prime waters. The fish we did examine were feeding on insects and invertebrates a good source of food and one ate a Johnny darter. Fishers report northern pike in

the lake, which are predators on yellow perch, however, reports are they are reduced in numbers recently and we caught none in our gill nets. Largemouth bass, which are common in the lake and voracious predators were eating yellow perch, so could be a factor in their lower survival.

One large black crappie and some YOY were captured indicating there is a population, although small, of this species in the lake. Since they do well under turbid conditions, we expect them to possibly expand their populations under these turbid conditions. Like yellow perch, we caught no large bluegills, although YOY and some larger specimens to 4.8 in were captured. Pumpkinseeds were even rarer, since we only caught two small fish. These species will be stressed under the turbid conditions now existing in Hess Lake. We collected three species of minnows, golden shiners and bluntnose minnows, which is excellent forage and the common carp, which is well known for its disruptive behavior in disturbing sediments and fostering increased turbidity. They appear to be common in Hess Lake. There were four other species captured in low numbers, including the banded killifish, Johnny darters (small members of the perch family), brook silversides, and white sucker.

Conclusions

Water quality based on low to no dissolved oxygen on the bottom at one station and low water transparency along with known levels of elevated nutrients (data from ProgressiveAE) shows Hess Lake to be productive, stressed, has Eurasian milfoil infestations, and apparently it has a degraded fishery based on what fishers expressed about its history. There are very few large yellow perch, bluegills, or pumpkinseeds in the lake based on our sample data, but reports are that largemouth bass fishing is good. The introduction of channel catfish will have to be evaluated as time goes on. They are very abundant based on fisher's reports and our sampling and are currently dominated by one year class, which will grow larger and pose a threat to forage fish. These fish are adapted to feed in the dark and should do well in Hess Lake. Whether this is desirable will depend on the response of the fishers and other fishes to this influx of an abundant, non-native predator. There are two species of minnows (golden shiner and bluntnose minnows) in the lake which is great. The golden shiner especially does well in turbid water, grows to large sizes (12 inches), reproduces well, and will provide excellent forage for top predators. The lake also has an abundant population of common carp, which need to be reduced by all means possible. We await: water chemistry nutrient data, algae, zooplankton, and age determinations.

Freshwater Physicians Inc.

5293 Daniel • Brighton, MI 48114

Tony Groves, ProgressiveAE
Re: Hess Lake, Newago County MI
2 June 2019

As per our discussion, herein find a proposal for your consideration to examine the water quality, algae, zooplankton, and fish community for Hess Lake during summer 2019.

Background

Freshwater Physicians, Inc. has been assisting lake associations and other entities in Michigan since 1974 when we were first formed. We have a list of projects we have completed should you wish to see, and I can also provide you an example of one of the recent studies we have done. As far as credentials go, I have a MS degree in Fishery Biology and a PhD in limnology and have been at the University of Michigan since 1973 working on Great Lakes water quality and fishery issues. I retired during 2012.

During summer, we propose to collect water samples from the two deep basins once during July and once during August. We will arrange to get access to the lake, either using a pontoon (easier) from a lake resident or one of my boats. We will also sample algae at one deep station and zooplankton during both months at two stations (a shallow station and a deep station). During August, we propose to sample the fish community and examine the fish habitat in the lake. We also will incorporate any previous data in the report for historical perspective and for comparative purposes. We have already retrieved a large amount of previous studies done by the MDNR from the Institute for Fisheries Research on the UM campus. We prefer to do fish studies during summer for two reasons: the lake is at maximum stratification, so we can assess the maximum stress period for fish and the degree of anoxia on the bottom and second, fishes have already spawned and our seining assessments can provide a good indication of the recruitment success of the important fish species in the fish community.

Components of the Work:

1. Water Quality assessment

- A. Rationale: Knowledge of the environment that fishes are forced to live in is a critical component of devising a management plan to combat adverse situations in our inland lakes. Dissolved oxygen concentrations and temperatures at adequate levels are probably the most important environmental parameters to measure besides the accumulation of toxic substances that usually co-occur with the low dissolved oxygen conditions on the bottom of the deepest parts of the lake. During maximum stratification during summer, cool water fishes such as northern pike, can be squeezed between too hot temperatures at the surface and too little dissolved oxygen on the bottom. Hence, these data are important when evaluating fish community health. I note in MDNR reports that the lake used to be macrophyte dominated and now is algae dominated and that it has a substantial population of common carp. In addition, Wheeler Drain poses a serious problem delivering nutrients into the lake. Secondly, we will measure water transparency, pH, conductivity, soluble reactive phosphorus, total phosphorus, nitrates, ammonia, hydrogen sulfide, and chlorides at three depths (surface, mid-depth, and near bottom) at the two deepest basins in the lake during July and August. These data will provide documentation of the trophic status of the lake, give indications of the degree of pollution in the lake, and provide an assessment of the nutrient status of the lake.
- B. Methods: We will measure these parameters twice: once during July and once during August at the two deep basins. The dissolved oxygen profile of the lake at the deepest basins is measured using an YSI dissolved oxygen temperature meter and data confirmed with Winklers. Water transparency is measured with a Secchi disk, pH and conductivity with a portable meter, and the other water quality parameters (chlorides, ammonia, soluble reactive phosphorus, total phosphorus, and nitrates) will be measured in a university laboratory.

2. Algae

- A. Rationale: Algae are the base of the food web and depending on what species dominate (hopefully not blue-green algae like we are seeing in Lake Erie these days) and they can be important indicators of good water quality.
- B. Methods: An algae sample will be collected from one deep station in Hess Lake using a 0-2-m, integrator tube once during July and once in August. Algae samples will be preserved with glutaraldehyde, kept from light, and in the refrigerator until delivered to Dr. Mark Edlund for analyses. Measured subsamples of preserved algae (~120 mL) will be allowed to settle for a minimum of 1 week, and the algae concentrated to a volume of 15-20 mL. The sample will then be examined microscopically.

3. Zooplankton

A. Rationale: Sometimes it is advantageous to examine aspects of the lake ecosystem, especially if some of these parameters may have never been measured in the lake. It is important to be able to compare what organisms are eaten with those present in various components of the food web and these organisms can provide important information. Zooplankton is an important food of fishes and can be an indicator of fish predation in the lake. They are also mandatory first food of newly hatched fishes. They eat algae and *Daphnia* is the best at doing this, but this zooplankter is also preferred prey of larger larval fish and juveniles. Knowledge of the zooplankton community will be used in three ways: is there a balanced zooplankton community indicating good lake health? Second, what components of the zooplankton community are members of the fish community eating? Third, what is the size distribution of the zooplankton? If most of the zooplankters are copepods and there are few *Daphnia* it could indicate severe pressure by the small planktivorous fish in the lake eating the larger zooplankters, suggesting a reduction in small prey fish would be recommended. This process is termed biomanipulation: control of small fishes reduces predation on *Daphnia*, which in turn eat more algae, which in turn increases water clarity in the lake.

B. Methods: Zooplankton is collected with a 0.5-m diameter, 153-micron-mesh net towed vertically in the water column from near bottom to the surface. We will sample zooplankton from two sites: one offshore and one near shore site once during July and once during August.

4. Fish population assessment

A. Rationale: Sampling fish populations adequately is a difficult task because fishes reside in different habitats, they have different abilities to avoid capture, and all gear used to collect them have biases. Different sizes and species of fishes occupy different habitats, sometimes during day and night. To address this conundrum, we believe that the best way to sample near shore fishes is with a large seine. However, seining does miss the large fish (e.g., largemouth bass) and they are usually not caught very well in trap nets or gill nets. Hence to compensate, we usually ask sport fishers from the lake to remove a scale sample from fish they catch and release and provide us with species, total length, and the scale. If the fish is killed, we request that the stomach also be saved and frozen along with the scale sample. Most large predators will be offshore, or if they are near shore, they are very good at detecting a seine and avoiding it. To compensate for this, we are proposing using gill nets with experimental mesh sizes and trap nets for the offshore zone. Gill nets are very efficient collectors of fishes (except for largemouth bass which do not get caught very well in gill nets) and will collect most species in the lake. An experimental gill net has different sizes of meshes, which allows the collection of different sizes of fishes. This strategy should provide an adequate measure of the fish populations in the lake.

Any previous MDNR or other studies (there are many from IFR) will be consulted and included in the report, so our work will complement theirs.

In addition, we plan to assess the fish habitat (macrophyte community, sediment type for spawning, and tributaries), which will be mostly provided by the macrophyte survey being conducted by ProgressiveAE. There are at least four functions of fishes, which would require knowledge of whether there is adequate habitat present: spawning, nursery habitat, shelter, and feeding. A lack of critical spawning habitat (e.g., gravel or sand for sunfish nests) for example could lead to bottlenecks in survival of some species in the lake and poor growth could be promoted if there is inadequate habitat (lack of macrophytes, which seems to be the case) present for food production. For example, if your lake has the invasive plant Eurasian milfoil infestation, they could promote stunting of bluegills because of too much cover OR on the other hand, excessive destruction of milfoil and other native aquatic macrophytes might lead to inadequate amounts of plants for food production and cover and lack of plants can result in sediments that get stirred releasing nutrients. Boat traffic may be of special concern in shallower parts of the lake.

- B. Methods: To adequately assess the fish population of Hess Lake we propose to use three different types of gear: seine, trap nets, and gill nets. To collect largemouth bass and some of the species that reside in near shore areas, we will deploy a 50-ft seine in a tow parallel to shore for a distance of 100 ft or longer if the habitat is not too cluttered with aquatic plants or docks, at a minimum of four sites around the lake. To collect species in deeper water we will set at least two experimental gill nets (100-150 ft. long) of monofilament mesh at different sites on the lake, probably overnight (if we feel we will kill too many sport fish, we will not deploy overnight). Three trap nets at a minimum will also be placed in the lake over night to facilitate the capture of benthic fishes. Trap nets do not usually kill fish, so unwanted fishes can be released. Fishes will be placed on ice and processed in the laboratory as follows: each fish will be weighed to the nearest 0.1 gram, measured to the nearest 1 mm, and examined for the presence of tumors, hemorrhaging, fungus, parasites, or other diseases. Data will be converted to the English system for the report. Fish will also be aged from scale samples collected when measured and average lengths-at-age compared with Michigan state averages. We will also perform diet analyses to determine what the various fishes are eating. We will provide the following data on the fishes: length, weight, ages of selected fish, and diets. Fish with any diseases, deformities, etc. will also be reported. We do not like to kill large sport fishes, since they are so important to maintain predator-prey balance so any we capture alive will be measured and a scale sample taken and then the fish will be released. Hence, we would also like to request if this study is approved that sport fishers on the lake that catch and release top predators save a scale sample and those that kill top predators save the stomachs and a scale sample for this study as noted above.

5. Report, meetings, and presentations

A. Rationale: It is important to communicate results of the study both to the governing board and to the public who utilize the resource. There will undoubtedly be results of the study that will involve the understanding and cooperation of individuals from households on the lake and in the watershed. We need the support of these constituents, so they are engaged and so the lake can be better managed.

B. Methods: We usually try to issue a summary of findings after we complete the study. We will then compile the water quality, habitat assessment information, algae, zooplankton, and fish data into a comprehensive report during winter. The report will discuss the results of the study and put them in a context of how to proceed with management of the Hess Lake ecosystem, with emphasis on water quality, algae, and fish populations. Future steps and short- and long-term management plans (including stocking recommendations if pertinent) will be provided to address potential causes of problems (if any) and stresses on the fishes and ways to establish a well-balanced fish population. The report will incorporate any pre-existing reports and data into the final report (if hired, we would like to see all the historical reports you have). We will meet with the Hess Lake Association and/or residents at a mutually agreeable time to discuss the results and recommendations of the study. Total Cost of the study is: \$8,600.

This is a brief rendition of the kind of study we will provide. If you have more questions, please let me know. E: djude@umich.edu H: 810-227-6623 C: 810 923 5773.

Piscivorously yours,

David J. Jude, Freshwater Physicians, Inc.