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RCWD BOARD OF MANAGERS REGULAR MEETING AGENDA

Wednesday, March 22, 2017, 9:00 a.m.

Shoreview City Hall Council Chambers
4600 North Victoria Street, Shoreview, Minnesota

Agenda

CALL TO ORDER

ROLL CALL

SETTING OF THE AGENDA

APPROVAL OF MARCH 6, 2017 WORKSHOP MINUTES AND MARCH 8, 2017 MEETING MINUTES.

CONSENT AGENDA

The following items will be acted upon without discussion in accordance with the staff recommendation and associated documentation unless a Manager or another interested person requests opportunity for discussion:

Table of Contents

Permit Applications Requiring Board Action

No.	Applicant	Location	Plan Type	Recommendation
16-097	Ford Nicholson, White Bear Mini Storage	White Bear Township	Final Site Drainage Plan	CAPROC 7 items
17-004	Joel & Jenny Vancanneyt	Columbus	Floodplain Alteration	CAPROC 2 items

It was moved by Manager _____ and seconded by Manager _____, to approve the consent agenda as outlined in the above Table of Contents in accordance with RCWD District Engineer’s Findings and Recommendations, dated March 15, 2017.

OPEN MIKE

Any RCWD resident may address the Board in his or her individual capacity, for up to three minutes, on any matter not on the agenda. Speakers are requested to come to the podium, state their name and address for the record. Additional comments may be solicited and accepted in writing. Generally, the Board of Managers will not take

official action on items discussed at this time, but may refer the matter to staff for a future report or direct that the matter be scheduled on an upcoming agenda.

ITEMS REQUIRING BOARD ACTION

1. Consider Resolution Approving No Loss Determination For Impacts To Wetland Related To The Restoration of The Vancanneyt Pond on Anoka County Ditch 31. (Nick Tomczik)
2. Consider Master Water Steward Project WQ Grant Program R17-01 West Ave.- Raingarden. (Samantha Berger, Master Water Steward)
3. Consider Final Findings And Order Directing The Repair Of Branch 2 Of Anoka County Ditch 53-62 And Implementing Water Management District Charges. (Phil Belfiori)
4. Consider Findings and Order Approving Petitioned Action related to Anoka Washington JD 3 Branches 2 and 3; Authorizing Modification of Drainage System And Abandoning Portions Of Drainage System. (Phil Belfiori)
5. Consider Authorization of Washington Judicial Ditch 6 Special Legislation. (Phil Belfiori)
6. Consider Pay Request #4 from the City of Saint Anthony for the Mirror Lake Project. (Kyle Axtell)
7. Consider Pay Request #6 from Rachel Contracting, Inc. for the Hansen Park Project. (Kyle Axtell)
8. Consider ProCom System S.A Contract Related to Fish Barriers. (Matt Kocian)
9. Consider Carp Solution Inc. Contract. (Matt Kocian)
10. Consider Anoka County Ditch 53-62 Repair Project Informational Sheet. (Phil Belfiori)
11. Consider Authorizing Staff to Work with Cities to Develop Metropolitan Council Grant Applications. (Phil Belfiori)
12. Consider Check Register dated March 22, 2017, in the amount of \$296,732.68 prepared by Redpath and Company.

ITEMS FOR DISCUSSION AND INFORMATION

1. Discussion on March 16, 2017 Hansen Park Project Update Meeting.
2. Staff Reports.
3. April Meeting Calendar.
4. Manager's Update.

ITEMS REQUIRING BOARD ACTION

8. Consider ProCom System S.A Contract Related to Fish Barriers. (Matt Kocian)

MEMORANDUM
Rice Creek Watershed District

To: RCWD Board of Managers **Date:** March 22, 2017
From: Matt Kocian, Lake and Stream Spec.
Subject: Services Contract with ProCom System S. A. and Carp Solutions, LLC

Background

RCWD Carp Management Goals and Current Findings

High densities of common carp (*Cyprinus carpio*) are negatively impacting water clarity in Long Lake (New Brighton) and the Lino Chain of Lakes. RCWD is working to reduce common carp populations in this system to meet lake water quality goals. Much of the current effort to manage carp falls under the ongoing BWSR Targeted Watershed Demonstration Program (TWDP) grant; “carp management” is one of four projects identified in the TWDP. The long-term goal for carp management is to sustain a population density below which they negatively impact water clarity – roughly 100 kg/ha.

Work conducted by the University of Minnesota, Carp Solutions, LLC, and the RCWD has yielded several key findings regarding common carp population dynamics and management goals. They include:

- Common carp are very dense in Long Lake. Current density ~ 800 kg/ha (goal is 100kg/ha)
- Most of the population spends winters in Long Lake, and migrates upstream through Rice Creek to the Lino Chain of Lakes each spring to spawn.
- Successful hatching and recruitment is common
- Juvenile carp in the Lino Chain move back to Long Lake
- **Ongoing and significant adult removal and juvenile deterrent is needed to meet goals**
 - **Remove 70-80% of adult population annually**
 - **Deter 70-80% of juvenile annually**
 - **Lesser actions will not meet carp management goals**

Past Management Tools

The primary tool used to decrease the abundance of adult carp has been netting. This typically involves using tagged fish and radio telemetry to locate schools of carp during winter months, then working with a commercial fisherman to remove the school using nets. While this process may occasionally result in the removal of very large amounts of carp, the success rate is highly variable. The following are examples of past commercial netting efforts:

MEMORANDUM
Rice Creek Watershed District

Date	Approximate Carp Catch (lbs)
Jan 2010	180,000
March 2011	160,000
March 2016	2,000
Nov 2016	30,000
Jan 2017	0

Results of past commercial netting on Long Lake

The high variability in catch reflects several factors. First, carp do not always aggregate in the same area at the same time, or in large numbers. The schooling behavior can be erratic, making scheduling and timely netting problematic. Second, ice conditions are not always suitable for large-scale netting efforts, which require heavy equipment. Most importantly, debris on the bottom of the lake often impedes the netting process; this is reflected in the low (or zero!) catch rates in March 2016 and January 2017. Efforts were made in 2016 to map lake debris, so that commercial netting efforts may avoid those areas. Unfortunately, mapping is not able to identify debris that is hidden under lake sediments; the lack of catch in January 2017 is believed to be due to debris buried in sediment. Additionally, if the carp aggregation is found in an area with known debris, netting is not possible.

Commercial netting can be highly effective at removing large numbers of carp; this remains a potential management tool to be used in the future. However, due to high variability in success, additional management tools are needed to meet RCWD goals.

New Carp Management Tools for Consideration

Physical Fish Barriers

A physical barrier, such as the one used at the outlet of Rondeau Lake, could be used to block upstream movement of common carp. In theory, a physical barrier installed in Rice Creek could block access to suitable upstream spawning habitat. Although relatively simple to design and install, there are numerous drawbacks, most notably maintenance issues related to debris.

Fixed, High-Voltage Electric Barrier

Like the physical barrier, a fixed, high voltage electric barrier would be used to block access to suitable spawning habitat. A barrier like this was installed at the outlet of Howard Lake. Although potentially effective at blocking upstream movement, this does not account for existing upstream adults. It would also block native fish, and is the most expensive management tool.

Aeration

Aerators could be used to support native fish populations in the Lino Chain of Lakes, which could reduce carp recruitment. Due to the large size of the Chain of Lakes, this option would likely not be effective.

MEMORANDUM

Rice Creek Watershed District

Commercial Netting

As discussed above, commercial netting remains a viable tool for removing adult carp. Costs are moderate, but success rates are highly variable.

Box Netting

Box netting has been used by the University of Minnesota and Caro Solutions to capture adult carp for population surveys. Upward scaling of this activity could provide a means for effective adult removal. However, labor rates are comparatively high.

Portable, Low-Voltage Electric Barrier / Guidance System

A relatively new concept, the portable, low-voltage electric barrier is a dual-purpose carp management tool. It may be used to block access to spawning areas, and guide both adult and juvenile carp into traps for removal. Although tested in peer-reviewed literature, this option is somewhat experimental. The primary advantage is the flexibility of uses and deployment.

Management Tool	Cost Estimate	Purpose	Advantages	Disadvantages
Physical barrier	unknown, \$200-300k?	Decrease recruitment	Simple	Debris catch, localized flooding concerns; permanent water trail impediment; blocks native fish
Fixed, high-voltage electric barrier	approx \$700-900k capital; unknown operating costs	Decrease recruitment	Potentially highly effective	Expensive; relatively high potential for danger; blocks native fish
Aeration	unknown	Decrease recruitment		Likely not effective; high long-term operating costs
Commercial netting	\$20k per year	Remove adult carp	Relatively low cost	Highly variable success rates
Box netting	\$20-30k per year	Remove adult carp	Simple; Scalable	Higher labor costs compared to commercial netting
Portable, low-voltage electric barrier	\$200-250k capital; \$5-15k operating	Remove adult carp and Decrease Recruitment	Multiple-use management tool	Somewhat experimental; complex implementation

Additional Notes on the Portable, Low Voltage Barrier

The company that manufactures and deploys portable, low-voltage electric barriers is based in Poland. That company, ProCom System S.A., has previously deployed and tested their *NEPTUN* system in Michigan, where it was used successfully to guide sea lamprey into traps.

A U.S.-based company that manufactures electric fish barriers, Smith-Root, was also solicited for these services. Although Smith-Root has extensive experience making high-voltage fish barriers, they have not installed portable, low-voltage fish systems. Nevertheless, Smith-Root provided a cost-estimate which was roughly 25% higher than ProCom.

The portable, low-voltage barrier is best described as a moderate to high-risk / high-reward project. This technology has been tested successfully in peer-reviewed literature, but not extensively in the United States. If successful in RCWD, it could become a highly cost effective tool for removing adult carp and reducing recruitment. However, it is possible that, after testing, we decide not to use this tool long-term.

MEMORANDUM
Rice Creek Watershed District

Recommended Approach

At this time, RCWD staff recommend testing ProCom’s NEPTUN low-voltage guidance system in Rice Creek, in cooperation with Carp Solutions, LLC. The recommended approach is to rent the NEPTUN system for 1-2 years and test the effectiveness of the system. If found to be effective, equipment purchase (\$60,000) and long-term use would be recommended.

The enclosed Contracts and Proposals, from ProCom System and Carp Solutions, LLC present detailed costs and workplans for implementation. The total cost of both contracts will not exceed \$197,343. Approximately half of this cost will be covered by the Targeted Watershed Demonstration Grant.

Recommendation 1

RCWD staff recommend entering into a professional services agreement with ProCom System, S.A., for an amount not-to-exceed \$138,800.00.

Proposed Motion:

Manager _____ moves to authorize the Administrator, on advice of counsel, and with non-substantial changes, to enter into a professional services agreement with ProCom System, S.A., for an amount not-to-exceed \$138,800.00.

Recommendation 2

RCWD staff recommend entering into a professional services agreement with Carp Solutions, LLC, for an amount not-to-exceed \$58,543.00.

Proposed Motion:

Manager _____ moves to authorize the Administrator, on advice of counsel, to enter into a professional services agreement with Carp Solutions, LLC, for an amount not-to-exceed \$58,543.00.

- Attachment 1: Services Agreement for ProCom System S.A.
- Attachment 2: Proposal and Scope for ProCom System S.A.
- Attachment 3: Services Agreement for Carp Solutions, LLC
- Attachment 4: Proposal and Scope for Carp Solutions, LLC

**AGREEMENT BETWEEN
RICE CREEK WATERSHED DISTRICT
and PROCOM SYSTEM S. A.**

**Design, Installation, Commissioning and
Verification of Portable Low-Voltage Fish-Guidance
Systems**

This Agreement is entered into between the Rice Creek Watershed District, a public body with powers set forth at Minnesota Statutes chapters 103B and 103D (RCWD), and PROCOM SYSTEM S. A., a private business incorporated under the laws of Poland and with principal business address 8a, Stargardzka Street, 54-156 Wroclaw, Poland (“CONSULTANT”). CONSULTANT is certified to transact business in the State of Minnesota under Minnesota Statutes chapter 303, with a registered agent established. In consideration of the mutual terms and conditions set forth herein, including the obligations of mutual consideration, the sufficiency of which is hereby acknowledged, RCWD and CONSULTANT agree as follows:

1. Services

CONSULTANT will design and supply the Portable Low-Voltage Fish-Guidance Systems (“Systems”) and perform the work described in the February **13**, 2017 Commercial Offer attached as Attachment A (all together, the “Services”). Attachment A is incorporated into this agreement and its terms and schedules are binding on CONSULTANT as a term hereof. In the event of specific conflict between Attachment A and this Agreement, the Agreement will control. RCWD, at its discretion, in writing may at any time suspend work or amend the Services to delete any task or portion thereof. Authorized work by CONSULTANT on a task deleted or modified by the RCWD will be compensated in accordance with Paragraphs 5 and 6. The Services are subject to the following terms:

a. Design.

CONSULTANT will design two Systems for applications described by RCWD. RCWD will supply data requested by CONSULTANT concerning the applications and CONSULTANT will be responsible to confirm that RCWD has supplied all data needed to properly design the applications. CONSULTANT has determined that RCWD has supplied data sufficient to define the electric field, and has determined that both systems will be designed to generate heterogeneous modulated pulsed electric field in the range of 0,09V - 0,3V/cm.

CONSULTANT understands that the Systems will be in locations on public recreational land to which members of the public may have access. As between CONSULTANT and RCWD, CONSULTANT is knowledgeable as to performance as well as any safety and operational considerations related to electrical, physical or other features of the Systems. Accordingly, CONSULTANT warrants the design as provided in section 4, below, and will include with its design a description of such considerations, as well as

installation and maintenance practices for the purpose of limiting any described safety or operational risks.

CONSULTANT'S design will include: (i) specifications for both direct and alternate current power supply; and (ii) specifications for pillars and any other elements of the systems that will be affixed to channel bed or banks and their installation.

b. Installation and Commissioning.

RCWD will be responsible to install CONSULTANT-supplied pillars, lockable control boxes and any other support elements not requiring specialized expertise, supply electrical power, and acquire all approvals required to install and maintain the Systems. CONSULTANT, itself or through a qualified subcontractor, will install and commission the control unit and electrode system. RCWD will provide non-specialized personnel to assist in transport and installation at CONSULTANT's direction. RCWD and CONSULTANT will coordinate scheduling for efficient installation.

Furthermore, regarding security matters, RCWD will be responsible to install fencing in the immediate vicinity of the site where the electric barrier will be installed. RCWD will install warning signage to inform third persons about the electric field in the water and that it is prohibited to approach the barrier. RCWD will design and install fencing, warning and any related measures as it judges proper to implement CONSULTANT's guidance under paragraph 1.a, above.

c. Verification.

CONSULTANT will provide on-site inspection and testing to verify performance on two occasions as specified in Attachment A.

2. Independent Contractor

CONSULTANT is an independent contractor under this Agreement. CONSULTANT will select the means, method and manner of performing the Services. Nothing herein contained is intended or should be construed to constitute CONSULTANT as the agent, representative or employee of RCWD in any manner. Personnel performing the Services on behalf of CONSULTANT or a subcontractor will not be considered employees of RCWD and are not entitled to any compensation, rights or benefits of any kind from RCWD.

3. Subcontract and Assignment

CONSULTANT will not assign, subcontract or transfer any obligation or interest in this Agreement or any of the Services without the written consent of RCWD. Written consent to any subcontracting will not relieve CONSULTANT from its responsibility to perform the Services or any part thereof, nor in any respect its warranty, insurance, indemnification, duty to defend or release with respect to the Services. CONSULTANT will incorporate this Agreement in any RCWD-PROCOM SYSTEM S. A. Services Agreement

assignment, subcontract or transfer agreement.

4. Duty of Care and Indemnification

a. CONSULTANT will perform design, commissioning, verification and support Services in accordance with due professional care and warrants that the Systems as designed are merchantable and fit for the use as described by RCWD pursuant to paragraph 1.a, above. CONSULTANT warrants that for a period of two years from commissioning, each System, including operational features, will function as designed and will produce the electric field described in paragraph 1.a, above, and as further described in Attachment A.

b. CONSULTANT will perform all Services with ordinary due care.

c. CONSULTANT will indemnify and release RCWD, its board members, employees and agents from any and all actions, costs, damages and liabilities of any nature, including reasonable attorney fees, to the degree they are the result of CONSULTANT's or a subcontractor's professional or ordinary negligence or other action or inaction by CONSULTANT or a subcontractor that is the basis for CONSULTANT's or the subcontractor's liability in law or equity.

d. RCWD will indemnify, defend and release CONSULTANT, its officers, employees and agents, from any and all actions, costs, damages and liabilities of any nature to the degree they are the result of any action or inaction by RCWD that is the basis for RCWD's ordinary negligence or other action or inaction by RCWD that is the basis for RCWD's liability in law or equity.

e. Notwithstanding the preceding or any other term of this Agreement, RCWD waives no immunity in tort. This Agreement creates no right in and waives no immunity, defense or limitation on liability with respect to CONSULTANT or any third party.

5. Compensation

RCWD will compensate CONSULTANT for the Services in United States dollars in accordance with the fee amounts and schedule in Attachment A. Prices stated in Attachment A include all costs whatsoever in providing the Systems and performing the Services, except as Attachment A explicitly states otherwise. The following terms clarify and, where in conflict, supersede the terms of Attachment A ("Rental option"):

a. Lines 1, 2, 6, 7 and 8 are design and field service work to be paid as lump sum fixed price.

b. Line 3 is equipment rental to be paid as fixed price per year, shipped from outside of the United States.

c. Lines 4 and 5 are equipment to be purchased, paid as fixed price, sourced and shipped from within the United States.

- d. Line 9 is a lump sum payment for transfer of ownership of Line 3 equipment.
- e. Line 12 is estimated cost. The District will pay actual cost for this described item based on CONSULTANT's invoice, up to but not exceeding \$10,400 USD.
- f. With respect to any other direct costs for which the District is responsible under this Agreement, if any, the District will pay actual cost based on CONSULTANT's invoice.
- g. CONSULTANT is responsible to properly classify equipment and other elements of the transaction for the purpose of determining but not overpaying customs costs, taxes and any other similar direct costs.

Payment for undisputed Services will be dispatched within 30 days of receipt of invoice pursuant to pay transmittal instructions of the CONSULTANT representative identified in section 13, below, with CONSULTANT bearing any transaction costs thereof.

CONSULTANT will maintain all records pertaining to the Services for six years from the date of completion of the Services. CONSULTANT agrees that any authorized representative of RCWD or the State Auditor may examine, audit, and copy any such records.

6. Term and Termination

This Agreement is effective when fully executed by the parties and remains in force until December 31, 2018, unless earlier terminated as set forth herein.

RCWD may terminate this Agreement at its convenience, by a written termination notice stating specifically what prior authorized or additional services CONSULTANT is to complete. CONSULTANT will receive full compensation for all authorized work performed, except that CONSULTANT will not be compensated for any part performance of a specified task if termination is due to CONSULTANT's breach of this Agreement.

7. Waiver

The failure of either party to insist on the strict performance by the other party of any provision or obligation under this Agreement, or to exercise any option, remedy or right herein, does not waive or relinquish the party's rights in the future to insist on strict performance of any provision, condition or obligation, all of which will remain in full force and affect. The waiver of either party on one or more occasion of any provision or obligation of this Agreement will not be construed as a waiver of any subsequent breach of the same provision or obligation, and the consent or approval by either party to or of any act by the other requiring consent or approval will not render unnecessary the party's consent or approval to any subsequent similar act by the other.

8. Insurance

At all times during the term of this Agreement, CONSULTANT will have and keep in force the following insurance coverages:

- A. General: \$1.0 million each occurrence and aggregate, covering both CONSULTANT's work and completed operations on an occurrence basis and including contractual liability.
- B. Professional liability: \$1.0 million each claim and aggregate; coverage may be on a claims-made basis, in which case CONSULTANT must maintain the policy for, or obtain extended reporting period coverage extending, at least three (3) years from completion of the Services.
- C. Workers' compensation: in accordance with legal requirements applicable to CONSULTANT.

The underwriter of each policy will hold a Minnesota Department of Commerce certificate of authority covering the policy type issued. CONSULTANT will not commence work until it has filed with RCWD a certificate of insurance clearly evidencing the required coverages and naming RCWD as an additional insured for general liability, along with a copy of the additional insured endorsement establishing coverage for CONSULTANT's work and completed operations as primary coverage on a noncontributory basis. The certificate will name RCWD as a holder and will state that RCWD will receive written notice of policy change under the same terms as CONSULTANT."

9. Compliance with Laws

CONSULTANT will comply with the laws and requirements of all national, state, local and other governmental units in connection with its performance under this Agreement. CONSULTANT is responsible to hold all registrations, certificates, licenses, permits and other rights necessary to fulfill this Agreement in accordance with the laws of the United States and the State of Minnesota.

10. Materials

All documents provided to CONSULTANT by RCWD, including documents in hard and electronic copy, software, and all other forms, are the property of RCWD. On termination of the agreement, CONSULTANT may maintain a copy of some or all of said materials except for any materials designated by RCWD as confidential or non-public under applicable law, a copy of which may be maintained by CONSULTANT only pursuant to written agreement with RCWD specifying terms.

RCWD acknowledges that CONSULTANT's design methods, plans and specifications, and other work products are instruments of professional service. Nevertheless, RCWD has an unlimited, non-exclusive license to receive, possess, reproduce and use all plans and specifications and other documents, such as but not limited to permit files, engineering reports and other materials, produced or acquired by CONSULTANT to perform the Services. RCWD will release, indemnify and defend CONSULTANT from all damages, claims, expenses and losses arising out

of its reuse of said documents outside of the scope of use of this Agreement without CONSULTANT'S written authorization.

11. Data Practices; Confidentiality

The Minnesota Data Practices Act applies to this Agreement as set forth at Minnesota Statutes §13.05, subdivision 11.

12. Continuation of Obligation

It is understood and agreed that insurance obligations; warranties; duties of care, releases and obligations to defend and indemnify; and document retention requirements will survive completion of the Services and the term of this Agreement.

13. Notices

Any written communication required under this Agreement to be provided in writing will be directed to the other party as follows:

To RCWD:

Administrator
Rice Creek Watershed District
4325 Pheasant Ridge Drive
Suite 611
Blaine, MN 55449-4539 USA

To PROCOM SYSTEM S.A.:

One or both of the following, as appropriate:

Mr. Emil Kukulski
ProCom System S. A.
Ul. Stargardzka 8a
54-156 Wroclaw, Poland
Emil.kukulski@procomsystem.pl

Registered Agent:
Registered Agents Inc.
1660 S. Highway 100
STE 500A
St. Louis Park, MN 55416

The RCWD or PROCOM representative may in writing designate another individual to receive communications under this Agreement. A PROCOM change of registered agent will be effective only as evidenced by a revised certificate of authority issued by the Minnesota Secretary of State and transmitted to RCWD.

14. Choice of Law, Venue and Jurisdiction

This Agreement will be construed under and governed by the laws of the State of Minnesota and, in matters not governed by State law, of the United States. Venue and jurisdiction for any action under this Agreement will lie in Anoka County, Minnesota.

15. Whole Agreement

The entire agreement between the two parties is contained herein and this Agreement supersedes all oral agreements and negotiations relating to the subject matter hereof. Any modification of this Agreement is valid only when reduced to writing as an amendment to the Agreement and signed by the parties hereto. The RCWD may amend this Agreement only by action of the Board of Managers acting as a body.

16. Time Is of the Essence

Time is of the essence in the fulfillment of the terms of this Agreement.

IN WITNESS WHEREOF, intending to be legally bound, the parties hereto execute and deliver this Agreement.

Approved for form & execution

RCWD Attorney

PROCOM SYSTEM S. A.

**RICE CREEK
WATERSHED DISTRICT**

By _____
Its _____
Date _____

By _____
Its _____
Date _____

**ATTACHMENT A
PROCOM SYSTEM S.A.
SERVICES**

Commercial offer

nr 60b/02/2017

13.03.2017r.

For:

Matt Kocian

Rice Creek Watershed District

Title:

Delivery, installation and commissioning of two portable NEPTUN low-voltage DC fish-guidance systems in Rice Creek

Prepared by:



Emil Kukulski, Tel. [+48 71 77 66 780](tel:+48717766780) Mob. [+48 782 710 010](tel:+4878271010)

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Tax Identification No. (NIP) 899-02-04-851
National Business Registry No. (REGON) 008044238
KRS (National Court Register no.) 0000050817 District Court
for Wrocław, 6th Commercial Department
Share capital: PLN 3,300,000 fully paid up.



1. General Information

This quotation has been drawn up on the basis of the knowledge and experience gathered by PROCOM SYSTEM S.A. (hereinafter referred to as PROCOM).

The implementation of the Neptun system must be preceded by the design phase which takes into account many details specific to the place of installation. Through this approach the Neptun system reaches very high effectiveness.

2. Deliverables

This proposal includes the following deliverables:

Rice Creek at Hodgson Road:

- a. Pillars required to fix the underwater installation to the riverside.
- b. Set of electrode system for underwater installation designed to stop downstream movement of carp 10-70 cm in length and guide them to the trap – max 35m length.
- c. Portable control unit – NEMO2.



Rice Creek near Poppyseed Dr in New Brighton:

- d. Pillars required to fix the underwater installation to the riverside.
- e. Set of electrode system for underwater installation designed to stop upstream movement of carp > 30 cm in length and guide them to the trap – max 30m length.
- f. Portable control unit – NEMO2.



Furthermore:

Supervision of installation of the barriers on the sites.

Commissioning of both systems.

Tests and calibration of the parameters.

Participation in the field tests:

- 1 week of tests carried out directly after first installation
- Verification of the barriers and their settings, 1 week of tests – autumn 2017
- Verification of the barriers and their settings, 1 week of tests – spring 2018

Spare parts for electronic control box and training for Rice Creek Watershed District personnel on how and when it should be used.

User manual.

Training for operators and users of the Neptun system.



3. PROCOM's responsibilities

PROCOM shall be responsible for:

- Design of the electric barrier to achieve high effectiveness of blocking of common carp. The barriers will be designed to generate an electric field in the range of 0,09V - 0,3V/cm.
- Supplying of components required for installation.
- Providing of the guidelines and detailed documentation.
- Commissioning and calibration of the system before effectiveness tests.
- Participation and supervision over the testing of the effectiveness of the Neptun system on site within suggested periods of time.
- Remote supervision of the systems and monitoring of the operating parameters.
- Substantive support in field tests over a 2 year period.

4. Ordering Party's responsibilities

The Ordering Party shall be responsible for providing the necessary equipment to unload and transport the items upon delivery.

The Ordering Party shall provide or otherwise arrange for the following:

- Technicians to assist with transport to and installation of the system at the selected site;
- Technicians to help install the system and learn to operate and monitor the system.
- Two SIM cards with static IP address required for remote monitoring.
- Installation of pillars required to fix the underwater installation to the riversides.
- Power supply to the control box (110V(60Hz) + ground)(max power 4kVA).
- Trap to catch carps.
- fence mounted at immediate vicinity of the site where electric barrier is installed. RCWD will install warning boards which inform third persons about prohibition of approaching to the barrier and electricity in the water.

Any future implementation of the NEMO 2 system at other sites will require adaptation of the settings in order to obtain expected effectiveness, therefore the Ordering Party is obligated to involve PROCOM for proper design and support in implementation.

5. Technical assumptions

The minimum water level in Rice Creek (at Hodgson Road and near Poppyseed Dr in New Brighton) amounts to 80cm, so in order to obtain the required stability of the underwater



installation, the electrodes cannot be longer than 110cm measured from the bottom. Consequently the electric field generated by such electrodes will cover a space corresponding to the max 140cm of depth during floods.

In order to increase the depth up to 2m we offer elongation of the electrodes by appending ~40cm pieces to each base electrode. This operation should be performed manually when the water level is no less than 110cm.

6. Quotation - rental option

The rental option applies only to the electronic control box (Item 3) because of the underwater components are degradable and made specifically for the particular site.

Item	Description	Quantity	Price	Discount	Total price (2 years)
1	• Design of the electric barrier for Rice Creek at Hodgson Road	1 set	15 500 USD	20%	12 400 USD
2	• Design of the electric barrier for Rice Creek near Poppyseed Dr in New Brighton	1 set	15 500 USD	20%	12 400 USD
3	• Rental of the electronic control and power supply system – portable version (NEMO2).	2 pcs.	10 000 USD/ year	-	40 000 USD
4	• Set of positive and negative electrodes (max 35m barrier length). • Installation of the system. • Commissioning and calibration.	1 set	24 000 USD	20%	19 200 USD
5	• Set of positive and negative electrodes (max 30m length). • Installation of the system. • Commissioning and calibration.	1 set	20 500 USD	20%	16 400 USD
6	• Project management and personnel for 1 week of the tests after installation.	1 set	8 000 USD	-	8 000 USD
7	• Verification of the barrier and their settings, 1 week of the tests – autumn 2017	1 set	10 000 USD	-	10 000 USD
8	• Verification of the barrier and their settings, 1 week of the tests – spring 2018	1 set	10 000 USD	-	10 000 USD
9	• Rent to own option - possible after two years of rental.	2 pcs.	30 000 USD	-	60 000 USD
10	US Customs costs – 10% value of equipment		10 400 USD*	-	10 400 USD**

* These are estimated US Customs costs which will be covered by Ordering Party based on the invoice issued by U.S. Customs and Border Protection.



The above quotation includes:

- Labour and accommodation costs of PROCOM's personnel during the installation work and launching of the NEPTUN System.
- Travel costs of PROCOM's representatives.
- Insurance - General & Professional liability: \$1.0 million each occurrence and aggregate.
- Transport cost of the equipment from Poland to the Minneapolis (destination address indicated by Ordering Party).

Ordering Party has the right to cancel an order of rental the electronic control and power supply box after 1 year of testing. In that case Ordering Party will pay for services as they are rendered. The minimum rental period is one year.

The quotation does not include any costs related to any other relevant U.S. taxes.

7. Payment conditions

Rental option:

- 24,800 USD - after submission of design documents for both sites. Payment deadline – four weeks after signing acceptance protocol.
- 63,600 USD - after system delivery, installation and commissioning. Payment deadline – four weeks after signing acceptance protocol.
- 10,000 USD - after verification of the barriers and their settings, 1 week of tests – autumn 2017. Payment deadline – four weeks after sign off an acceptance protocol.
- 10,000 USD - after verification of the barriers and their settings, 1 week of tests – spring 2018. Payment deadline – four weeks after sign off an acceptance protocol.
- 20,000 USD – (2nd year rental cost) – within 1 month after 1st year of system operation if Ordering Party decide to extend rental agreement for second year.
- ~10 400 USD – based on US Customs invoice.

Procom will issue invoice for each executed stage of the contract, Ordering Party will pay the invoice through bank transfer.

8. Delivery schedule

Dispatch of the components of the Neptun system to USA – max 9 weeks after reception the order and execution of the agreement.



Installation of the Neptun system on site: within 10 days after reception of the consignment in the US.

9. Guarantee

The NEPTUN System is covered by a 24-month guarantee from the date of installation and commissioning.

Note: Damage to the installation as a result of force majeure are not subject to warranty.

CZŁONEK ZARZĄDU
DYREKTOR FINANSOWY


Bogdan Dolinski

PREZES ZARZĄDU
DYREKTOR NACZELNY


Artur Wójcikowski

Approval (date & signature)

ITEMS REQUIRING BOARD ACTION

9. Consider Carp Solution Inc. Contract. (Matt Kocian)

**AGREEMENT BETWEEN
RICE CREEK WATERSHED DISTRICT and CARP SOLUTIONS, LLC**

**Developing and Testing Systems to Block and Remove Common Carp from the
Long Lake Chain of Lakes
Year 3**

This agreement is entered into by the Rice Creek Watershed District, a public body with powers set forth at Minnesota Statutes chapters 103B and 103D (RCWD), and Carp Solutions, LLC, a private Minnesota corporation (CONSULTANT). In consideration of the terms and conditions set forth herein, including the obligations of mutual consideration, the sufficiency of which is hereby acknowledged, RCWD and CONSULTANT agree as follows:

1. Scope of Work

CONSULTANT will perform the work described in the February 25, 2017 Scope of Work attached as Exhibit A (the "Services"). Exhibit A is incorporated into this agreement and its terms and schedules are binding on CONSULTANT as a term hereof. In the event of specific conflict between Exhibit A and the agreement, the agreement will control. RCWD, at its discretion, in writing may at any time suspend work or amend the Scope of Services to delete any task or portion thereof. Authorized work by CONSULTANT on a task deleted or modified by RCWD will be compensated in accordance with paragraphs 5 and 6. Time is of the essence in the performance of the Services.

2. Independent Contractor

CONSULTANT is an independent contractor under this agreement. CONSULTANT will select the means, method and manner of performing the Services. Nothing herein contained is intended or should be construed to constitute CONSULTANT as the agent, representative or employee of RCWD in any manner. Personnel performing the Services on behalf of CONSULTANT or a subcontractor will not be considered employees of RCWD and will not be entitled to any compensation, rights or benefits of any kind from RCWD.

3. Subcontract and Assignment

CONSULTANT will not assign, subcontract or transfer any obligation or interest in this agreement or any of the Services without the written consent of RCWD and

pursuant to any conditions included in that consent. RCWD consent to any subcontracting does not relieve CONSULTANT of its responsibility to perform the Services or any part thereof, nor in any respect its warranty, insurance, indemnification, duty to defend or agreement to hold harmless with respect to the Services. RCWD consents to subcontracting with commercial fisherman for carp removal, as referenced in Exhibit A, Task 2.

4. Duty of Care, Indemnification

CONSULTANT will perform the Services with due professional care. CONSULTANT will indemnify, defend and hold harmless RCWD, its board members, employees and agents from any and all actions, costs, damages and liabilities of any nature arising from: (a) CONSULTANT's negligent or otherwise wrongful act or omission, or breach of a specific contractual duty; or (b) a subcontractor's negligent or otherwise wrongful act or omission, or breach of a specific contractual duty owed by CONSULTANT to RCWD. For any claim subject to indemnification under this paragraph by an employee of CONSULTANT or a subcontractor, the indemnification obligation is not limited by a limitation on the amount or type of damages, compensation or benefits payable by or for CONSULTANT or a subcontractor under workers' compensation acts, disability acts or other employee benefit acts.

RCWD will indemnify, defend and hold harmless CONSULTANT, its officers, employees and agents, from any and all actions, costs, damages and liabilities of any nature to the degree they are the result of any action or inaction by RCWD that is the basis for RCWD's liability in law or equity.

5. Compensation

RCWD will compensate CONSULTANT for the Services on an hourly basis and pay for direct costs, not to exceed the per-task amounts stated for each line item in Exhibit A. Invoices will be submitted monthly for work performed during the preceding month. Payment for undisputed work will be due within 30 days of receipt of invoice. Direct costs not specified in Exhibit A will not be reimbursed except with prior written approval of the RCWD administrator.

The total payment for the Services will not exceed \$58,543. Total payment means all sums to be paid whatsoever, including but not limited to fees and reimbursement of direct costs and subcontract costs, whether specified in this agreement or subsequently authorized by the administrator.

CONSULTANT will maintain all records pertaining to fees or costs incurred in connection with the Services for six years from the date of completion of the Services. CONSULTANT agrees that any authorized RCWD representative or the state auditor may have access to and the right to examine, audit and copy any such records during normal business hours.

6. Termination; Continuation of Obligations

This agreement is effective when fully executed by the parties and will remain in force until May 31, 2018, unless earlier terminated as set forth herein.

RCWD may terminate this agreement at its convenience, by a written termination notice stating specifically what prior authorized or additional tasks or services it requires CONSULTANT to complete. CONSULTANT will receive full compensation for all authorized work performed, except that CONSULTANT will not be compensated for any part performance of a specified task or service if termination is due to CONSULTANT's breach of this agreement.

Insurance obligations; obligations to defend, indemnify and hold harmless; and document-retention requirements will survive the completion of the Services and the term of this agreement.

7. Waiver

The failure of either party to insist on the strict performance by the other party of any provision or obligation under this agreement, or to exercise any option, remedy or right herein, will not waive or relinquish such party's rights in the future to insist on strict performance of any provision, condition or obligation, all of which will remain in full force and affect. The waiver of either party on one or more occasion of any provision or obligation of this agreement will not be construed as a waiver of any subsequent breach of the same provision or obligation, and the consent or approval by either party to or of any act by the other requiring consent or approval will not render unnecessary such party's consent or approval to any subsequent similar act by the other.

Notwithstanding any other term of this agreement, RCWD waives no immunity in tort. This agreement creates no right in and waives no immunity, defense or liability limit with respect to any third party.

8. Insurance

At all times during the term of this Agreement, CONSULTANT will have and keep in force the following insurance coverages:

- A. General liability: \$1.5 million each occurrence and aggregate, on an occurrence basis, covering CONSULTANT's work and contractual liability.
- B. Professional liability: \$1.5 million each claim and aggregate; coverage may be on a claims-made basis, in which case CONSULTANT must maintain the policy for, or obtain extended reporting period coverage extending, at least three (3) years from completion of the Services.
- C. Automobile liability: \$1.5 million combined single limit each occurrence coverage for bodily injury and property damage covering all vehicles on an occurrence basis.
- D. Workers' compensation: in accordance with legal requirements applicable to CONSULTANT.

CONSULTANT will not commence work until it has filed with RCWD a certificate of insurance clearly evidencing the required coverages and naming RCWD as an additional insured with primary coverage for general liability on a noncontributory basis, along with a copy of the additional insured endorsement. The certificate will name RCWD as a holder and will state that RCWD will receive written notice before cancellation, nonrenewal or a change in the limit of any described policy under the same terms as CONSULTANT.

9. Compliance With Laws

CONSULTANT will comply with the laws and requirements of all federal, state, local and other governmental units in connection with performing the Services and will procure all licenses, permits and other rights necessary to perform the Services.

In performing the Services, CONSULTANT will ensure that no person is excluded from full employment rights or participation in or the benefits of any program, service or activity on the ground of race, color, creed, religion, age, sex, disability,

marital status, sexual orientation, public assistance status or national origin; and no person who is protected by applicable federal or state laws, rules or regulations against discrimination otherwise will be subjected to discrimination.

10. Materials

All materials obtained or generated by CONSULTANT in performing the Services, including documents in hard and electronic copy, software, and all other forms in which the materials are contained, documented or memorialized, are the property of RCWD. CONSULTANT hereby assigns and transfers to RCWD all right, title and interest in: (a) its copyright, if any, in the materials; any registrations and copyright applications relating to the materials; and any copyright renewals and extensions; (b) all works based on, derived from or incorporating the materials; and (c) all income, royalties, damages, claims and payments now or hereafter due or payable with respect thereto, and all causes of action in law or equity for past, present or future infringement based on the copyrights. CONSULTANT agrees to execute all papers and to perform such other proper acts as RCWD may deem necessary to secure for RCWD or its assignee the rights herein assigned.

RCWD may immediately inspect, copy or take possession of any materials on written request to CONSULTANT. On termination of the agreement, CONSULTANT may maintain a copy of some or all of the materials except for any materials designated by RCWD as confidential or non-public under applicable law, a copy of which may be maintained by CONSULTANT only pursuant to written agreement with RCWD specifying terms.

11. Data Practices; Confidentiality

If CONSULTANT receives a request for data pursuant to the Data Practices Act, Minnesota Statutes chapter 13 (DPA), that may encompass data (as that term is defined in the DPA) CONSULTANT possesses or has created as a result of this agreement, it will inform RCWD immediately and transmit a copy of the request. If the request is addressed to RCWD, CONSULTANT will not provide any information or documents, but will direct the inquiry to RCWD. If the request is addressed to CONSULTANT, CONSULTANT will be responsible to determine whether it is legally required to respond to the request and otherwise what its legal obligations are, but will notify and consult with RCWD and its legal counsel before replying. Nothing in the preceding sentence supersedes CONSULTANT's obligations under this agreement with respect to protection of RCWD data,

property rights in data or confidentiality. Nothing in this section constitutes a determination that CONSULTANT is performing a governmental function within the meaning of Minnesota Statutes section 13.05, subdivision 11, or otherwise expands the applicability of the DPA beyond its scope under governing law.

CONSULTANT agrees that it will not disclose and will hold in confidence any and all proprietary materials owned or possessed by RCWD and so denominated by RCWD. CONSULTANT will not use any such materials for any purpose other than performance of the Services without RCWD written consent. This restriction does not apply to materials already possessed by CONSULTANT or that CONSULTANT received on a non-confidential basis from RCWD or another party. Consistent with the terms of this section 11 regarding use and protection of confidential and proprietary information, CONSULTANT retains a nonexclusive license to use the materials and may publish or use the materials in its professional activities. Any CONSULTANT warranty under this agreement does not extend to any party other than RCWD or to any use of the materials by RCWD other than for the purpose(s) for which CONSULTANT is compensated under this agreement.

12. RCWD Property

All property furnished to or for the use of CONSULTANT or a subcontractor by RCWD and not fully used in the performance of the Services, including but not limited to equipment, supplies, materials and data, both hard copy and electronic, will remain the property of RCWD and returned to RCWD at the conclusion of the performance of the Services, or sooner if requested by RCWD. CONSULTANT further agrees that any proprietary materials are the exclusive property of RCWD and will assert no right, title or interest in the materials. CONSULTANT will not disseminate, transfer or dispose of any proprietary materials to any other person or entity unless specifically authorized in writing by RCWD. Any property including but not limited to materials supplied to CONSULTANT by RCWD or deriving from RCWD is supplied to and accepted by CONSULTANT as without representation or warranty including but not limited to a warranty of fitness, merchantability, accuracy or completeness. However, CONSULTANT's warranty of professional care under paragraph 4, above, does not extend to materials provided to CONSULTANT by RCWD or any portion of the Services that is inaccurate or incomplete as the result of CONSULTANT's reliance on those materials.

13. Notices

Any written communication required under this agreement to be provided in writing will be directed to the other party as follows:

To RCWD:

Matt Kocian, Lake and Stream Specialist
Rice Creek Watershed District
4325 Pheasant Ridge Drive NE, Suite 611
Blaine, MN 55449

To CONSULTANT:

Przemyslaw G. Bajer
Carp Solutions, LLC
P. O. Box 120204
New Brighton, MN 55112-3388

Either of the above individuals may in writing designate another individual to receive communications under this agreement.

14. Choice of Law, Venue and Jurisdiction

This agreement will be construed under and governed by the laws of the State of Minnesota.

15. Whole Agreement

The entire agreement between the two parties is contained herein and this agreement supersedes all oral agreements and negotiations relating to the subject matter hereof. Any modification of this agreement is valid only when reduced to writing as an amendment to the agreement and signed by the parties hereto. RCWD may amend this agreement only by action of the Board of Managers acting as a body.

IN WITNESS WHEREOF, intending to be legally bound, the parties hereto execute and deliver this agreement.

CARP SOLUTIONS, LLC

By _____

Przemyslaw G. Bajer

Title:

Date: _____

RICE CREEK WATERSHED DISTRICT

By _____

Phil Belfiori, Administrator

Date: _____

Approved as to Form & Execution

RCWD Attorney

Exhibit A
Scope of Services



Developing and testing systems to block and remove common carp from Long Lake chain of lakes

Przemyslaw G. Bajer
Carp Solutions (CS), LLC
www.carpsolutionsmn.com

February 25, 2017

Prepared for Rice Creek Watershed District (RCWD)

Preface

This document presents the work that will be conducted by Carp Solutions, LLC. to develop and test new strategies to control common carp (*Cyprinus carpio*) in Long Lake, Ramsey County, Minnesota. The work encompasses one year (April 1, 2017 – March 31, 2018) and will be performed on a time and materials basis, with cost not-to-exceed \$ 58,543, unless a written agreement is granted. This proposal includes the following objectives: 1. Test and develop electric guidance systems (installed by RCWD) to block seasonal migration of carp and determine if carp could be directed into traps for removal. 2. Develop selective carp removal schemes in Long Lake using baited “box nets” 3. Monitor the status of the population in Long Lake and production of young in Lino Lakes to guide management strategies (Objectives 3, 4, 5).

Objective 1 is a “high risk-high reward” scenario that is needed in the long run. If it works, (i.e. if large numbers of carp can be removed using the trap in the stream in conjunction with the electric guidance system) carp management in Long Lake will accelerate dramatically, thus we propose starting with this objective. However, the immediate success of this objective is uncertain in 2017, because this will be the first season this system is installed and many unforeseen logistical challenges might occur. Objective 2 is a “safe bet”, because we have already shown that 1,000s of carp can be removed with baited box nets from Long Lake and we are confident in this approach. This effort, however, requires more men power and will be costlier in the long run that Objective 1, thus Objective 1 is priority.

Given this complexity, the project is designed to maximize efficiency and minimize risk and cost. If objective 1 is progressing satisfactorily, then Objective 2 may be nullified,

or money from that objective may be moved to Objective 1. If, on the other hand, Objective 1 proves challenging, money from it may be moved to Objective 2.

We will present a written evaluation of Objective 1 by end of July to determine if Objective 2 is necessary/desired.

Objective 1. Testing and developing electric guidance systems to block seasonal migration of carp and determine if carp can be directed into traps for removal.

Adult common carp exhibit extensive spawning migrations from Long Lake to the Lino Lakes chain, which function as carp nurseries, each spring. These fish then return from Lino Lakes to Long Lake shortly after spawning and often exhibit one or two more of such round-trip migrations through the rest of the year. Nearly all adult carp participate in these migrations suggesting that if these fish could be blocked and directed into traps, carp abundance in the Long Lake system would be drastically reduced and management goals met. Further, after they hatch and grow, juvenile carp migrate downstream from Lino Lakes to Long Lake. Reducing the migrations of these carp is also of critical importance because this behavior ultimately drives the high carp abundance in Long Lake. By installing two guidance systems with traps (one for adult carp moving upstream and one for juvenile carp moving downstream), we will seek to develop removal strategies for both adults and juveniles.

To achieve this objective, RCWD will install a new type of portable, low-power, electric guidance system to block or slow down seasonal migrations of adult and juvenile carp and direct these fish into traps. This system was recently and successfully used to block and trap the invasive sea lamprey during their spawning migrations in Michigan. We will work with RCWD and the manufacturer of the electric guidance system (Procom, SA., Poland) to install two electric guidance systems (EGS) along Rice Creek. The first EGS will be installed just upstream of Long Lake and its purpose will be to block adult carp during their upstream migration and direct them into a trap. The second system will be installed just downstream of Rice Lake (Edgerton Rd.). This system will be designed to slow down the downstream migration of juvenile carp from Lino lakes to Long Lake and to also slow down the return migration of adults from Lino to Long. These fish will be also directed into a trap. At each site, the EGS will be installed at a steep angle so the carp that migrate will be directed toward one side of the stream where we will place a trap.

The goal for this season is to coordinate the installation of the EGS, link it with a trap, design the trap, and evaluate and optimize the performance of the overall system. System of antennas capable of detecting carp implanted with micro-transmitters (passive integrated transponder tags; PIT tags; ~ 10 mm in length, 3 mm in diameter) will be positioned around the EGS to monitor carp passage through the barrier and into the trap. Specifically, at each site, one antenna will be installed on the side of the barrier from which the carp will be approaching, and another antenna will be installed at the entrance to the trap. One additional antenna will be also installed in between the barrier sites (this antenna already exists). We will use those antennas to determine if the EGS can block the movement of carp and if the carp can be

directed to enter the trap. Up to 1,000 carp will be captured and implanted with PIT tags to allow for testing of the EGS and the trap.

Specific methodology will be developed as the experiment progresses due to unforeseen circumstances. Monthly updates can be provided to RCWD to communicate progress and inform of immediate plans. Close communication will be critical, but we have already established good working relationship with RCWD personnel.

Budget

Carp Solutions:

1. Up to 30 days in the field to coordinate the installation of the EGS and the traps, implant carp with PIT tags, evaluate trap performance, trap/remove migrating carp; crew of two people, electrofishing boat surveys to implant carp with PIT tags prior to installation of the EGS and as the season continues, backpack electrofishing to sample near barriers and empty traps; crew of 2 for safety; \$140/hour = 25 days x 8 x 140 = **\$28,000**
2. Coordination with ProCom by P. Bajer ~ 20h x \$140 = **\$2,800**
3. Mileage: 30 round trips X 19 miles/trip @ \$0.54/mile = **\$308**

RCWD:

- a. purchase 1,000 PIT tags = ~\$2,000
- b. Purchase elements of 4 PIT antennas (2 at each site) and pay for construction = \$10,800 (subcontract with Dan Zielinski)
- c. Arrange for the disposal of the carp
- d. Arrange all necessary permits, including a potential agreement with the commercial fisherman (Jeff Riedemann) to allow for harvesting carp by RCWD/CS from the system.

Objective 2. Developing selective carp removal schemes in Long Lake using “box nets”.

Our analysis of carp abundance in Long Lake shows that high rates of adult carp removal (80% or more) will be needed to achieve population control at or below 100 lbs/acre. While winter seining is often the “go to” strategy to remove adult carp from lakes, this approach has not worked successfully in Long Lake during the last two winters. Even though carp formed tight aggregations under the ice, the fishermen were unable to catch and remove them as the nets invariably snag on the bottom of the lake; two seines were conducted catching < 500 carp total (~ 2% of the population)

We have been developing an alternative approach to remove carp, in which carp are baited and lured into a trap with corn during summer and fall when water temperatures are warm and carp forage intensively. This approach is based on observations that carp can be trained to aggregate in very large numbers at sites baited with corn (Bajer et al. 2010). Typically, a site is baited for 4-7 days by placing corn in mesh bags each day. The bait is placed on top of the box net (a mesh net with 4 sides and bottom), which is laid flat on the bottom of the lake. Once the carp are trained to aggregate in large numbers within the trap, sides of the net are quickly lifted trapping the carp inside. Then, the bottom of the net is lifted to aggregate the carp in a small

area from which they are netted onto a boat. 2-3 people can empty a trap containing up to 500 of carp in ~ 4 hours. This process can be repeated every 2-3 days through the summer.

The main advantages of this approach are that 1) the bait is quite effective and 100s of carp can be removed in each net per day, 2) the bait (cracked corn) attracts only carp and native fish are not harmed, 2) once in the trap, the carp cannot escape (because the net has mesh bottom) which prevents them from learning how to avoid it the next time. Escape from nets is a big disadvantage of winter seining where carp can quickly learn how to avoid this particular gear.

Using relatively small nets (30 x 30 feet) were able to capture, on average, 175 carp per single box net lift in Long Lake in 2016. On some days, catch rates exceeded 500 per net. We believe that if larger and more nets were used, and if two crews of two people are hired to run the nets, we might be able to capture ~ 1,000 a day or more, which would bring the cost of carp management to approximately \$1.5 per adult carp removed, a cost comparable if not lower than winter seining. This effort is also much easier to coordinate as a crew of 2-4 people is able to work up to 4 traps in an effective manner.

We propose a dedicated effort to determine if a systematic use of 4 large box nets (30 x 60 feet) is able to remove carp at high rates and in a more economical way than other approaches. Our goal would be to remove 10,000 carp at a cost of no more than ~\$1.5 per fish.

Budget

Carp Solutions:

1. Up to 15 days of work in the field to trap carp with box nets and remove them from Long lake; 15 days x 8 x 140 (crew of 4 people) = **\$16,800.**
2. Mileage : 15 round trips X 19 miles per trip X 2 vehicles X \$0.54/mile = **\$308**

RCWD:

Corn: Approximately 260 bags X \$7.50/bag = ~\$1,950

In-kind: bait sites with corn for ~ 20 days (~ 3 h each day); Arrange for carp disposal.

Objective 3. Determine carp recruitment in Lino Lakes

The rates with which carp produce offspring in Lino lakes is of critical importance. It varies from year-to-year. For example, 2015 was a high recruitment year but 2016 was not. We propose a late-summer survey in each Lino Lake to determine if carp recruited in 2017. This information will also be important for effective use of the electric deterrent system at Hodgson Rd (Objective 1).

Budget

Carp Solutions:

1. Trap net surveys in 5 lakes: \$800 x 5 = **\$4,000**
2. 7 round trips X 31 miles/trip X \$0.54/mile = **\$117**

Rice Creek:

None

Objective 4. Determine changes in length and age structure in Long Lake in fall 2017.

Electrofishing surveys of carp in Long Lake in the fall of 2017 to capture end-of-season population abundance, length and age structure. These surveys are important to monitor how many juvenile carp move down to Long lake each year.

Budget**Carp Solutions:**

1. 1 day of boat electrofishing: **\$2,000**
2. Ageing of 20 small carp to determine recruitment: $20 \times 0.5 \times \$140 = \mathbf{\$1,400}$
3. Mileage: 1 round trip X 19 miles X \$0.54/mile = **\$10**

Rice Creek:

None.

Objective 5: Report and analysis.

Budget

Carp Solutions: $20 \text{ h} \times \$140 = \$2,800$

Rice Creek:

None.

References.

Bajer, P. G., H. Lim, M. J. Travaline, B. D. Miller, and P. W. Sorensen. 2010. Cognitive aspects of food searching behavior in free-ranging wild Common Carp. *Environmental Biology of Fishes* **88**:295-300.