STATE OF MICHIGAN
ENTERPRISE PROCUREMENT

Department of Technology, Management, and Budget
525 W. ALLEGAN ST., LANSING, MICHIGAN 48913
P.O. BOX 30026 LANSING, MICHIGAN 48909

CONTRACT CHANGE NOTICE

Change Notice Number **1**
to
Contract Number **071B5500003**

CONTRACTOR	
	GREAT LAKES COMMISSION
	2805 South Industrial Highway
	Ann Arbor, MI 48104-6791
	Laura Kaminski
	734-971-9135 x124
	laurak@glc.org
	*******7814

STATE			
	Program Manager	Marcy Knoll Wilmes	DEQ
		(517) 284-5544	
		KnollM@Michigan.gov	
	Contract Administrator	Dan Stevens	DTMB
		(517) 284-7049	
		StevensD6@michigan.gov	

CONTRACT SUMMARY			
DESCRIPTION: Great Lakes Commission			
INITIAL EFFECTIVE DATE	**INITIAL EXPIRATION DATE**	**INITIAL AVAILABLE OPTIONS**	**EXPIRATION DATE BEFORE CHANGE(S) NOTED BELOW**
October 1, 2014	September 30, 2017	2 - 1 Year	September 30, 2017
PAYMENT TERMS		**DELIVERY TIMEFRAME**	
NET 45		N/A	
ALTERNATE PAYMENT OPTIONS			**EXTENDED PURCHASING**
☐ P-card	☐ Direct Voucher (DV)	☐ Other	☐ Yes ☒ No
MINIMUM DELIVERY REQUIREMENTS			
N/A			

DESCRIPTION OF CHANGE NOTICE				
OPTION	**LENGTH OF OPTION**	**EXTENSION**	**LENGTH OF EXTENSION**	**REVISED EXP. DATE**
☒	Two years	☐		September 30, 2019
CURRENT VALUE	**VALUE OF CHANGE NOTICE**		**ESTIMATED AGGREGATE CONTRACT VALUE**	
$ 695,000.00	$ 15,000.00		$ 710,000.00	

DESCRIPTION: Effective July 12, 2016 the State is exercising the two option years on the Contract, and is increased by $15,000.00. The revised Contract expiration date is September 30, 2019. Please note the Contract Administrator has changed to Dan Stevens per (Section 2. Notices and Section 3. Contract Administrator) All other terms, conditions, specifications, and pricing remain the same. Per vendor and agency agreement, and DTMB Procurement approval.

Form No. DTMB-3522 (Rev. 4/2012)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Contract will not be executed unless form is filed

STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
PROCUREMENT
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

NOTICE
OF
CONTRACT NO. 071B5500003
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF CONTRACTOR:	PRIMARY CONTACT	EMAIL
Great Lakes Commission	Laura Kaminski	LauraK@glc.org
2805 South Industrial Highway, Suite 100	**TELEPHONE**	**CONTRACTOR #, MAIL CODE**
Ann Arbor, MI 48104-6791	734-971-9135 x124	

STATE CONTACTS	AGENCY	NAME	PHONE	EMAIL
CONTRACT COMPLIANCE INSPECTOR:	DEQ	William Dimond	517-241-9003	dimondw@michigan.gov
BUYER:	DTMB	Brandon Samuel	517-284-7025	samuelb@michigan.gov

CONTRACT SUMMARY:

DESCRIPTION:

Continuance and Enhancement of the Michigan Clean Water Corps

INITIAL TERM	EFFECTIVE DATE	INITIAL EXPIRATION DATE	AVAILABLE OPTIONS
Three years	October 1, 2014	September 30, 2017	2, one year
PAYMENT TERMS	**F.O.B**	**SHIPPED**	**SHIPPED FROM**
Net 45	N/A	N/A	N/A

ALTERNATE PAYMENT OPTIONS:			AVAILABLE TO MiDEAL PARTICIPANTS	
☐ P-card	☐ Direct Voucher (DV)	☐ Other	☐ YES	☒ NO

MINIMUM DELIVERY REQUIREMENTS:

N/A

MISCELLANEOUS INFORMATION:

N/A

ESTIMATED CONTRACT VALUE AT TIME OF EXECUTION:	$695,000.00

Form No. DTMB-3522 (Rev. 4/2012)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Contract will not be executed unless form is filed

STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
PROCUREMENT
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CONTRACT NO. 071B5500003
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF CONTRACTOR:	PRIMARY CONTACT	EMAIL
Great Lakes Commission **2805 South Industrial Highway, Suite 100** **Ann Arbor, MI 48104-6791**	Laura Kaminski	LauraK@glc.org
	TELEPHONE	**CONTRACTOR #, MAIL CODE**
	734-971-9135 x124	

STATE CONTACTS	AGENCY	NAME	PHONE	EMAIL
CONTRACT COMPLIANCE INSPECTOR:	DEQ	William Dimond	517-241-9003	dimondw@michigan.gov
BUYER:	DTMB	Brandon Samuel	517-284-7025	samuelb@michigan.gov

CONTRACT SUMMARY:

DESCRIPTION:

Continuance and Enhancement of the Michigan Clean Water Corps

INITIAL TERM	EFFECTIVE DATE	INITIAL EXPIRATION DATE	AVAILABLE OPTIONS
Three years	10/1/14	9/30/17	Two one-year options
PAYMENT TERMS	**F.O.B**	**SHIPPED**	**SHIPPED FROM**
Net 45	N/A	N/A	N/A
ALTERNATE PAYMENT OPTIONS:			AVAILABLE TO MiDEAL PARTICIPANTS
☐ P-card ☐ Direct Voucher (DV) ☐ Other			☐ YES ☒ NO

MINIMUM DELIVERY REQUIREMENTS:

N/A

MISCELLANEOUS INFORMATION:

N/A

ESTIMATED CONTRACT VALUE AT TIME OF EXECUTION:	$695,000.00

THIS IS NOT AN ORDER: This Contract Agreement is awarded on the basis of our inquiry bearing the solicitation #007114B0002578**. Orders for delivery will be issued directly by the Department of Technology, Management & Budget through the issuance of a Purchase Order Form.**

Notice of Contract #: 071B5500003

FOR THE CONTRACTOR:	**FOR THE STATE:**
Great Lakes Commission	
Firm Name	Signature Sharon Walenga-Maynard, Sourcing Director
Authorized Agent Signature	Name/Title
	Department of Technology, Management & Budget
Authorized Agent (Print or Type)	Enter Name of Agency
Date	Date

STATE OF MICHIGAN
Department of Technology, Management and Budget
Procurement

Continuance and Enhancement of the Michigan Clean Water Corps
Contract No.071B5500003

Buyer Name: Brandon Samuel
Telephone Number: (517) 284-7025
DTMB-Procurement Telephone Number: (855) 647-8724
E-Mail Address: samuelb@michigan.gov

This is Contract for Continuance and Enhancement of the Michigan Clean Water Corps (MCWC) commonly referred to as MiCorps) volunteer inland lakes and river monitoring programs and elements of the Volunteer, River, Stream Creek Cleanup Program described in Article I.

STATE OF MICHIGAN

STANDARD CONTRACT TERMS

This STANDARD CONTRACT ("**Contract**") is agreed to between the State of Michigan (the "**State**") and the awarded Contractor, Great Lakes Commission, a Michigan Company. This Contract is effective on October 1, 2014 ("**Effective Date**"), and unless terminated, expires on September 30, 2017.

This Contract may be renewed for up to two additional one year period(s). Renewal must be by written agreement of the parties.

The parties agree as follows:

1. **Duties of Contractor.** Contractor must perform the services and provide the deliverables described in **Exhibit A – Statement of Work** (the "**Contract Activities**"). An obligation to provide delivery of any commodity is considered a service and is a Contract Activity.

   Contractor must furnish all labor, equipment, materials, and supplies necessary for the performance of the Contract Activities, and meet operational standards, unless otherwise specified in Exhibit A.

   Contractor must: (a) perform the Contract Activities in a timely, professional, safe, and workmanlike manner consistent with standards in the trade, profession, or industry; (b) meet or exceed the performance and operational standards, and specifications of the Contract; (c) provide all Contract Activities in good quality, with no material defects; (d) not interfere with the State's operations; (e) obtain and maintain all necessary licenses, permits or other authorizations necessary for the performance of the Contract; (f) cooperate with the State, including the State's quality assurance personnel, and any third party to achieve the objectives of the Contract; (g) return to the State any State-furnished equipment or other resources in the same condition as when provided when no longer required for the Contract; (h) not make any media releases without prior written authorization from the State; (i) assign to the State any claims resulting from state or federal antitrust violations to the extent that those violations concern materials or services supplied by third parties toward fulfillment of the Contract; (j) comply with all State physical and IT security policies and standards which will be made available upon request; and (k) provide the State priority in performance of the Contract except as mandated by federal disaster response requirements. Any breach under this paragraph is considered a material breach.

   Contractor must also be clearly identifiable while on State property by wearing identification issued by the State, and clearly identify themselves whenever making contact with the State.

2. **Notices.** All notices and other communications required or permitted under this Contract must be in writing and will be considered given and received: (a) when verified by written receipt if sent by courier; (b) when actually received if sent by mail without verification of receipt; or (c) when verified by automated receipt or electronic logs if sent by facsimile or email.

If to State:	*If to Contractor:*
Brandon Samuel 525 W. Allegan St. 1st Floor Lansing, MI samuelbmichigan.gov (517) 284-7025	Laura Kaminski 2805 S. Industrial Hwy., Suite 100 Ann Arbor, MI 48104 laurak@glc.org (734) 971-9135

3. **Contract Administrator.** The Contract Administrator for each party is the only person authorized to modify any terms and conditions of this Contract (each a "**Contract Administrator**"):

If to State:	If to Contractor:
Brandon Samuel 525 W. Allegan St. 1st Floor Lansing, MI samuelbmichigan.gov (517) 284-7025	Laura Kaminski 2805 S. Industrial Hwy., Suite 100 Ann Arbor, MI 48104 laurak@glc.org (734) 971-9135

4. Program Manager. The Program Manager for each party will monitor and coordinate the day-to-day activities of the Contract (each a "**Program Manager**"):

If to State:	If to Contractor:
William F. Dimond P.O. Box 30458 Lansing, MI 48909 dimondw@michigan.gov (517) 241-9003	Laura Kaminski 2805 S. Industrial Hwy., Suite 100 Ann Arbor, MI 48104 laurak@glc.org (734) 971-9135

5. Performance Guarantee. Contractor must at all times have financial resources sufficient, in the opinion of the State, to ensure performance of the Contract and must provide proof upon request. The State may require a performance bond if, in the opinion of the State, it will ensure performance of the Contract.

6. **Insurance Requirements.** Contractor must maintain the insurances identified below and is responsible for all deductibles. All required insurance must: (a) protect the State from claims that may arise out of, are alleged to arise out of, or result from Contractor's or a subcontractor's performance; (b) be primary and non-contributing to any comparable liability insurance (including self-insurance) carried by the State; and (c) be provided by an company with an A.M. Best rating of "A" or better and a financial size of VII or better.

Insurance Type	Additional Requirements
Commercial General Liability Insurance	
Minimal Limits: $1,000,000 Each Occurrence Limit $1,000,000 Personal & Advertising Injury Limit $2,000,000 General Aggregate Limit $2,000,000 Products/Completed Operations Deductible Maximum: $50,000 Each Occurrence	Contractor must have their policy: (1) endorsed to add "the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees, and agents" as additional insureds using endorsement CG 20 10 11 85, or both CG 2010 07 04 and CG 2037 07 04; (2) include a waiver of subrogation; and (3) for a claims-made policy, provide 3 years of tail coverage.
Motor Vehicle Insurance	
Minimal Limits: $1,000,000 Per Occurrence	
Workers' Compensation Insurance	
Minimal Limits: Coverage according to applicable laws governing work activities.	Waiver of subrogation, except where waiver is prohibited by law.
Employers Liability Insurance	
Minimal Limits: $100,000 Each Accident $100,000 Each Employee by Disease $500,000 Aggregate Disease.	

If Contractor's policy contains limits higher than the minimum limits, the State is entitled to coverage to the extent of the higher limits. The minimum limits are not intended, and may not be construed to limit any liability or indemnity of Contractor to any indemnified party or other persons.

Contractor must: (a) provide insurance certificates to the Contract Administrator, containing the agreement or purchase order number, at Contract formation and within 20 calendar days of the expiration date of the applicable policies; (b) require that subcontractors maintain the required insurances contained in this Section; (c) notify the

Contract Administrator within 5 business days if any insurance is cancelled; and (d) waive all rights against the State for damages covered by insurance. Failure to maintain the required insurance does not limit this waiver.

7. **Reserved.**
8. **Reserved.**

7. **Independent Contractor.** Contractor is an independent contractor and assumes all rights, obligations and liabilities set forth in this Contract. Contractor, its employees, and agents will not be considered employees of the State. No partnership or joint venture relationship is created by virtue of this Contract. Contractor, and not the State, is responsible for the payment of wages, benefits and taxes of Contractor's employees and any subcontractors. Prior performance does not modify Contractor's status as an independent contractor.

8. **Subcontracting.** Contractor may not delegate any of its obligations under the Contract without the prior written approval of the State. Contractor must notify the State at least 90 calendar days before the proposed delegation, and provide the State any information it requests to determine whether the delegation is in its best interest. If approved, Contractor must: (a) be the sole point of contact regarding all contractual matters, including payment and charges for all Contract Activities; (b) make all payments to the subcontractor; and (c) incorporate the terms and conditions contained in this Contract in any subcontract with a subcontractor. Contractor remains responsible for the completion of the Contract Activities, compliance with the terms of this Contract, and the acts and omissions of the subcontractor. The State, in its sole discretion, may require the replacement of any subcontractor.

9. **Staffing.** The State's Contract Administrator may require Contractor to remove or reassign personnel by providing a notice to Contractor.

10. **Background Checks.** Upon request, Contractor must perform background checks on all employees and subcontractors and its employees prior to their assignment. The scope is at the discretion of the State and documentation must be provided as requested. Contractor is responsible for all costs associated with the requested background checks. The State, in its sole discretion, may also perform background checks.

11. **Assignment.** Contractor may not assign this Contract to any other party without the prior approval of the State. Upon notice to Contractor, the State, in its sole discretion, may assign in whole or in part, its rights or responsibilities under this Contract to any other party. If the State determines that a novation of the Contract to a third party is necessary, Contractor will agree to the novation, provide all necessary documentation and signatures, and continue to perform, with the third party, its obligations under the Contract.

12. **Change of Control.** Contractor will notify, at least 90 calendar days before the effective date, the State of a change in Contractor's organizational structure or ownership. For purposes of this Contract, a change in control means any of the following: (a) a sale of more than 50% of Contractor's stock; (b) a sale of substantially all of Contractor's assets; (c) a change in a majority of Contractor's board members; (d) consummation of a merger or consolidation of Contractor with any other entity; (e) a change in ownership through a transaction or series of transactions; (f) or the board (or the stockholders) approves a plan of complete liquidation. A change of control does not include any consolidation or merger effected exclusively to change the domicile of Contractor, or any transaction or series of transactions principally for bona fide equity financing purposes.

    In the event of a change of control, Contractor must require the successor to assume this Contract and all of its obligations under this Contract.

13. **Reserved.**

14. **Acceptance.** Contract Activities are subject to inspection and testing by the State within 30 calendar days of the State's receipt of them ("**State Review Period**"), unless otherwise provided in Exhibit A. If the Contract Activities are not fully accepted by the State, the State will notify Contractor by the end of the State Review Period that either: (a) the Contract Activities are accepted, but noted deficiencies must be corrected; or (b) the Contract Activities are rejected. If the State finds material deficiencies, it may: (i) reject the Contract Activities without performing any further inspections; (ii) demand performance at no additional cost; or (iii) terminate this Contract in accordance with Section 17, Termination for Cause.

    Within 10 business days from the date of Contractor's receipt of notification of acceptance with deficiencies or

rejection of any Contract Activities, Contractor must cure, at no additional cost, the deficiency and deliver unequivocally acceptable Contract Activities to the State. If acceptance with deficiencies or rejection of the Contract Activities impacts the content or delivery of other non-completed Contract Activities, the parties' respective Program Managers must determine an agreed to number of days for re-submission that minimizes the overall impact to the Contract. However, nothing herein affects, alters, or relieves Contractor of its obligations to correct deficiencies in accordance with the time response standards set forth in this Contract.

If Contractor is unable or refuses to correct the deficiency within the time response standards set forth in this Contract, the State may cancel the order in whole or in part. The State, or a third party identified by the State, may perform the Contract Activities and recover the difference between the cost to cure and the Contract price plus an additional 10% administrative fee.

15. **Risk of Loss and Title.** Until final acceptance, title and risk of loss or damage to Contract Activities remains with Contractor. Contractor is responsible for filing, processing, and collecting all damage claims. The State will record and report to Contractor any evidence of visible damage. If the State rejects the Contract Activities, Contractor must remove them from the premises within 10 calendar days after notification of rejection. The risk of loss of rejected or non-conforming Contract Activities remains with Contractor. Rejected Contract Activities not removed by Contractor within 10 calendar days will be deemed abandoned by Contractor, and the State will have the right to dispose of it as its own property. Contractor must reimburse the State for costs and expenses incurred in storing or effecting removal or disposition of rejected Contract Activities.

16. **Warranty Period**. The warranty period, if applicable, for Contract Activities is a fixed period. If the Contract Activities do not function as warranted during the warranty period the State may return such non-conforming Contract Activities to the Contractor for a full refund.

17. **Terms of Payment.** Invoices must conform to the requirements communicated from time-to-time by the State. All undisputed amounts are payable within 45 days of the State's receipt. Contractor may only charge for Contract Activities performed as specified in Exhibit A. Invoices must include an itemized statement of all charges. The State is exempt from State sales tax for direct purchases and may be exempt from federal excise tax, if Contract Activities purchased under the Contract are for the State's exclusive use. Prices are exclusive of all taxes, and Contractor is solely responsible for payment of any applicable taxes.

    The State has the right to withhold payment of any disputed amounts until the parties agree as to the validity of the disputed amount. The State will notify Contractor of any dispute within a reasonable time. Payment by the State will not constitute a waiver of any rights as to Contractor's continuing obligations, including claims for deficiencies or substandard Contract Activities. Contractor's acceptance of final payment by the State constitutes a waiver of all claims by Contractor against the State for payment under this Contract, other than those claims previously filed in writing on a timely basis and still disputed.

    The State will only disburse payments under this Contract through Electronic Funds Transfer (EFT). Contractor must register with the State at http://www.michigan.gov/cpexpress to receive electronic fund transfer payments. If Contractor does not register, the State is not liable for failure to provide payment.

    Without prejudice to any other right or remedy it may have, the State reserves the right to set off at any time any amount then due and owing to it by Contractor against any amount payable by the State to Contractor under this Contract.

18. **Reserved.**

19. **Stop Work Order.** The State may suspend any or all activities under the Contract at any time. The State will provide Contractor a written stop work order detailing the suspension. Contractor must comply with the stop work order upon receipt. Within 90 calendar days, or any longer period agreed to by Contractor, the State will either: (a) issue a notice authorizing Contractor to resume work, or (b) terminate the Contract or purchase order. The State will not pay for Contract Activities, Contractor's lost profits, or any additional compensation during a stop work period.

20. **Termination for Cause.** The State may terminate this Contract for cause, in whole or in part, if Contractor, as determined by the State: (a) endangers the value, integrity, or security of any location, data, or personnel; (b) becomes insolvent, petitions for bankruptcy court proceedings, or has an involuntary bankruptcy proceeding filed against it by any creditor; (c) engages in any conduct that may expose the State to liability; (d) breaches any of its material duties or obligations; or (e) fails to cure a breach within the time stated in a notice of breach. Any reference to specific breaches being material breaches within this Contract will not be construed to mean that other breaches are not material.

    If the State terminates this Contract under this Section, the State will issue a termination notice specifying whether Contractor must: (a) cease performance immediately, or (b) continue to perform for a specified period. If it is later determined that Contractor was not in breach of the Contract, the termination will be deemed to have been a Termination for Convenience, effective as of the same date, and the rights and obligations of the parties will be limited to those provided in Section 24, Termination for Convenience.
    The State will only pay for amounts due to Contractor for Contract Activities accepted by the State on or before the date of termination, subject to the State's right to set off any amounts owed by the Contractor for the State's reasonable costs in terminating this Contract. The Contractor must pay all reasonable costs incurred by the State in terminating this Contract for cause, including administrative costs, attorneys' fees, court costs, transition costs, and any costs the State incurs to procure the Contract Activities from other sources.

21. **Termination for Convenience.** The State may immediately terminate this Contract in whole or in part without penalty and for any reason, including but not limited to, appropriation or budget shortfalls. The termination notice will specify whether Contractor must: (a) cease performance of the Contract Activities immediately, or (b) continue to perform the Contract Activities in accordance with Section **Error! Reference source not found.**, Transition Responsibilities. If the State terminates this Contract for convenience, the State will pay all reasonable costs, as determined by the State, for State approved Transition Responsibilities.

22. **Transition Responsibilities.** Upon termination or expiration of this Contract for any reason, Contractor must, for a period of time specified by the State (not to exceed 90 calendar days), provide all reasonable transition assistance requested by the State, to allow for the expired or terminated portion of the Contract Activities to continue without interruption or adverse effect, and to facilitate the orderly transfer of such Contract Activities to the State or its designees. Such transition assistance may include, but is not limited to: (a) continuing to perform the Contract Activities at the established Contract rates; (b) taking all reasonable and necessary measures to transition performance of the work, including all applicable Contract Activities, training, equipment, software, leases, reports and other documentation, to the State or the State's designee; (c) taking all necessary and appropriate steps, or such other action as the State may direct, to preserve, maintain, protect, or return to the State all materials, data, property, and confidential information provided directly or indirectly to Contractor by any entity, agent, vendor, or employee of the State; (d) transferring title in and delivering to the State, at the State's discretion, all completed or partially completed deliverables prepared under this Contract as of the Contract termination date; and (e) preparing an accurate accounting from which the State and Contractor may reconcile all outstanding accounts (collectively, "**Transition Responsibilities**"). This Contract will automatically be extended through the end of the transition period.

23. **General Indemnification.** Contractor must defend, indemnify and hold the State, its departments, divisions, agencies, offices, commissions, officers, and employees harmless, without limitation, from and against any and all actions, claims, losses, liabilities, damages, costs, attorney fees, and expenses (including those required to establish the right to indemnification), arising out of or relating to: (a) any breach by Contractor (or any of Contractor's employees, agents, subcontractors, or by anyone else for whose acts any of them may be liable) of any of the promises, agreements, representations, warranties, or insurance requirements contained in this Contract; (b) any infringement, misappropriation, or other violation of any intellectual property right or other right of any third party; (c) any bodily injury, death, or damage to real or tangible personal property occurring wholly or in part due to action or inaction by Contractor (or any of Contractor's employees, agents, subcontractors, or by anyone else for whose acts any of them may be liable); and (d) any acts or omissions of Contractor (or any of Contractor's employees, agents, subcontractors, or by anyone else for whose acts any of them may be liable).

    The State will notify Contractor in writing if indemnification is sought; however, failure to do so will not relieve Contractor, except to the extent that Contractor is materially prejudiced. Contractor must, to the satisfaction of the State, demonstrate its financial ability to carry out these obligations.

The State is entitled to: (i) regular updates on proceeding status; (ii) participate in the defense of the proceeding; (iii) employ its own counsel; and to (iv) retain control of the defense if the State deems necessary. Contractor will not, without the State's written consent (not to be unreasonably withheld), settle, compromise, or consent to the entry of any judgment in or otherwise seek to terminate any claim, action, or proceeding. To the extent that any State employee, official, or law may be involved or challenged, the State may, at its own expense, control the defense of that portion of the claim.

Any litigation activity on behalf of the State, or any of its subdivisions under this Section, must be coordinated with the Department of Attorney General. An attorney designated to represent the State may not do so until approved by the Michigan Attorney General and appointed as a Special Assistant Attorney General.

24. **Infringement Remedies.** If, in either party's opinion, any piece of equipment, software, commodity, or service supplied by Contractor or its subcontractors, or its operation, use or reproduction, is likely to become the subject of a copyright, patent, trademark, or trade secret infringement claim, Contractor must, at its expense: (a) procure for the State the right to continue using the equipment, software, commodity, or service, or if this option is not reasonably available to Contractor, (b) replace or modify the same so that it becomes non-infringing; or (c) accept its return by the State with appropriate credits to the State against Contractor's charges and reimburse the State for any losses or costs incurred as a consequence of the State ceasing its use and returning it.

25. **Limitation of Liability.** The State is not liable for consequential, incidental, indirect, or special damages, regardless of the nature of the action.

26. **Disclosure of Litigation, or Other Proceeding.** Contractor must notify the State within 14 calendar days of receiving notice of any litigation, investigation, arbitration, or other proceeding (collectively, "**Proceeding**") involving Contractor, a subcontractor, or an officer or director of Contractor or subcontractor, that arises during the term of the Contract, including: (a) a criminal Proceeding; (b) a parole or probation Proceeding; (c) a Proceeding under the Sarbanes-Oxley Act; (d) a civil Proceeding involving: (1) a claim that might reasonably be expected to adversely affect Contractor's viability or financial stability; or (2) a governmental or public entity's claim or written allegation of fraud; or (e) a Proceeding involving any license that Contractor is required to possess in order to perform under this Contract.

27. **State Data.** All data and information provided to Contractor by or on behalf of the State, and all data and information derived therefrom, is the exclusive property of the State ("**State Data**"); this definition is to be construed as broadly as possible. Upon request, Contractor must provide to the State, or a third party designated by the State, all State Data within 10 calendar days of the request and in the format requested by the State. Contractor will assume all costs incurred in compiling and supplying State Data. No State Data may be used for any marketing purposes.

28. **Reserved.**

29. **Non-Disclosure of Confidential Information**. The parties acknowledge that each party may be exposed to or acquire communication or data of the other party that is confidential, privileged communication not intended to be disclosed to third parties. The provisions of this Section survive the termination of this Contract.

    a. Meaning of Confidential Information. For the purposes of this Contract, the term "**Confidential Information**" means all information and documentation of a party that: (a) has been marked "confidential" or with words of similar meaning, at the time of disclosure by such party; (b) if disclosed orally or not marked "confidential" or with words of similar meaning, was subsequently summarized in writing by the disclosing party and marked "confidential" or with words of similar meaning; and, (c) should reasonably be recognized as confidential information of the disclosing party. The term "Confidential Information" does not include any information or documentation that was: (a) subject to disclosure under the Michigan Freedom of Information Act (FOIA); (b) already in the possession of the receiving party without an obligation of confidentiality; (c) developed independently by the receiving party, as demonstrated by the receiving party, without violating the disclosing party's proprietary rights; (d) obtained from a source other than the disclosing party without an obligation of confidentiality; or, (e) publicly available when received, or thereafter became publicly available (other than through any unauthorized disclosure by, through, or on behalf of, the receiving party). For purposes of this Contract, in all cases and for all matters, State Data is deemed to be Confidential Information.

b. Obligation of Confidentiality. The parties agree to hold all Confidential Information in strict confidence and not to copy, reproduce, sell, transfer, or otherwise dispose of, give or disclose such Confidential Information to third parties other than employees, agents, or subcontractors of a party who have a need to know in connection with this Contract or to use such Confidential Information for any purposes whatsoever other than the performance of this Contract. The parties agree to advise and require their respective employees, agents, and subcontractors of their obligations to keep all Confidential Information confidential. Disclosure to a subcontractor is permissible where: (a) use of a subcontractor is authorized under this Contract; (b) the disclosure is necessary or otherwise naturally occurs in connection with work that is within the subcontractor's responsibilities; and (c) Contractor obligates the subcontractor in a written contract to maintain the State's Confidential Information in confidence. At the State's request, any employee of Contractor or any subcontractor may be required to execute a separate agreement to be bound by the provisions of this Section.

c. Cooperation to Prevent Disclosure of Confidential Information. Each party must use its best efforts to assist the other party in identifying and preventing any unauthorized use or disclosure of any Confidential Information. Without limiting the foregoing, each party must advise the other party immediately in the event either party learns or has reason to believe that any person who has had access to Confidential Information has violated or intends to violate the terms of this Contract and each party will cooperate with the other party in seeking injunctive or other equitable relief against any such person.

d. Remedies for Breach of Obligation of Confidentiality. Each party acknowledges that breach of its obligation of confidentiality may give rise to irreparable injury to the other party, which damage may be inadequately compensable in the form of monetary damages. Accordingly, a party may seek and obtain injunctive relief against the breach or threatened breach of the foregoing undertakings, in addition to any other legal remedies which may be available, to include, in the case of the State, at the sole election of the State, the immediate termination, without liability to the State, of this Contract or any Statement of Work corresponding to the breach or threatened breach.

e. Surrender of Confidential Information upon Termination. Upon termination of this Contract or a Statement of Work, in whole or in part, each party must, within 5 calendar days from the date of termination, return to the other party any and all Confidential Information received from the other party, or created or received by a party on behalf of the other party, which are in such party's possession, custody, or control; provided, however, that Contractor must return State Data to the State following the timeframe and procedure described further in this Contract. Should Contractor or the State determine that the return of any non-State Data Confidential Information is not feasible, such party must destroy the non-State Data Confidential Information and must certify the same in writing within 5 calendar days from the date of termination to the other party.

30. Reserved.

31. Reserved.

32. Reserved

33. Records Maintenance, Inspection, Examination, and Audit. The State or its designee may audit Contractor to verify compliance with this Contract. Contractor must retain, and provide to the State or its designee and the auditor general upon request, all financial and accounting records related to the Contract through the term of the Contract and for 7 years after the latter of termination, expiration, or final payment under this Contract or any extension ("**Audit Period**"). If an audit, litigation, or other action involving the records is initiated before the end of the Audit Period, Contractor must retain the records until all issues are resolved.

Within 10 calendar days of providing notice, the State and its authorized representatives or designees have the right to enter and inspect Contractor's premises or any other places where Contract Activities are being performed, and examine, copy, and audit all records related to this Contract. Contractor must cooperate and provide reasonable assistance. If any financial errors are revealed, the amount in error must be reflected as a credit or debit on subsequent invoices until the amount is paid or refunded. Any remaining balance at the end of the Contract must be paid or refunded within 45 calendar days.

This Section applies to Contractor, any parent, affiliate, or subsidiary organization of Contractor, and any subcontractor that performs Contract Activities in connection with this Contract.

34. Warranties and Representations. Contractor represents and warrants: (a) Contractor is the owner or licensee of any Contract Activities that it licenses, sells, or develops and Contractor has the rights necessary to convey title, ownership rights, or licensed use; (b) all Contract Activities are delivered free from any security interest, lien, or encumbrance and will continue in that respect; (c) the Contract Activities will not infringe the patent, trademark, copyright, trade secret, or other proprietary rights of any third party; (d) Contractor must assign or otherwise transfer to the State or its designee any manufacturer's warranty for the Contract Activities; (e) the Contract Activities are merchantable and fit for the specific purposes identified in the Contract; (f) the Contract signatory has the authority to enter into this Contract; (g) all information furnished by Contractor in connection with the Contract fairly and accurately represents Contractor's business, properties, finances, and operations as of the dates covered by the information, and Contractor will inform the State of any material adverse changes; and (h) all information furnished and representations made in connection with the award of this Contract is true, accurate, and complete, and contains no false statements or omits any fact that would make the information misleading. A breach of this Section is considered a material breach of this Contract, which entitles the State to terminate this Contract under Section **Error! Reference source not found.**, Termination for Cause.

35. Conflicts and Ethics. Contractor will uphold high ethical standards and is prohibited from: (a) holding or acquiring an interest that would conflict with this Contract; (b) doing anything that creates an appearance of impropriety with respect to the award or performance of the Contract; (c) attempting to influence or appearing to influence any State employee by the direct or indirect offer of anything of value; or (d) paying or agreeing to pay any person, other than employees and consultants working for Contractor, any consideration contingent upon the award of the Contract. Contractor must immediately notify the State of any violation or potential violation of these standards. This Section applies to Contractor, any parent, affiliate, or subsidiary organization of Contractor, and any subcontractor that performs Contract Activities in connection with this Contract.

36. Compliance with Laws. Contractor must comply with all federal, state and local laws, rules and regulations.

37. Reserved.

38. Nondiscrimination. Under the Elliott-Larsen Civil Rights Act, 1976 PA 453, MCL 37.2101, *et seq*., and the Persons with Disabilities Civil Rights Act, 1976 PA 220, MCL 37.1101, *et seq*., Contractor and its subcontractors agree not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, marital status, or mental or physical disability. Breach of this covenant is a material breach of this Contract.

39. Unfair Labor Practice. Under MCL 423.324, the State may void any Contract with a Contractor or subcontractor who appears on the Unfair Labor Practice register complied under MCL 423.322.

40. Governing Law. This Contract is governed, construed, and enforced in accordance with Michigan law, excluding choice-of-law principles, and all claims relating to or arising out of this Contract are governed by Michigan law, excluding choice-of-law principles. Any dispute arising from this Contract must be resolved in Michigan Court of Claims. Contractor consents to venue in Ingham County, and waives any objections, such as lack of personal jurisdiction or *forum non conveniens*. Contractor must appoint agents in Michigan to receive service of process.

41. Non-Exclusivity. Nothing contained in this Contract is intended nor will be construed as creating any requirements contract with Contractor. This Contract does not restrict the State or its agencies from acquiring similar, equal, or like Contract Activities from other sources.

42. Force Majeure. Neither party will be in breach of this Contract because of any failure arising from any disaster or acts of god that are beyond their control and without their fault or negligence. Each party will use commercially reasonable efforts to resume performance. Contractor will not be relieved of a breach or delay caused by its subcontractors. If immediate performance is necessary to ensure public health and safety, the State may immediately contract with a third party.

43. Dispute Resolution. The parties will endeavor to resolve any Contract dispute in accordance with this provision. The dispute will be referred to the parties' respective Contract Administrators or Program Managers. Such referral

must include a description of the issues and all supporting documentation. The parties must submit the dispute to a senior executive if unable to resolve the dispute within 15 business days. The parties will continue performing while a dispute is being resolved, unless the dispute precludes performance. A dispute involving payment does not preclude performance.

Litigation to resolve the dispute will not be instituted until after the dispute has been elevated to the parties' senior executive and either concludes that resolution is unlikely, or fails to respond within 15 business days. The parties are not prohibited from instituting formal proceedings: (a) to avoid the expiration of statute of limitations period; (b) to preserve a superior position with respect to creditors; or (c) where a party makes a determination that a temporary restraining order or other injunctive relief is the only adequate remedy. This Section does not limit the State's right to terminate the Contract.

44. **Media Releases.** News releases (including promotional literature and commercial advertisements) pertaining to the Contract or project to which it relates must not be made without prior written State approval, and then only in accordance with the explicit written instructions of the State.

45. **Website Incorporation.** The State is not bound by any content on Contractor's website unless expressly incorporated directly into this Contract.

46. **Order of Precedence.** In the event of a conflict between the terms and conditions of the Contract, the exhibits, a purchase order, or an amendment, the order of precedence is: (a) the purchase order; (b) the amendment; (c) Exhibit A; (d) any other exhibits; and (e) the Contract.

47. **Severability.** If any part of this Contract is held invalid or unenforceable, by any court of competent jurisdiction, that part will be deemed deleted from this Contract and the severed part will be replaced by agreed upon language that achieves the same or similar objectives. The remaining Contract will continue in full force and effect.
48. **Waiver.** Failure to enforce any provision of this Contract will not constitute a waiver.

49. **Survival.** The provisions of this Contract that impose continuing obligations, including warranties and representations, termination, transition, insurance coverage, indemnification, and confidentiality, will survive the expiration or termination of this Contract.

Entire Contract and Modification. This Contract is the entire agreement and replaces all previous agreements between the parties for the Contract Activities. This Contract may not be amended except by signed agreement between the parties (a "**Contract Change Notice**").

STATE OF MICHIGAN

Contract No.071B5500003
Continuance and Enhancement of the Michigan Clean Water Corps

EXHIBIT A
STATEMENT OF WORK
CONTRACT ACTIVITIES

This exhibit identifies the anticipated requirements of the Contract. The term "Contractor" in this document refers to a Great Lakes Commission.

Background

This Contract is for the continuance and enhancement of the Michigan Clean Water Corps (MCWC) commonly referred to as MiCorps) volunteer inland lakes and river monitoring programs and elements of the Volunteer, River, Stream Creek Cleanup Program (VRSCCP).

Executive Order #2003-15, signed by Governor Jennifer M. Granholm on September 30, 2003, created the Michigan Clean Water Corps as an advisory body to the Michigan Department of Environmental Quality (DEQ). The DEQ is charged with monitoring and protecting water quality (WQ) in Michigan's lakes, rivers, streams, creeks, and wetlands. There are many more water bodies in Michigan whose numbers exceed the capacity of available DEQ staff to assess on an annual basis. Michigan and other states are increasingly dependent upon volunteer monitoring programs to enhance and expand WQ data collection efforts and to provide long-term trend information for assessing the WQ status of the water resources of the state.

The MCWC has been built on a foundation of established volunteer monitoring programs and encourages additional volunteer monitoring programs to join. Michigan has involved citizen volunteers in inland lakes monitoring since 1974 and in the wadeable stream monitoring program since 1998. Many other volunteer groups have programs designed to protect and monitor Michigan surface waters. The intent of the MCWC is to pull together and maintain a volunteer monitoring network to facilitate communication, data and information sharing, define common assessment methods, and quality assurance practices. The intent is to gather and maintain the exchange of reliable and meaningful WQ data for water resource management and protection programs at the state and local level. The MCWC assists the DEQ in carrying out its mission to preserve and protect Michigan's waters from impairment and destruction.

1.0 Requirements

This Contract must provide and continue development, maintenance, enhancement, implementation, and administration of the MCWC Program and elements of the VRSCCP. Specific activities included in the SOW are to: (1) annually enhance, maintain, and implement promotional MCWC components and activities; (2) maintain and update the current publicly accessible Web site (http://www.micorps.net) that includes: [2a] a registry for volunteer organizations, a directory of member organizations, and a listserv; [2b] Informational and educational materials; [2c] MCWC quality assurance program plans (QAPPs); [2d] MCWC web-based data management systems, including the MCWC Data Exchange (MDE), a Structured Query Language (SQL) based platform, including maintaining and facilitating MCWC member use of the MDE and the annual entry of volunteer stream and lake monitoring data; (3) maintain and enhance an annual volunteer monitoring recognition program; (4) organize and conduct an annual volunteer water monitoring workshop; (5) provide and administer the Cooperative Lakes Monitoring Program (CLMP), including annual training and preparation of an annual CLMP summary report by February of the following year; (6) provide and administer the DEQ volunteer stream monitoring grant program (VSMP), including annual training, and annually provide DEQ an up-to-date summary progress report including a description of each grant awarded and current status of the stream monitoring grants; (7) develop, pilot, and implement sampling and analytical protocols for a volunteer stream flow monitoring parameter; (8) develop and implement MCWC training enhancements incorporating new technologies to enhance and facilitate volunteer training; (9) close out the Contract and transfer program operations to DEQ or designated successor at Contract end as needed; and (10) provide and administer the Volunteer River, Stream and Creek Cleanup (VRSCCP) grant program and annually provide DEQ an up to date summary progress report including a description of each grant awarded and current status of the VRSCCP.

Clean Michigan Initiative (CMI), License Plate Fee, and limited General Funds will be used to carry out these activities. Funds will be added each fiscal year of the program contingent on continuing appropriations and successful fulfillment of contractual obligations in the previous year.

1.1 Work and Deliverables

Task 1: MiCorps Promotional Materials
Success of the MiCorps program requires effective promotion. The Contractor must actively promote the program. The Contractor must also maintain and implement current promotional MiCorps components or activities. The Contractor must create and distribute informational material primarily electronically, but where necessary, supplying hard copy when requested. In addition, the Contractor must develop and operate a DEQ-approved MiCorps social media approach.

Contractor must:

1. Update Promotional MiCorps materials as needed throughout the Contract period. This includes the existing CLMP and stream monitoring brochures and the factsheets for each CLMP parameter and stream monitoring technique. This also includes the addition of new factsheets and procedures developed for any new MiCorps monitoring parameters.
2. Develop, implement, and operate a DEQ-approved MiCorps social media approach.
3. Provide DEQ-approved announcements of MiCorps events, products, and accomplishments, as needed throughout the Contract period.
4. Outreach to target audiences.

Task 2: MiCorps Web Site
The Contractor must maintain and upgrade the current MiCorps Web site (www.MiCorps.net) to include all MiCorps elements and serve as a Web site for the volunteer WQ monitoring network and data management. The Web site must include electronic, online enrollment and grant application capability, a registry of volunteer organizations, a directory of member organizations, a listserv to distribute volunteer monitoring announcements and information, a WQ monitoring information and education system, and a WQ data exchange system for the entry and retrieval of lakes and streams monitoring data. The MiCorps Web site and all elements created under the Contract are property of the State, and systems documentation and source code must be provided to the State upon completion of this Contract. At such time, the Contractor must provide an overview in the form of an updated system schema and system documentation report that must include meetings with appropriate State of Michigan staff.

Contractor must:

1. Provide maintenance and periodic updates to the Web site, as necessary, throughout the length of the Contract, including online registration and application pages for various MiCorps components.
2. Coordinate with DEQ and DTMB for a smooth transition of the Web site and MDE prior to the end of the Contract, if required.
3. As necessary, the Contractor must provide DEQ with an updated system schema, system documentation report, and source code and data.
4. The Contractor must also participate in meetings with appropriate State of Michigan staff to facilitate the system's transfer and ensure a smooth transition of these elements.
5. Once the transition is complete, the Contractor must cease to operate the MDE or collect new data, and the system must be offline until the DEQ (or its designee) can resume operating the MDE systems.

Subtask 2a: MiCorps Web-Based Registry, Directory, and Listserv
The Contractor must maintain, host and annually update the Web-based registry for screening and enrolling volunteer WQ monitoring programs in the MiCorps. This must include periodic evaluations of and updates to the criteria for admission to the MiCorps.

The Contractor must maintain and annually upgrade the current Web-based directory of MiCorps member organizations for the duration of the Contract.
The Contractor must maintain the MiCorps listserv and use it to communicate with volunteers and other interested parties. Such communications must include DEQ- approved announcements and news relevant to volunteer monitors. In

addition, the Contractor must use the listserv to convene and query ad-hoc volunteer advisory committees for MiCorps issues at DEQ request.

Contractor must provide:

1. Maintenance of the web-based monitoring program registry and MiCorps member Directory. This must include annual reviews of contact and program information to ensure information is up-to-date.
2. Maintenance and updates to the online MiCorps membership materials and application, as required.
3. Maintenance and operation of the MiCorps listserv.

Subtask 2b: MiCorps Web-Based Information and Education System
The Contractor must maintain and annually update the WQ monitoring information and education (I&E) system as part of the MiCorps Web site. The I&E system must include monitoring methods, volunteer operating procedures, example data forms and training aids established for the MiCorps programs as well as links to other resources of volunteer WQ monitoring information from governmental agencies, nonprofit organizations, and the private sector. Contractor must also add links to water quality and lake management information at DEQ request. Finally, Contractor must develop, implement and operate DEQ-approved Frequently Asked Questions and electronic "submit questions" tools for the website to address volunteer questions.

Contractor must:

1. Provide maintenance and improvement of the web-based I&E system.
2. Develop, maintain, and operate a DEQ-approved frequently-asked questions tool.
3. Develop, maintain, and operate a DEQ-approved "submit questions" tool.

Subtask 2c: MiCorps Quality Assurance Program Plans
The Contractor must maintain and annually update the MiCorps Quality Assurance Program Plan (QAPP) that has been developed for the CLMP as necessary. The MiCorps web site must also include the MiCorps CLMP and stream monitoring grant recipient QAPPs as examples for the WQ monitoring network, as well as links to QAPPs developed by the MiCorps member organizations. All volunteer WQ monitoring programs enrolled in the MiCorps are required to develop an approved QAPP.

Contractor must provide:

1. Maintenance of the quality assurance guidance information on the MiCorps website. This will include updates of the CLMP QAPP as necessary, and review, approval, and posting of MiCorps members' QAPPs to the website via links to the member's website, or directly on the MiCorps website if no member website is available.
2. As a condition of continued membership, Contractor must request members conduct bi-annual reviews of their existing approved QAPPs and make updates as necessary.

Subtask 2d: MiCorps Web-Based Data Management Systems
The Contractor must maintain, enhance, and annually update the data exchange platform as part of the MiCorps Web site. Data collected under the core programs must be accessible via the MiCorps Web site and links to the member organization's data management systems must be maintained for the MiCorps volunteer WQ monitoring network, and for public use. Annual monitoring results and metadata must be included as appropriate. Contractor must also develop and implement a DEQ-approved enhanced presentation of individual lake CLMP data during data searches.

Contractor must:

1. Provide maintenance and continued improvement of the MDE to add to the functionality of the existing data management systems. This must include the addition of new data entry capabilities needed for any new monitoring parameters to MiCorps programs.
2. Provide links to member organizations' online data management systems, as available and appropriate.
3. Develop and implement DEQ-approved enhanced CLMP data presentation for individual lakes during MDE searches.
4. The enhanced presentation must include as appropriate, but is not limited to, parameter data summaries and pop-up charts.
5. Participate in discussions with DEQ and DTMB staff as requested to scope out the potential addition of MiCorps data to the State's MiSWIM System for surface water information.

Task 3: MiCorps Volunteer Monitoring Recognition Program
An important element of any volunteer program is recognition of the volunteer efforts. The Contractor must continue to develop, implement, and maintain an annual Volunteer Monitoring Recognition Program for the duration of the Contract. New MiCorps member organizations (including VSMP "full" grantees – those who received a full award) must receive a Certificate of Recognition, and VSMP "start-up" grantees must receive a Certificate of Participation, at the annual MiCorps fall workshop. The lead volunteer from each lake enrolled in the CLMP must receive a Certification of Participation for their participation in the previous year's field season along with the annual summary report at the annual MiCorps fall Workshop or at the annual CLMP training event the following spring. Volunteers may receive their certificate in the mail if they do not attend either event. Certificates for new MiCorps member organizations to be signed by the DEQ Director must be provided to the DEQ project administrator no later than 30 days prior to the day of presentation.

Contractor must provide:

1. Certificates of Recognition for new MiCorps member groups and Certificates of Participation for start-up grantees at each MiCorps fall workshop.
2. Annual Certificates of Participation from the past CLMP field season for the lead volunteer from each CLMP-enrolled lake and must be distributed along with the annual summary report or at the annual CLMP training event.
3. Contractor must mail certificates to absent volunteers.
4. Certificates for 2017 CLMP lead volunteer participants must be prepared before the end of the Contract for distribution the following spring.
5. Tokens of recognition for Long-Term Contribution must be given to the lead volunteers of CLMP and VSMP member groups that have contributed VSMP or CLMP data for six years or more at the time of the beginning of this Contract, This is a one-time honor to long-term volunteers as we initiate the five-year Certificates, below. Form of token to be decided.
6. Five-year interval tokens of recognition for CLMP lead volunteers and VSMP member groups that continue to provide data to the MDE. Form of token to be decided..

Task 4: MiCorps Annual Volunteer Monitoring Workshop
Contractor must organize and provide an annual one-day MiCorps Volunteer Monitoring Workshop each fall to report on the accomplishments of the volunteer WQ monitoring network, to promote volunteer monitoring, to celebrate the successes of the MiCorps, and to recognize volunteers. The Workshop serves to promote the importance of the MiCorps volunteer and to afford attendees an opportunity to share and exchange their experiences, and discuss lake and stream monitoring issues. The Contractor must plan, organize, promote, coordinate, and implement the Workshop for the duration of the Contract in consultation with the DEQ. The Contractor must finalize the workshop agenda, confirm, reimburse, where necessary, and thank speakers, coordinate meeting facilities, prepare workshop materials, manage registration, handle on-site arrangements, facilitate workshop sessions, and conduct any workshop follow-up elements.

Contractor must provide:

1. Annual fall MiCorps workshop advance planning, coordination and operation of workshops to be held in October 2015 and 2016. The Contractor must reserve the venue for the fall 2017 workshop, must construct the preliminary agenda, must brainstorm a list of possible speakers and discussion, including ad-hoc volunteer advisory committees for MiCorps issues at DEQ request, and must invite speakers. Further work on the fall 2017 Workshop is contingent upon new funds.
2. Workshop materials (e.g., save-the-date, registration form, agenda, evaluation forms, etc.).
3. Workshop promotion and publicity, including a DEQ-approved press release.
4. On-site management of workshop facilities and facilitation of workshop sessions.
5. Workshop follow-up, including proceedings posted online, thanking of speakers, and summaries of workshop evaluations for future workshop planning.

Task 5: Administer the Cooperative Lake Monitoring Program (CLMP)
The CLMP (formerly the Self-Help Program), has been a core component of Michigan's inland lakes monitoring program since 1974. The DEQ and the MLSA, under a Memorandum of Understanding, have jointly administered the program since 1992. A subcontract amount of $25,000 was originally established with MLSA to administer the CLMP. The Contractor must subcontract with MLSA to continue the work MLSA has traditionally performed for the CLMP under the previous Contract.

Working with MLSA, the Contractor must provide and administer the CLMP, including:

1. Administering CLMP logistics including advertisement, enrollment, mailings, and report writing, printing, and distribution.
2. Coordinating the CLMP training programs and annually update training materials posted on the website. The CLMP training of lake monitoring volunteers must occur annually in April, typically with the Michigan Lake and Stream Associations annual Conference prior to the monitoring season, for the duration of the Contract.
3. Maintaining the MiCorps CLMP Clearinghouse.
4. Updating the CLMP Clearinghouse Monthly Activities Plan (MAP) as described below and update the MAP as needed throughout the Contract.
5. Acquiring, building, and distributing, all monitoring equipment and supplies for all CLMP parameters. The current CLMP parameters are:
    a. Spring Phosphorus
    b. Summer Phosphorus
    c. Chlorophyll-a
    d. Secchi Disk Transparency
    e. Dissolved Oxygen/Temperature
    f. Aquatic Plant Mapping
    g. Exotic Aquatic Plant Watch
    h. Lakeshore Development
6. Maintaining, hosting and enhancing the MiCorps Web site online registration process to facilitate annual registration of participating volunteer lakes in the CLMP monitoring program for all CLMP parameters.
7. Coordinating and implementing CLMP sampling logistics including scheduling, mailings, equipment, sample collection, and delivery. This includes maintaining and updating the CLMP Monthly Activities Plan on the web site (Exhibit. D).
8. Coordinating CLMP monitoring activities with other volunteer lake monitoring programs to increase participation and available WQ data as appropriate.
9. Compiling and electronically store all data annually collected in the MDE.
10. Producing a DEQ-approved annual CLMP summary report due out by February of the following year.
11. Maintaining contact, as needed, with DEQ staff to promote communication, program quality and exchange of information and ideas. This must include no less than one monthly phone call with the DEQ Program manager.
12. Promoting CLMP enrollment.
13. Annually reviewing and updating, if needed, the quality assurance project plan for the CLMP.
14. Annually reviewing and updating, if needed, the monitoring procedures for all parameters.
15. Annually updating CLMP training programs for all parameters.
16. Additional DEQ expectations of duties to be performed are described by the Monthly Activities Plan (Exhibit D). And CLMP: Handling Phosporus & Chlorophyll Samples (Exhibit E). The dates the duties are performed may vary from the month described as long as the overall tasks are completed in a timely fashion satisfactory to DEQ.
17. Additional descriptions of program activities are also detailed in the CLMP Quality Assurance Program Plan (Exhibit F).

Contractor must:

1. Provide administrative and technical assistance for the CLMP.
2. Plan and convene at least one volunteer training event each year in cooperation with DEQ staff and other CLMP partners, typically in April at the MLSA annual workshop.
3. Add updated training materials to the website after the annual training event.
4. Provide maintenance and enhancements to the online volunteer enrollment system for the CLMP program through the end of the 2017 enrollment period.
5. Compile and quality assure data collected by volunteers and enter as needed, via the MDE through the end of the Contractor's Contract period.
6. Prepare a DEQ-approved Annual CLMP report, to be released in February each year. This must not include the 2017 sampling year.
7. Revise and implement CLMP report format and distribution protocol, emphasizing appearance and appeal to the individual lake user, in place by the publication of the 2014 data year report in fall-winter 2014-2015.
8. Provide promotional materials to promote CLMP enrollment.

9. Provide procedures, training aids, and other information provided on the website to address MiCorps member needs.

Task 6: Administer Volunteer Stream Monitoring Program (VSMP) Grants

The DEQ has provided both full grants and start-up grants to local units of government and non-profit entities for WQ monitoring activities in wadeable streams and rivers. The full grants fund local volunteer macroinvertebrates/habitat monitoring, road stream crossing inventories, and/or purchase of WQ monitoring supplies, while the start-up grants fund the formation of new monitoring groups, their design of a monitoring strategy and development of a proposal for the full grant program. In addition, the grants may fund a new stream flow monitoring procedure to be developed by the Contractor (Task 7). Since 1998, the DEQ has annually set aside up to $50,000 for the VSMP. A local match of 25 percent of the total project cost is required for each grant in the form of cash, materials, or in-kind services.

Several tasks are associated with the administration of Michigan's Volunteer Stream Monitoring Grant Program for which the Contractor must:

1. Maintain, annually update and enhance the online application system and the DEQ approved GAP.
2. Publicize the VSMP grants program statewide electronically through a maintained online mailing list or listserv.
3. Send the GAP to prospective applicants, as appropriate.
4. Maintain and update the VSMP database to track grant applications and awarded grants.
5. Send out application receipt acknowledgements.
6. Review all applications based on the evaluation criteria provided by the DEQ.
7. Select fundable grant applications; submit reviews and selections to the DEQ for discussion and approval.
8. Award the grants.
9. Annually, prepare a draft news release for grants awarded and submit it to the DEQ for approval and release by the DEQ.
10. Administer financial oversight and payments for grantees.
11. Obtain final financial and project reports from grantees by specified deadlines.
12. Send out final reimbursement payments.
13. Annually administer the Volunteer Stream Monitoring Grant Program, fund and manage grants, provide training, review and approve QAPPs and maintain the volunteer stream monitoring grant program database for the duration of the Contract and the completion of all grants.
14. Provide technical assistance to ensure that volunteers collect usable, high quality data. For the macroinvertebrate/habitat monitoring, the technical assistance includes training, site selection advice, and quality assurance. All volunteer group leaders are required to attend a one-day training session on sampling procedures, safety guidelines, and macroinvertebrate identification, and a field visit to a wadeable river or stream site that provides volunteers the opportunity to assess a site, collect and identify live macroinvertebrates, complete standard data forms and ask questions. The leaders can then train volunteers within their group.
15. Go on a one-on-one sampling event with each volunteer group prior to their first macroinvertebrate collection event.
16. Assist the volunteer groups in developing an approved QAPP, which describes project objectives, and the procedures implemented to ensure data quality. The DEQ will only use data from groups that are trained and follow approved quality assurance procedures.
17. Provide separate training for the Road Stream Crossing Inventory in association with DNR partners as appropriate.
18. Ensure data collected by means of the grants are entered into the established database and made available on the Web site.

Contractor must provide:

1. Grants administration for open VSMP grants awarded in 2015 through 2016. Only start-up grants will be awarded in 2016 and these must be closed prior to September 2017.
2. Technical assistance and training to volunteer monitors, including a one-day training session in the spring prior to monitoring events and one-on-one sampling event for new grantees, and an additional advanced training in the fall for volunteer coordinators at the annual MiCorps workshop.
3. Assistance for volunteer groups in developing and updating QAPPs, to be posted on the program website.
4. Aid for data-entry into the MiCorps Data Exchange database and enforce the use of required reporting standards.
5. DEQ approved press releases for the GAP and the selected grant awards.

NOTE: A separate Contract and additional funding will be necessary to award full grants in 2016 or full or start-up grants in 2017, administer these grants, and provide the training and other services described above after September 30, 2017.

Task 7: Develop and Implement Stream Flow Monitoring Procedure
Contractor must work with the DEQ and other partners as appropriate in developing a volunteer stream flow monitoring parameter and provide instruction to volunteers for implementing the parameter. "Development of a Tiered Approach to Volunteer Stream Flow Monitoring to Improve the Water Withdrawal Assessment Tool in Michigan, including sampling and analytical protocols or other appropriate protocols[1]" is one resource for consideration in development of this procedure. Given DEQ concurrence, this task is to be completed within the first year of the Contract and provided as an option in the VSMP GAPs released in Fall-Winter 2015-2016.

[1]Thomas, K. and B. Burroughs. 2013. Report, Michigan Trout Unlimited, Lansing, Michigan. 32 pp.

Contractor must provide:

1. DEQ-approved volunteer stream flow monitoring parameter as appropriate, including sampling and analytical protocols, and volunteer instruction tools.
2. Technical assistance and training to volunteer monitors.
3. Inclusion of parameter in VSMP grant process.
4. Technical assistance guidance, as needed, to ensure that volunteers collect usable, high-quality data.
5. A data management system as part of, or accessible from, the MDE.

Task 8: MiCorps Training Enhancements
MiCorps will incorporate new technologies to enhance and facilitate volunteer training. Contractor must develop and enhance DEQ-approved training tools that take advantage of developing electronic and web technologies. Implementation of these tools will expand MiCorps' training outreach, and reduce costs associated with face-to-face training. Enhanced training tools may include on-line training, testing, and certification, including video presentations; webcasts and/or webinars; and remote regional interactive presentations at partner locations. Contractor must integrate the new training tools into the MiCorps training program, and promote the tools to the MiCorps volunteers.

Contractor must provide:

1. Stand-alone presentations of existing CLMP parameter slide training sessions including voice-over (and videos as appropriate), made available online at the MiCorps Web site by March 2015.
2. Online testing for the CLMP Secchi disk and total phosphorus parameters by March 2015.
3. The capacity to present interactive CLMP and VSMP training remotely on a regional basis through DEQ district offices and/or suitable alternative regional partners by March 2016.

Task 9: Administer Volunteer River, Stream, and Creek Cleanup Program (VRSCCP)
The DEQ provides small grants to local units of government to help implement cleanups of rivers, streams, and creeks to improve water in Michigan. A total of $25,000 will annually be made available for individual grants that range from $500.00 to a maximum of $5,000.00. A local match of 25 percent of the total project cost is required for each grant in the form of cash, materials, or in-kind services. Adult supervision of the project is also required.

The VRSCCP is not a MiCorps program but is to be administered as part of the proposed Contract.

The Contractor, under the direction of the DEQ Program Manager, must annually administer the VRSCCP including:

- Maintain, annually update and enhance the online application system and the DEQ approved GAP.
- Publicize the VRSCCP grants program statewide electronically through a maintained online mailing list or listserv.
- Send the GAP to prospective applicants, as appropriate.
- Maintain and update the VRSCCP database to track grant applications and awarded grants.
- Send out application receipt acknowledgements.
- Review all applications based on the evaluation criteria provided by the DEQ.
- Select fundable grant applications; submit reviews and selections to the DEQ for discussion and approval.
- Award the grants.

- Annually, prepare a draft news release for grants awarded and submit it to the DEQ for approval and release by the DEQ.
- Administer financial oversight and payments for grantees.
- Obtain final financial and project reports from grantees by specified deadlines.
- Send out final reimbursement payments.
- Annually, submit final reports to the DEQ by October of each year.

Contractor must:

1. Maintain a web-based grant application system for the VRSCCP.
2. Promote the VRSCCP Grants Application Package. Review grant applications and provide staff recommendations to the DEQ project administrator.
3. Administer the VRSCCP grants awarded in 2015 through 2017, review final grant reports, and coordinate award payments. Grants awarded in 2017 must be for events occurring prior to August 15, 2017, with final reports due from grantees by September 15, 2017.
4. Provide final reports and annual grantee tracking summary to MDEQ by October each year.
5. Provide DEQ approved press releases for the GAP and selected grant awards.

Task 10: Contract Close-out Responsibilities
In the final year of the Contract, the Contractor must close out all contractual involvement with the support of the MiCorps program. This must include closing out all Contracts with current grantees. Responsibility for the fall 2017 annual workshop venue must be transferred to the DEQ. All VSMP grants and VRSCCP grants must be closed. With the exception of a final report, which will be submitted by October 31, 2017, the Contractor will have no responsibilities to the MiCorps program as of close of business September 30, 2017, unless a future Contract amends this end date.

Contractor must:

1. Notify the venue for the 2017 annual MiCorps workshop that the Contractor must cancel or transfer any open Contracts to the DEQ so that the Contractor is no longer financially responsible for any costs associated with the 2017 workshop.
2. Submit to DEQ, a final report detailing program accomplishments for each major component of the MiCorps program, recommendations for improving the program, and a summary of expenses for each major element by October 31, 2017.

2.0 Acceptance

2.1 Acceptance, Inspection and Testing
The following criteria will be used by the State to determine Acceptance of the Services or Deliverables provided under this Contract:

- Acceptance and approval of quarterly reports as identified in article 4.3

- Acceptance and approval of annual summary report as identified in article 4.3

3.0 Staffing

3.1 Contractor Representative
The Contractor must appoint qualified individuals, specifically assigned to this State of Michigan Contract, that will respond to State inquiries regarding the Contract Activities and answer all questions related to the Contracts subject matter. Below is the designated personnel:

Project Team Co-Leads
Laura Kaminski, Grants and Contracts Manager, Great Lakes Commission (GLC); and
Paul Steen, Ph.D., Watershed Ecologist, Huron River Watershed Council (HRWC)

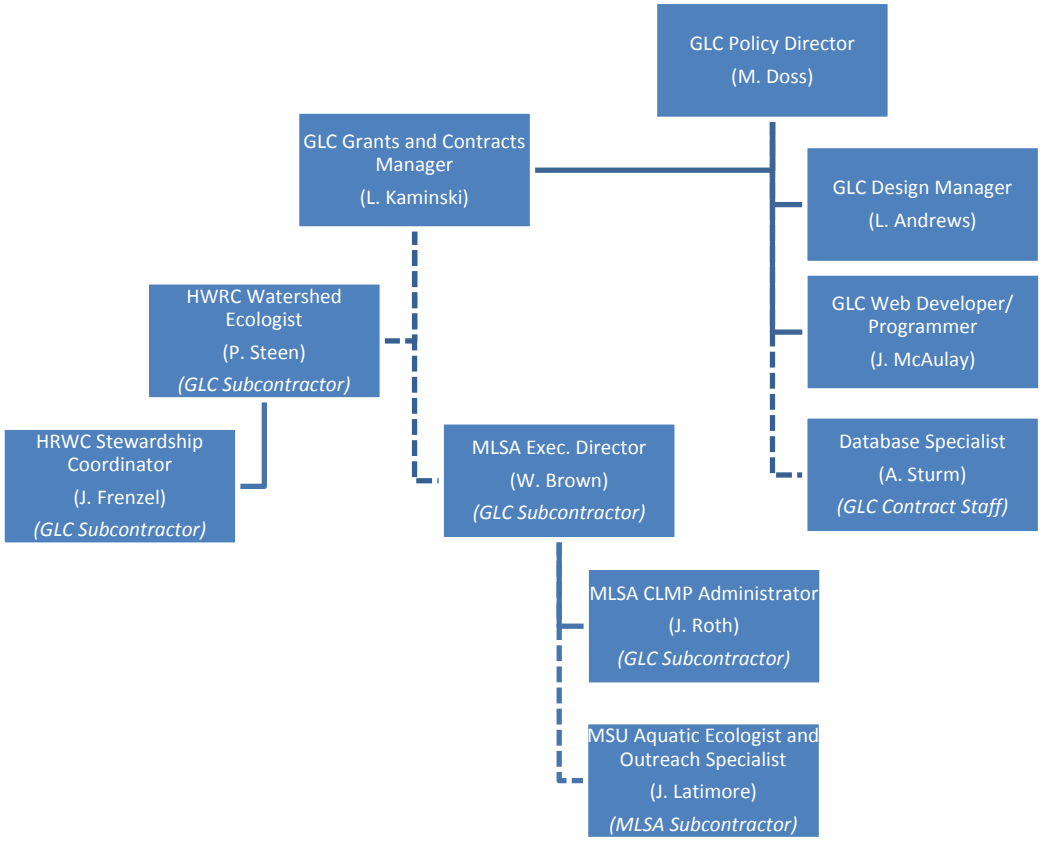
3.2 Customer Service Number
The Contractor Representatives are available for calls during the hours of 8 am to 5 pm EST.

Ms. Kaminski, GLC: (734) 971-9135 x.124
Dr. Steen, HRWC: (734) 769-5123 x. 601

3.3 Work Hours

The Contractor must provide Contract Activities during the State's normal working hours Monday – Friday 7:00 a.m. to 6:00 p.m. EST, and possible night and weekend hours depending on the requirements of the project.

3.4 Organizational Chart



The project team is comprised of the following individuals:

Great Lakes Commission (GLC):

- Laura Kaminski, Project Management and Administrative Lead
- Matt Doss, Project Oversight
- Laura Andrews, Media and Publications Design
- Jeff McAulay, Database and Web Development
- Anne Sturm, Database Support *(GLC contractual staff)*

Huron River Watershed Council (HRWC):

- Paul Steen, Ph.D., Project Management and Technical Lead *(GLC subcontractor)*
- Jason Frenzel, Volunteer Training and Outreach Support *(GLC subcontractor)*

Other CLMP Staff:

- Jean Roth, Michigan Lake and Stream Associations (MLSA), CLMP Administration *(GLC subcontractor)*
- William Scott Brown, Michigan Lake and Stream Associations (MLSA), CLMP Project Oversight *(GLC subcontractor)*
- Jo Latimore, Ph.D., Michigan State University (MSU), Technical and Training Support *(MLSA subcontractor)*

3.5 Disclosure of Subcontractors

Subcontractor 1: Huron River Watershed Council (HRWC)
1100 N. Main Street, Suite 210
Ann Arbor, MI 48104
(734) 769-5123
www.hrwc.org

Description of Organization: The mission of the HRWC is to inspire attitudes, behaviors, and economies that protect, rehabilitate, and sustain the Huron River system. HRWC has developed the premiere citizen-monitoring network in the State. Its strong quality assurance and quality control mechanisms allow agencies to confidently use this data to direct water protection programs. It has been operating this monitoring network since 1994. Since 2005, HRWC has been teaching and advising other groups in similar activities through the MiCorps program.

Ability to Provide the Contract Activities: HRWC has provided scientific and technical support for MiCorps' implementation since the program's inception in 2004. HRWC has overseen the monitoring and training aspects of the CLMP and VSMP during this period. HRWC also assists the GLC by being the lead contact for the day-to-day management and technical support of the VSMP grants.

Subcontractor 2: Michigan Lake and Stream Associations, Inc. (MLSA)
300 N. State Street, Suite A
Stanton, MI 48888
(989) 831-5100
www.mymlsa.org

Description of Organization: MLSA is a non-profit, statewide organization dedicated to the preservation, protection and wise management of Michigan's vast treasure of inland lakes and streams. Created in 1961, MLSA provides direct support to member lake and stream associations in implementing local initiatives involving organizational development, stewardship focused education and outreach, riparian rights, and aquatic invasive species management. Due to a large statewide membership, excellent customer support, and effective overall management, MLSA continues to enjoy operational and financial stability.

Ability to Provide the Contract Activities: MLSA has been a reliable collaborative partner in effectively working with both the Michigan DNR and the DEQ in administering citizen-based volunteer inland lake water quality monitoring programs in Michigan since 1974. Successfully serving as the MiCorps CLMP Administrator since 2004, MLSA is uniquely positioned to continue to provide strong administrative support to the MiCorps CLMP and the GLC's project team.

Note: MLSA subcontracts with Dr. Jo Latimore, MSU, for technical support.

Subcontractor 3: Jo A. Latimore, Ph.D., Michigan State University (MSU)
Department of Fisheries and Wildlife
480 Wilson Rd., Room 13
East Lansing, MI 48824
(517) 432-1491
latimor1@msu.edu

(Subcontractor to MLSA)

Description of Organization: Public Land-Grant University

Ability to Provide the Contract Activities: Through her role as an Aquatic Ecologist and Outreach Specialist at MSU, and previously at the HRWC, Dr. Latimore has provided technical and training leadership and support for MiCorps for 10 years. She has extensive experience supporting volunteer monitors on lakes and streams, and professional expertise in water quality assessment, physical and biological characterization of freshwater systems, and aquatic ecosystem management.

Subcontractor 4: Anne Sturm
2805 S. Industrial Hwy., Suite 100
Ann Arbor, MI 48104
(734) 971-9135
asturm@glc.org

Description of Organization: Independent Contractor to the GLC

Ability to Provide the Contract Activities: Ms. Sturm currently serves as the MiCorps Database Manager in support of the data components of MiCorps.

Ms. Sturm has assisted with the data entry components of this project for 10 years since the creation of the MDE, and ensures that all data generated under the program are checked for quality assurance and available publicly via the program website.

4.0 Project Management

4.1 Project Plan

a. The Contractor must carry out this project under the direction and oversight of the DEQ.

b. Although there will be continuous liaison with the Contractor team, the client's agency project director must meet or speak monthly as a minimum, with the Contractor's project manager for the purpose of reviewing progress and providing necessary guidance to the Contractor on solving problems which arise.

c. The Contractor must submit a brief written summary progress reports detailing task accomplishments to be included with the quarterly Financial Status Report (FSR). The progress reports must include details on the work accomplished during the reporting period; work to be accomplished during the subsequent reporting period; problems, real or anticipated, which are to be brought to the attention of the agency's project director; and notification of any significant deviation from previously agreed upon work plans. A copy of each quarterly progress report must be forwarded to the named Buyer in DTMB-Procurement.

d. Within 15 working days of the award of the Contract, the Contractor must submit a work plan to the DEQ's project director for final approval. The final implementation plan must include the following:

1) A project organizational structure.

2) A staffing table with names and titles of Key Personnel assigned to the project, and indicate where they will be physically located, describe the functions they will perform, and provide current chronological résumés. Necessary substitutions due to change of employment status and other unforeseen circumstances may only be made with prior approval of the State.

3) A project breakdown showing sub-projects, activities and tasks, and resources required and allocated to each.

4) A time-phased plan in the form of a graphic display, showing each event, task, and decision point in your work plan.

4.2 Reporting

The Contractor must produce quarterly reports summarizing work completed and problems, if any, for the quarter to be submitted with the quarterly Financial Status Report (FSR).

An annual, summary report for the MCWC program must include program highlights, accomplishments for the year, a listing of member organizations. The Contractor must include in the annual summary report high lights summarizing elements representative of the three focal programs: the VSMGP grants program, the VRSCCP grants program and the CLMP program.

The Contractor must provide system documentation, as required in current Department of Technology, Management and Budget (DTMB) standards for all computerized systems developed for the MCWC.

5.0 Ordering

5.1 Authorizing Document
The appropriate document will be a Blanket Purchase Order from which a Purchase Order will be established with the Contractor.

6. Invoice and Payment

6.1 Payment Methods
Vendor will be paid quarterly based on submitted and approved invoices.

7. Price Clause
For the duration of the contract, pricing is firm-fixed, lump sum.

STATE OF MICHIGAN

Request For Proposal No. 007114B0002578
Continuance and Enhancement of the Michigan Clean Water Corps

Exhibit C
PRICING

BUDGET CATEGORIES	Task 1: MiCorps Promotional Materials	Task 2: MiCorps Web Site (and other subtasks)	Task 3: MiCorps Volunteer Monitoring Recognition Program	Task 4: MiCorps Annual Volunteer Monitoring Workshop	Task 5: Provide and Administer the CLMP	Task 6: Administer VSMP Full and Start-up Grants	Task 7: Develop and Implement Stream Flow Monitoring Procedure	Task 8: MiCorps Training Enhancements	Task 9: Administer VRSCCP	Task 10: End of Contract Responsibilities	Total 3 Year Project Costs
PERSONNEL COSTS											
Project Manager (Kaminski)	$13,543.20	$8,025.60	$1,003.20	$20,201.00	$3,324.20	$2,183.25	$1,671.80	$5,959.80	$22,070.40	$2,754.40	**$80,736.85**
Communications Support (Andrews)	$4,287.80	$2,594.52	$369.08	$1,118.12				$966.00			**$9,335.52**
Web Programming (McAulay)	$1,172.00	$11,682.52					$1,180.80	$1,180.80		$1,367.96	**$16,584.08**
Project Oversight (Doss)	$1,704.00									$584.88	**$2,288.88**
Technical Support (Eddy / Wang)		$4,923.12									**$4,923.12**
Salary Total	**$20,707.00**	**$27,225.76**	**$1,372.28**	**$21,319.12**	**$3,324.20**	**$2,183.25**	**$2,852.60**	**$8,106.60**	**$22,070.40**	**$4,707.24**	**$113,868.45**
BENEFITS (@ 40% of salary)	**$8,282.80**	**$10,890.30**	**$548.91**	**$8,527.65**	**$1,329.68**	**$873.30**	**$1,141.04**	**$3,242.64**	**$8,828.16**	**$1,882.90**	**$45,547.38**
CONTRACTUAL SERVICES											
Technical Support (HRWC)	$6,030.00	$20,100.00		$15,075.00	$69,350.00	$64,805.00	$17,210.00	$7,035.00		$1,005.00	**$200,610.00**
CLMP Admin Support (MLSA)					$99,000.00						**$99,000.00**
MDE Technical Support (Sturm)		$12,722.25									**$12,722.25**
VSMP Grants						$100,000.00					**$100,000.00**
VRSCCP Grants									$75,000.00		**$75,000.00**
Workshop Facilities				$2,500.00							**$2,500.00**
Video Production								$1,500.00			**$1,500.00**
Contractual Total	**$6,030.00**	**$32,822.25**	**$0.00**	**$17,575.00**	**$168,350.00**	**$164,805.00**	**$17,210.00**	**$8,535.00**	**$75,000.00**	**$1,005.00**	**$491,332.25**

BUDGET CATEGORIES	Task 1: MiCorps Promotional Materials	Task 2: MiCorps Web Site (and other subtasks)	Task 3: MiCorps Volunteer Monitoring Recognition Program	Task 4: MiCorps Annual Volunteer Monitoring Workshop	Task 5: Provide and Administer the CLMP	Task 6: Administer VSMP Full and Start-up Grants	Task 7: Develop and Implement Stream Flow Monitoring Procedure	Task 8: MiCorps Training Enhancements	Task 9: Administer VRSCCP	Task 10: End of Contract Responsibilities	Total 3 Year Project Costs
SUPPLIES AND MATERIALS											
Telephone	$10.00			$70.00	$10.00	$10.00	$30.00	$700.00	$15.00		**$845.00**
Printing / Copying	$40.00			$760.00		$30.00			$45.00		**$875.00**
Postage				$1,250.00	$20.00	$40.00			$60.00		**$1,370.00**
Equipment Maintenance	$750.00	$7,095.00									**$7,845.00**
Supplies			$475.00	$158.75							**$633.75**
Supplies Total	**$800.00**	**$7,095.00**	**$475.00**	**$2,238.75**	**$30.00**	**$80.00**	**$30.00**	**$700.00**	**$120.00**	**$0.00**	**$11,568.75**
TRAVEL											
Staff Travel	$100.00			$100.00							**$200.00**
Workshop Travel (speakers, etc.)				$600.00							**$600.00**
Travel Total	**$100.00**	**$0.00**	**$0.00**	**$700.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$800.00**
SUBTOTAL	**$35,919.80**	**$78,033.31**	**$2,396.19**	**$50,360.52**	**$173,033.88**	**$167,941.55**	**$21,233.64**	**$20,584.24**	**$106,018.56**	**$7,595.14**	**$663,116.83**
INDIRECT COSTS (20% of salaries and benefits)	**$5,797.96**	**$7,623.21**	**$384.24**	**$5,969.35**	**$930.78**	**$611.31**	**$798.73**	**$2,269.85**	**$6,179.71**	**$1,318.03**	**$31,883.17**
TOTAL 3 YEAR GRAND TOTAL:	**$41,717.76**	**$85,656.52**	**$2,780.43**	**$56,329.87**	**$173,964.66**	**$168,552.86**	**$22,032.37**	**$22,854.09**	**$112,198.27**	**$8,913.17**	**$695,000.00**

Exhibit D
CLMP Monthly Activities Plan

AUGUST

SAMPLING PERIOD - MONTH 1

Position	Name	Responsibility
Contractor		Review/comment on registration materials for this month's meeting
Contractor		Update MiCorps/CLMP on-line enrollment site for upcoming year
Contractor		Prepare and mail out program registration materials
Contractor		Update Registration postcard

SAMPLING PERIOD - MONTH 13

Position	Name	Responsibility
Contractor		Mail out bottles, labels and materials for summer total phosphorus
Contractor		Begin to receive first summer total phosphorus samples and last two chlorophyll samples (UP samples).
DEQ		Schedule late summer TP, chlorophyll, Secchi disk and oxygen side-by-side sampling events with volunteers
DEQ		Schedule late summer total phosphorus and chlorophyll samples with DEQ lab
DEQ		Email reminder to DEQ sample drop-off locations that samples will be coming in
DEQ		Send insulated shipping containers and labels to UP District and Bay City office drop-off locations for late summer samples
Contractor		Select late summer total phosphorus replicates

SEPTEMBER

SAMPLING PERIOD - MONTH 2

Position	Name	Responsibility
Contractor		Registration must be up by 9/30
Contractor		End of the month: Send out postcards about registration opening on October 1.

SAMPLING PERIOD - MONTH 14

Position	Name	Responsibility
Contractor		Telephone volunteers that signed up for but did not turn in samples
Contractor		Receive (5 weeks), preserve, process and turn in summer total phosphorus samples
Contractor		Receive (5 weeks), process and turn in chlorophyll samples
Contractor		Complete Aquatic Plant reports and send to PM
DEQ		Side-by-side sampling for Secchi disk, total phosphorus, chlorophyll a

OCTOBER

SAMPLING PERIOD - MONTH 3

Position	Responsibility

SAMPLING PERIOD - MONTH 15

Position	Responsibility
Contractor	Receive and review chlorophyll, phosphorus data from laboratory

NOVEMBER

SAMPLING PERIOD - MONTH 4

Position	Name	Responsibility

SAMPLING PERIOD - MONTH 16

Position	Responsibility
Contractor	Receive Secchi disk forms and enter into data exchange. Track forms received on Excel log.
	Send original Secchi disk and DO/Temp. data forms to DEQ after data entry
DEQ	Transmit chlorophyll, phosphorus data batch files from DEQ lab to contractor
Contractor	Review total phosphorus summer data from laboratory and produce Excel spreadsheet.
Contractor	Review chlorophyll data from laboratory and produce Excel spreadsheet.
Contractor	Create secchi, phosphorus and chlorophyll graphs for lakes 8 years in program
Contractor	All files go into clearinghouse.
Contractor	Update volunteer thank you letter
Contractor	QA/QC check on the various graphs and tables built for the annual report
Contractor	Drawing for free registrations

DECEMBER

SAMPLING PERIOD - MONTH 5

Position	Name	Responsibility
Contractor		Prepare and make second mailing of registration materials
Contractor		Inventory supplies/parts for chlorophyll equipment building, order needed supplies/parts

SAMPLING PERIOD - MONTH 17

Position	Responsibility
Contractor	Write the Aquatic Plants section of annual report
Contractor	Put the various pieces of the annual report together; write draft of Annual Report
Contractor	Finalize any annual report tables or graphs that were not done the previous month.
Contractor	Update QA/QC replicate and side-by-side data charts.
DEQ	Contact side by side volunteers and share data charts with them

JANUARY

SAMPLING PERIOD - MONTH 6

Position	Responsibility
Contractor	Develop initial plan for the Annual Conference training session.
Contractor	Revise and produce announcement of program for website.
Contractor	Purchase materials for making Secchi disk and deliver to volunteer for production or produce as appropriate.
Contractor	Produce quarter ending finanical reports
DEQ	Order MgCO3, bottles, H2SO4 for PC and PM from Lab
Contractor	Print "MgCO3" and "WARNING" labels for chlorophyll sampling equipment building event

SAMPLING PERIOD - MONTH 18

Position	Responsibility
Contractor	Prepare cover letter to go with CLMP final annual report. Cover letter contains a thank you note and notice of the certificate of participation which is also shipped with the annual report.
DEQ	Get official DEQ report number for annual report at contractor request.
Contractor	Draft annual report
DEQ	Review annual report draft
Contractor	Final annual report
Contractor	Post final annual report on CLMP clearinghouse
Contractor	Post final annual report on MiCorps website
Contractor	Send final annual report to printers
Contractor	Prepare labels and envelopes for mailing Annual Report

FEBRUARY

SAMPLING PERIOD - MONTH 7

Position	Responsibility
Contractor	Build chlorophyll sampling equipment (see Worksheet)
Contractor	Finalize plan for DEQ-Approved Annual Conference training session
Contractor	Update all materials on clearinghouse for new sampling year
Contractor	Provide Program Manager with Spring shipping labels for shipping containers for all sample drop-off locations (DEQ, DNR District offices, etc.)
Contractor	Check UPS pick up schedule
Contractor	Check status of account with UPS for shipping samples.
Contractor	Send out follow-up letter for CLMP registration
Contractor	Prepare and deliver to DEQ sampling schedule and sample turn in schedule for all parameters
DEQ	Coordinate with DEQ sample drop-off locations Courtesy note to DEQ Field Coordinator: program is continuing Note to DEQ District Offices: DEQ MiCorps assistance staff changes? Subsequent note to DEQ MiCorps assistance staff: Sample collection-shipment dates; what to do, and updated UPS information
DEQ	Organize and provide to District Offices shipping containers and shipping labels

SAMPLING PERIOD - MONTH 19

Position	Responsibility
Contractor	Mail Annual Report, cover letter, certificate of participation
Contractor	Email secchi graphs, chlorophyll, total P to volunteers

MARCH

SAMPLING PERIOD - MONTH 8

Position	Name	Responsibility
Contractor		Send intro letters to selected lake communities and reject letter to those not selected for sampling
Contractor		Mail spring total phosphorus packets (3 weeks before sampling dates; see Worksheet)
Contractor		Notify DEQ by March 3 of the number of spring total phosphorus lakes being sampled by district
Contractor		Prepare packets/equip for Secchi disk, chlorophyll (new and resupply), aquatic plants and bring to conference
Contractor		Remind aquatic plant mapping participants that they must attend training session
DEQ		Deliver H_2SO_4 to Contractor for phosphorus sample acidification
Contractor		Put together training aids and demonstration equipment for annual training session
PM		Notify DEQ laboratory of incoming sample numbers for season
Contractor		Decide which samples will be duplicated (i.e. random 10% , lakes of concern)
DEQ		Confirm side-by-side selected lakes (date, where to meet, need for boat)
DEQ		Deliver updated water analysis lab sheets to Contractor see previous sheets in "Documents" in clearinghouse

APRIL

SAMPLING PERIOD - MONTH 9

Position	Name	Responsibility
Contractor		Conduct Annual Conference training session; DEQ to introduce training and assist with training if available
Contractor		After conference, mail packets to those who did not attend conference.
Contractor		Produce year ending financial and project reports.
Contractor		Receive, preserve, process and turn in spring total phosphorus samples

MAY

SAMPLING PERIOD - MONTH 10

Position	Responsibility
Contractor	Calculate number of shipping labels needed for each drop off location and provide labels to DEQ
DEQ	Inventory Shipping Coolers; ask Contractor to obtain more as needed
DEQ	Transmit spring TP results batch file from DEQ lab to Contractor
Contractor	Send mid-summer chlorophyll shipping labels for UP and Bay City District offices to DEQ
Contractor	Send late summer shipping labels to DEQ

JUNE

SAMPLING PERIOD - MONTH 11

Position	Name	Responsibility
Contractor	Paul	Electronically store spring total phosphorus data, create Excel spread sheet, post on MiCorps website
Contractor	Jean	Email out information and materials about the Great American Dip-in.
Contractor	Jean	Parameter Lists showing who is registered (done for each parameter- Secchi, Summer T.P, DO, Chlorophyll, Exotic Plant, Full Plant)
Contractor	Jean	Put together list of email addresses for Laura Kaminski, Bill Dimond, and Scott Brown
Contractor	Jean	List of all volunteer names to Anne Sturm (checks against MDE for quality assurance purposes)
DEQ	Bill	Provide sample bottles for late summer TP packets to Contractor as needed
DEQ	Bill	Supply insulated shipping containers and labels for late summer samples to Contractor for mid-summer drop-off at sample drop-off locations

JULY

SAMPLING PERIOD - MONTH 12

Position	Name	Responsibility
Contractor		Provide cooler boxes and mailing labels to sample drop-off locations and pick up 1st batch of chlorophyll samples
Contractor		Send out mid-summer chlorophyll letter
Contractor		Prepare summer phosphorus packets
Contractor		Produce quarter ending financial and activity report
Contractor		Process and turn in 1st batch of chlorophyll samples (see Worksheet).
DEQ		Send insulated shipping containers and labels to UP District and Bay City offices for mid-summer chlorophyll samples
DEQ		Plan for side-by-side for chlorophyll and Secchi disk
DEQ		Schedule mid-summer chlorophyll samples with DEQ lab.

Exhibit E
CLMP: Handling Phosphorus & Chlorophyll Samples

Handling Phosphorus Samples

Supplies Needed

- Space to set out bottles to thaw.
- Sulfuric acid preservative (from DEQ)
- Fine-tipped waterproof markers (Sharpies work pretty well, if label is dry.)
- Sharp/mechanical pencils (for completing lab forms)
- Extra labels
- Total Phosphorus enrollment log
- Towels for drying off bottle labels and hands
- Field ID# list
- Box opener/scissors
- Fan to speed thawing
- Blank Lab Forms

Receiving

1) Samples arrive via UPS (Time, date of routine UPS delivery)
   - See spring and summer turn-in schedules.
2) Remove samples from mailing coolers to thaw.
3) Check samples against enrollment log
   a. Note any missing or extra samples.

Quality Control

1) Check for cracked bottles/caps.
2) Note any samples that were not frozen/cold upon arrival.
3) Check for missing replicates.
   a. If a replicate selected for analysis is missing, chose a different lake's replicate to analyze.
4) Check/correct field forms.
   a. Were they submitted?
   b. Is Field ID# included and correct?
   c. Is sample date included?
5) Check/correct bottle labels.
   a. Is label present?
   b. Is label legible?
   c. Is sample date included? Does it match the field form?
   d. Is Field ID# included? Correct? Match field form?
   e. Is location field complete (lake name)?
   f. Is Parameter Code (GA) included?
   g. Are replicates labeled as such ("REP")?

Sample Preservation

1) Discard replicate samples, except:
   a. Replicates identified for analysis (see log)
   b. Those where the original sample is bad (leaky, etc.)
2) Preserve remaining samples with 5 drops of sulfuric acid.
3) Add to label: Chemical Added (H_2SO_4) and PF#.
4) **If it is the first or last week of sampling,** create a bottle blank for processing:

a. Add 5 drops of sulfuric acid to an empty bottle.
b. Label as "Bottle Blank".
c. Keep bottle upright.
d. Add "Bottle Blank" to lab form (see below).

Lab Forms

1) Batch samples by DEQ District, to keep lab work orders reasonably sized.
   - Avoid batches with >5 pages (50 samples); break up as necessary.
2) Complete lab forms for each batch.
   a. Refer to past examples.
   b. Field ID: Include STORET#, lake name, and county (& "-REP" if a replicate).
      - Group samples with replicates to be analyzed at the beginning of the list.
   c. Fill in Sample Collected Date and Time (from field form).
   d. Comments: Form should already say "frozen date sampled, thawed & preserved."
      - add date thawed and preserved below that. Use " to repeat info for each sample.
   e. In bottom half of form, circle "GA", "Tot P", and the # of samples listed on the form.
   f. Print name/affiliation and sign.
   g. On back, include Preservative Tracking Number for GA/GG (H2SO4).
      - See preservative bottle.

Delivery to State Lab: 3350 N Martin L King Jr Blvd, Lansing, MI 48906

Deliver samples to lab by 3:00 pm; if necessary, hold preserved samples cool and dark until next day.

Carry Photo ID at all times.

Getting In

1) Tell gate attendant your affiliation and that you are delivering environmental samples.
2) Follow drive to Visitor Parking/Sample Receiving Parking.
   - Carts are available inside, if necessary.
3) Sign in with building security inside entrance, who will call for an escort once you are ready.
4) Escort will take you to the third floor.
5) Sign in with third floor receptionist.

Deliver samples to Sample Receiving Room.

1) Set out samples on tables in order listed on lab sheets.
2) Lab staff will check samples against lab forms.
3) Staff will provide receipt (lab form copies) to you.

Departure

1) Sign out with third floor receptionist.
2) Be escorted to ground floor.
3) Sign out with security by turning in nametag.

Follow-up

1) Deliver original field forms to DEQ Program manager
2) Keep lab receipt forms for your records.
3) Contact volunteers to correct minor mistakes (call or email), including:
   a. Use of non-permanent ink on bottle labels.
   b. Field ID# errors.
4) Notify volunteers in writing of serious errors resulting in unprocessed samples, including:
   a. Sampling outside of approved sampling date interval.
   b. Sampled wrong site.

c. Cracked bottle or cap.

Procedures for mailing total phosphorus packets

1. Prepare mailing envelopes
a. 11x15 envelopes for 2 bottles and 4 bottles
b. 15x20 envelopes for 6 bottles
2. Prepare mailing labels
a. If possible labels should be grouped by DEQ district
3. Track mailing and receiving of samples.
4. Get bottles from DEQ
5. Produce bottle labels
5. What goes into envelopes
a. Introduction letter from DEQ
b. A copy of the sampling procedures
c. Sampling schedule
d. Data form (one if two bottles, two if four bottles, three if six bottles).
e. Bottles - two for each lake to be sampled.
f. Bottle labels - one for each bottle plus one extra for a backup.
6. Create three sample packets (2 bottles, 4 bottles and 6 bottles) just as to be mailed.
7. Take sample packets to post office and determine the cost for mailing each packet.
a. Packets can vary in weight slightly. If weight is close to next cost bracket use higher mailing cost.
8. Obtain stamps.
9. Mail packets two to three weeks in advance of the sampling date.
10. Make three mailings (UP and N. Lower, Central and Southern districts).
11. Before putting materials in envelopes put on necessary stamps, return address and mailing label.
12. Place materials in envelopes and seal.
13. Take packets to post office
14. At post office take sample packets to postal clerk and verify sufficiency of stamps.
15. Ask clerk what to do with the rest of the packets.
16. Fill in excel log for dates packets were mailed.

Handling Chlorophyll Samples

Supplies Needed

- Space to lay out samples for sorting.
- Fine-tipped and regular waterproof markers (Sharpies work pretty well, if label is dry.)
- Sharp/mechanical pencils (for completing lab forms)
- Extra labels
- Chlorophyll enrollment log
- Towels for drying off foil, labels and hands
- Field ID# list
- Box opener/scissors
- Plenty of copies of DEQ Lab Form for turning in to lab (two-sided)
- Blank Lab Forms

Receiving

1) May, June, & July samples are turned in mid-July
- See turn-in schedules for dates.
- CLMP staff deliver most districts samples for processing on T, W, Th; remote samples arrive by UPS on (typical delivery date, time)
- CLMP staff bring own coolers and ice packs to keep samples cold and dark.
- CLMP staff leave shipping boxes w/ district staff for shipping late summer samples (below).

2) Aug. & Sept. samples are shipped with late summer Total Phosphorus samples.

- See turn-in schedules for dates.

3) Check samples against enrollment log
   a. Note any missing or extra samples.

Quality Control

1) Note any samples that were not frozen/cold upon arrival.
2) Check/correct field forms
   a. Were they submitted?
   b. Mark as received on log
   c. Is Field ID# included and correct?
   d. Is sample date included & within sampling window (10th-20th of May-Aug, required Sept dates)?
      - Can give some leniency, especially if collected during SxS.
   e. Did they filter <50 cc? If so, note volume filtered on Lab Form (see below).
3) Are lake name and sample month on the foil the vials are wrapped in?
4) Are lake name, county, and Field ID# on the ziploc bags the samples are in?
5) Check for missing replicates.
   a. If a rep chosen for processing is missing, choose a new rep to run.
6) Check/correct vial labels if you have to unwrap foil.
   a. Is label present?
   b. Is label legible?
   c. Is sample date included? Does it match the field form?
   d. Is Field ID# included? Correct? Match field form?
   e. Is location field complete (lake name)?
   f. Is Parameter Code (CA) included?
   g. Is the Chemicals Added field complete (MgCO3)?

Sample Turn-In

1) Turn in all replicates (may be wrapped in same piece of foil (preferred)).
   a. Only list on lab form those replicates you want analyzed (see below).
2) Keep samples frozen until turn-in.

Lab Forms

1) Batch samples by DEQ District, to keep lab work orders reasonably sized.
   - Avoid batches with >5 pages (50 samples); break up as necessary.
2) Complete lab forms for each batch.
   a. Refer to past examples.
   b. Field ID: Include STORET#, lake name, and county (& "-REP" if a replicate).
      - Group samples with replicates to be analyzed at the beginning of the list.
   c. Fill in Sample Collected Date and Time (from field form).
   d. Comments: Form should already say "field filtered and frozen date sampled"
      - Use " to repeat info for each sample, as appropriate
      - If <50 cc filtered, indicate volume filtered in Comments field.
   e. In bottom half of form, circle "CA Chlorophyll", and the # of samples listed on the form.
   f. Print name/affiliation and sign.
3) Back of lab form should already be pre-filled with "No" for every question.

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   - Carts are available inside, if necessary.
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3) Sign out with security by turning in nametag.

Follow-up
1) Deliver original field forms to DEQ Program Manager
2) Keep lab receipt forms for your records.
3) Contact volunteers to correct minor mistakes (call or email), including:
   a. Use of non-permanent ink labels.
   b. Field ID# errors.
   c. Replicates not provided.
4) Notify volunteers in writing of serious errors resulting in unprocessed samples, including:
   a. Sampling outside of approved sampling date interval.
   b. Sampled wrong site.
   c. Vials not wrapped in foil or otherwise kept dark.

updated 1/2013

Chlorophyll Supply Kits Inventory

Item specifications and supplier information are described below

Full Kit

12 capped tubes

12 filters

labels for tubes

5 snack baggies

15 ml dropper bottle MgCO3 Preservative

1 tweezers

1 filter holder

12 filters

syringe

4" plastic tube for syringe

large safety pin

2 brown rectangular sample bottles

6-pack cooler bag

composite sampler

pack into gallon zip close bag

Resupply Kit

12 capped tubes

12 filters

labels for tubes

5 snack baggies

15 ml dropper bottle MgCO3 Preservative

pack into quart zip close bag

Sources

(Listing of specific merchant should not be construed as an endorsement, or requirement to use said merchant)

Composite Sampler

weighted container			
46-48 oz. juice can (7 in. x 4 1/4 in. dia.)	Recycling Center		
2 dumbell weights per can (1 1/4lb. 4" dia)	American Home Fitness - 2361 Grand River- Okemos,Mi. 48864	(517)347-7900	okemos@americanhomefitness.com
1 ft. light weight chain (#16, single jack)	Hardware Store		
1 ft. medium weight chain (#1, double loop)	Hardware Store		
2 eyebolts (#1, 3/16 x 1 1/4")	Hardware Store		
4 hex nuts (10-24)	Hardware Store		
4 fender washers (#10)	Hardware Store		
2 lock washers (1/4")	Hardware Store		
3 Split washers (1/2") or S hooks (1 1/4")	Hardware Store		
-Amber narrow-mouth bottle (1 liter)	VWR Scientific (Cat. No. 16062-120)	1-800-932-5000	VWRSP.com
(Nalgene heavy duty polypropylene	(Nalgene No. 2004-0032)		
Black rubber stopper, two hole (size 6, 5mm.hole dia)	VWR Scientific (Cat. No. 59582-246)	1-800-932-5000	VWRSP.com
2 glass or plastic tubes (2 in. Length) 6mm o.d. 1 mm wall)	VWR Scientific (Cat. No. 32613-031)	1-800-932-5000	VWRSP.com
30 - 60 feet braided rope (3/16 - 1/4 in dia.)	Provided by volunteers		

Field Filtering Equipment

60cc syringe w/Luer Lok tip	VWR Scientific (Cat. No. BD309663)	1-800-932-5000	VWRSP.com
syringe filter holder, 25 mm	Gelman Sciences (Gelman part No. 4320)		(Luer-Lok, s.s support screen)
0.45u HA filters, 25 mm (12)	Millipore (Cat. No. HAWP02500	1-800-MILLIPORE	
Nalgene flexible tubing (4 in. length) (3/16" i.d., 1/16" wall	VWR Scientific (Cat. No. 63013-329)	1-800-932-5000	VWRSP.com
12x75 mm culture tube w/ cap (12)	VWR Scientific (Tube: Cat. No. 60818-430	1-800-932-5000	VWRSP.com
caps for culture tube	VWR Scientific (Cap: Cat. No 60819-003)	1-800-932-5000	VWRSP.com
tweezers	Meijer's or a Dollar Store		

2 amber bottles (square, 250 ml)	VWR Scientific (Cat. No. 16186-270) Nalgene Cat. No. 2009-0008)	1-800-932-5000	VWRSP.com
drop - dispenser bottle (15 ml) (for MgCo3 Preservative)	VWR Scientific (CaT. No. 16354-400) (Nalgene Cat. No. 2400-0015)	1-800-932-5000	VWRSP.com
jewerly bags for filters (zip lock) (1)	Hobby Lobby		
coffee filters (3)	Meijers		
sample labels (11)	Contractor		
Koozy Coolers (2010: $3.52 each and come in packs of 48)	Promo-Direct (California)	1-800-748-6150	www.promodirect.com
Zip Lock Baggies Gallon (freezer) Quart Pint (sandwich) Snack			

Addresses of Companies from whom Supplies have been Ordered

Millipore Corporation - 186 Middlesex Turnpike - Burlington, Ma. 01803

VWR International. LLC - 800 E. Fabyan- Batavia, Il. 60510

American Home Fitness - 2361 West Grand River - Okemos, Mi. 48864

Gelman Sciences - Wagner Rd. - Ann Arbor, Mi.

Exhibit F
CLMP Quality Assurance Program Plan for the Cooperative Lakes Monitoring Program

Supported By:

Michigan Department of Environmental Quality

Water Resources Division

and

The Michigan Clean Water Corps Partnership

Great Lakes Commission
Huron River Watershed Council
Michigan Lake and Stream Associations, Inc.
Michigan State University

January 2002
Updated August 2004, January 2007, July 2009,
and October 2013

DEQ Contract Administrator: _____
William Dimond, MDEQ

Program Manager: _____
Paul Steen, Huron River Watershed Council

Project Specialist: _____
Jo Latimore, Michigan State University

Project Administrator: _____
Jean Roth, MI Lake and Stream Assoc., Inc.

This Quality Assurance Project Plan (QAPP) for the Cooperative Lakes Monitoring Program (CLMP) was originally written by Howard Wandell, Michigan State University, Department of Fisheries and Wildlife and Ralph Bednarz of the Water Bureau, Michigan Department of Environmental Quality. It is intended to be a comprehensive documentation of the program's planning, implementation and assessment including the elements of program management, data generation and acquisition, assessment and oversight as well as data validation and usability. The original QAPP was developed over a six month time period in 2001, during which numerous meetings were held by the involved organizations and input was secured from volunteers, environmental managers, researchers and other interested parties. The QAPP was organized following *The Volunteer Monitor's Guide to Quality Assurance Project Plans* (U.S. EPA 1996). The QAPP was updated in August 2004, January 2007, July 2009, and October 2013. Since the CLMP is a long-term, ongoing program the QAPP is intended to be a living document, reviewed and updated periodically.

Distribution List

William Dimond, MDEQ Water Division
Gary Kohlhepp, MDEQ Water Division
Laura Kaminski, Great Lakes Commission
Paul Steen, Huron River Watershed Council
Jo Latimore, Michigan State University
Jean Roth, Michigan Lake and Stream Associations, Inc.
Scott Brown, Michigan Lake and Stream Associations, Inc.

Exhibit F
CLMP Quality Assurance Program Plan

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A. Program/Task Organization

As a Michigan Clean Water Corps (MiCorps) program, the Cooperative Lakes Monitoring Program (CLMP) is a partnership between the Michigan Department of Environmental Quality (MDEQ), the Great Lakes Commission (GLC), the Huron River Watershed Council (HRWC), Michigan Lake & Stream Associations, Inc. (MLSA), Michigan State University (MSU) and Michigan citizen volunteer samplers.

- MDEQ Water Division - Coordinate and oversee MiCorps, including the CLMP. Coordinate laboratory support, data evaluation and quality assurance and quality control (QA/QC).
- Great Lakes Commission – Primary contractor for MiCorps. Oversee MiCorps contract for development and implementation of all MiCorps programs, including the CLMP and the MiCorps Data Exchange (MDE).
- Huron River Watershed Council – MiCorps partner under contract with GLC. Oversee development and implementation of MiCorps programs, including all CLMP operations.
- Michigan Lake and Stream Associations, Inc. – Administer CLMP operations including administrative logistics, enrollment targets, volunteer training, sampling logistics, sample handling and delivery, data management, and annual report printing and distribution. Assist with program coordination, pilot study development and implementation, and quality control activities.
- Michigan State University– Support MLSA in administering CLMP operations. Assist with volunteer training, sampling logistics, sample handling and delivery, data management and reporting, pilot study development and implementation, and quality control activities. Provide technical and scientific expertise and program outreach.
- MDEQ Environmental Laboratory and its overflow laboratories - Perform all specified analyses on lake water quality samples collected for the CLMP.

Table 1 provides specific names and contact information for each participating agency.

Table 1. Contact Information for CLMP Partners

Name	Agency	Contact Information	Role
Bill Dimond	MDEQ	517- 284-5528 dimondw@michigan.gov	DEQ Contract Administrator
Laura Kaminski	GLC	734-971-9135 laurak@glc.org	Contract Manager
Paul Steen	HRWC	734-769-5123 psteen@hrwc.org	Program Manager
Jean Roth	MLSA	989-257-3715 jroth@mlswa.org	Project Administrator
Jo Latimore	MSU	517-432-1491 latimor1@msu.edu	Project Specialist Sample Handling, QA/QC
Anne Sturm	GLC	734-971-9135 asturm@glc.org	Project Specialist MiCorps Data Exchange
Kirby Shane	MDEQ Lab	517-335-9888 shanek@michigan.gov	Laboratory Unit Supervisor
Melissa Smith	MDEQ Lab	517- 335-9800 smithm36@mi.gov	Laboratory Sample Coordinator

B. Problem Definition/Program Goal

Effective environmental monitoring is an essential component of the MDEQ mission. The MDEQ and the MiCorps partners recognize that comprehensive water quality monitoring is necessary to improve natural resource management, maintain sustainable ecosystems, and protect public health. The MDEQ and the MiCorps partners have certain responsibilities and interests in the management and protection of Michigan's inland lake resources.

Michigan has nearly 3,500 lakes over 25 acres in size and many thousand smaller lakes and ponds. The state has made a substantial effort to monitor the major inland lakes and has supported a citizen volunteer lakes monitoring program since 1974. However, non-stable funding in the past has limited the scope of these water quality monitoring and lake water quality assessment programs.

In 1998 the citizens of Michigan passed a general obligation bond, the Clean Michigan Initiative (CMI), to protect and enhance Michigan's environmental quality, natural resources, and infrastructure. The Governor and Legislature supported this initiative. The bond legislation called for a portion of the CMI funds, known as the Clean Water Fund (CWF) to implement the "Strategic Environmental Quality Monitoring Program for Michigan's Surface Waters" (Strategy), which was developed by the MDEQ in January 1997 (MDEQ 1997). This Strategy identifies a number of monitoring activities necessary for a comprehensive assessment of water quality in Michigan surface waters. One component of the Strategy is to expand the citizen volunteer lakes monitoring program.

With CMI-CWF support a cooperative project was undertaken in September 2000 by the MDEQ and MLSA in partnership with MSU to expand and enhance the CLMP volunteer monitoring network in terms of lakes enrolled and water-quality indicators monitored. A five-year program expansion plan was developed and the first year of the plan was implemented during the spring of 2001.

In September 2003 the Michigan Clean Water Corps (MiCorps) was created as a statewide network of volunteer monitoring programs to assist the MDEQ in collecting and sharing water quality data for use in water resources management and protection programs (www.micorps.net). The GLC in partnership with the HRWC was retained under contract to assist the MDEQ in developing and implementing MiCorps. The CLMP is a core MiCorps program. MLSA and MSU continue to provide administrative and technical support to the CLMP as MiCorps partners.

The CLMP goals are both data and education oriented including:

- Provide baseline information and document trends in water quality for individual lakes.
- Provide a cost-effective process for the MDEQ to increase baseline data for lakes statewide.
- Make volunteer lake monitoring data electronically available on the MiCorps web-site.
- Educate lake residents, users, and interested citizens in the collection of water quality data, lake ecology, and lake management practices.
- Build a constituency of citizens to practice sound lake management at the local level and to build public support for lake quality protection.

Data collected as part of the CLMP are incorporated into Michigan's lake water quality assessment process for classifying lakes by their water quality trophic state, identifying possible conflicts with water quality standards (screening tool assessment), documenting trends in lake eutrophication indicators, and supporting lake management activities. The CLMP is a significant source of consistent long-term eutrophication data for Michigan's inland lakes.

Besides the MDEQ, CLMP data may be used by other state and local agencies and groups including: the Department of Natural Resources (MDNR), lake boards, watershed councils, local government public works boards, lake and stream associations, conservation groups and others interested in water resource management.

CLMP records are often the only current lake water quality data available to state and local agencies and organizations. These groups may use CLMP data to make initial assessments of water resource conditions and management needs. From these initial assessments, planning activities may be set in motion leading to comprehensive resource/watershed management projects.

C. General Program/Task Description

Originally known as the Self-Help Program, the CLMP continues a long tradition of citizen volunteer monitoring of Michigan's inland lakes. Michigan has maintained a volunteer lakes monitoring program since 1974, making it the second oldest volunteer monitoring program for lakes in the nation.

The original program was designed for lake property owners to monitor water quality by measuring water clarity with a Secchi disk. In 1992, the MDEQ (then part of the MDNR) and MLSA entered into a cooperative agreement to expand the basic program. An advanced Self-Help program was initiated in 1993 that included a monitoring component for total phosphorus during spring lake turnover. In 1998, the program was further enhanced to include chlorophyll *a* and late-summer total phosphorus sampling. At that time the program was re-named the CLMP. In 2001, dissolved oxygen and temperature profile monitoring was added to the CLMP and an aquatic plant identification and mapping component was pilot tested and then added to the CLMP in 2002. An exotic plant watch component was pilot tested and then added as a full project parameter to the CLMP in 2011.

C1. CLMP Parameters Measured
The CLMP is a volunteer-based program for monitoring trophic state indicators in lakes. The focus of the CLMP is on the primary indicators Secchi disk transparency, total phosphorus and chlorophyll *a*. However, with CMI-CWF support additional parameters have been added to the CLMP including water-column dissolved oxygen and temperature, aquatic plant identification and mapping, and a specialized exotic plant program. Volunteer participation determines which lakes will be monitored for these parameters.

Table 2 provides a summary of the parameters currently being monitored in the CLMP. A general description of each CLMP sampling component follows:

Table 2. Parameters Measured as Part of the CLMP

Parameter	**Sample matrix**	Measures
Secchi disk transparency	physical	clarity, trophic state
Spring phosphorus	water chemistry	water chemistry, nutrient enrichment
Summer phosphorus	water chemistry	water chemistry, trophic state
Chlorophyll *a*	biological	algal productivity, trophic state
Dissolved oxygen and temperature	water chemistry and physical	hypolimnetic oxygen depletion and thermal stratification
Aquatic plants ID and mapping	biological	species present, relative abundance, exotic species, trophic state
Exotic plant watch	biological	species present, relative abundance

C2. Secchi disk transparency component:
Clear lakes are universally valued as resources with exceptional quality. For almost 150 years a lake's clarity or transparency has been used to appraise its quality. The Secchi disk has become a standard tool used by scientists around the world to generally assess lakes. It has been standardized as an eight-inch (20-centimeter) disk, with four alternating black and white quadrants painted on the surface.

To make a transparency measurement the disk is attached to a measured line and lowered into the lake until it disappears. The water depth at which the disk disappears is the Secchi disk depth or value for the lake. Obviously the deeper the disk is seen the clearer the water or the greater the transparency of the lake. A lake's clarity or transparency is influenced by several factors, but for most lakes the amount of algae in the water is a major cause for changes in transparency. As more nutrients like phosphorus enter the lake from the watershed more algae is produced. As more algae is produced the clarity of the water decreases. In very clear lakes, Secchi disk values greater than 30 feet can be measured. On the other hand, in lakes with high nutrient supplies and algae production the disk can disappear in two to three feet.

CLMP volunteers measure Secchi disk transparency weekly or every other week throughout the summer growing season from mid-May through mid-September.

The Secchi disk transparency along with total phosphorus and chlorophyll *a* results provide an estimate of the level of biological productivity, or trophic state, of lakes. These results are used to calculate a set of trophic state indices (i.e. Carlson TSISD, TSITP, and TSICHL) for the lake (Carlson 1977). These indices provide a quantitative means of describing the stage of lake aging, or eutrophication. Using the Carlson's TSI approach, lakes are classified according to their trophic status (i.e. oligotrophic, mesotrophic, eutrophic, hypereutrophic, etc.).

The summer season average of the weekly summer Secchi disk transparency measurements is used to calculate the Carlson TSISD for the lake which is compared with the TSITP and TSICHL for the trophic status determination.

C3. Total phosphorus component:
In the CLMP total phosphorus is sampled once just below the water surface (1-2 feet depth) in the spring and in late summer. Phosphorus is one of several essential nutrients that algae and rooted aquatic plants need to grow and reproduce. For most lakes in Michigan, phosphorus is the limiting factor for algae growth. The total amount of

phosphorus in the water is used to predict the level of biological productivity and eutrophication in a lake. An increase in phosphorus over time is an indication of nutrient enrichment.

Phosphorus is found in lakes in several forms that are in a constant state of flux as environmental conditions change and plants and animals live, die, and decompose in the lake. Because the forms of phosphorus are continuously changing and recycling, it is convenient to measure all of the forms of phosphorus together as total phosphorus.

During spring overturn most Michigan lakes are well mixed from top to bottom. This is an opportune time to sample just the surface of the lake to obtain a representative sample for estimating the total amount of phosphorus in the lake and for determining whole lake nutrient changes or trends over time. At other times of the year, more extensive water column sampling is needed to determine phosphorus levels in the lake. A surface sample taking during late summer stratification is a representative sample of the upper water layer of the lake, the epilimnion.

The late summer phosphorus results are used to calculate the Carlson TSITP for the lake which is compared with the TSISD and TSICHL for the trophic status determination.

C4. Chlorophyll *a* component:
The relative amount of algae in a lake can be estimated by measuring the chlorophyll *a* concentration in the water. The amount of chlorophyll in an algal cell varies among algae species as well as with changing light conditions at different depths within the lake. Changing seasons also create different light conditions that, in turn, affect chlorophyll production. To account for some of this variability, algal chlorophyll is monitored during five mid-month sampling events over the summer season (May through September) using a water column composite sampling technique. Samples are field filtered by the volunteer and frozen until delivered to the MDEQ laboratory for analysis.

The median value of the summer chlorophyll monitoring results is used to calculate the Carlson TSICHL for the lake which is compared with the TSISD and TSITP for the trophic status determination.

C5. Dissolved oxygen and temperature component:
In the CLMP, dissolved oxygen and temperature are measured from the water surface to within three feet of the bottom in the deepest basin of the lake. Measurements are taken twice per month from early spring to late summer. Dissolved oxygen and temperature profiles are plotted for each sampling event.

Dissolved oxygen and temperature are two of the fundamental variables in lake ecology. Measuring these parameters together provides valuable information for assessing the condition of a lake. The amount of dissolved oxygen in the water is an important indicator of overall lake health. Water temperature serves as a driving force for many important lake processes. The temperature controls the length of the growing season in lakes, which influences the type and amount of biological activity.

During the summer growing season, most lakes with sufficient depth (greater than 30 feet) are thermally stratified forming distinct layers of differing temperature and density. These layers are referred to as the epilimnion (warm surface layer) and hypolimnion (cold bottom layer) separated by a metalimnion or thermocline (middle layer with decreasing temperature). The greatest changes in temperature occur at the thermocline.

Physical and chemical changes within these layers influence the cycling of nutrients and other elements within the lake system. Temperature also affects the level of dissolved oxygen in the water. As temperature increases, the amount of atmospheric oxygen that can be dissolved in water decreases. Dissolved oxygen levels also are influenced by the time of day and by oxygen requirements of bacteria and other aquatic organisms. Photosynthesis during the daylight hours increases dissolved oxygen levels in the lake while dissolved oxygen is consumed by respiration at night.

The bottom waters of many stratified lakes are susceptible to oxygen depletion, since atmospheric replenishment and photosynthetic production of oxygen are decreased at greater water depth and decomposition of organic matter in the bottom waters and sediment utilizes available oxygen. Low dissolved oxygen levels can result in the loss of susceptible organisms, such as trout and other cold water fish, and the plant nutrient phosphorus can be released from the sediments when dissolved oxygen is depleted in the bottom waters. Hypolimnetic dissolved oxygen decline during summer stratification is used as an early warning indicator of eutrophication in oligotrophic lakes.

C6. Aquatic plant identification and mapping component:
Rooted aquatic plants are a natural and essential part of the lake, just as grasses, shrubs and trees are a natural part of the land. Their roots are a fabric for holding sediments in place, reducing erosion and maintaining bottom stability. They provide habitat for fish, including structure for food organisms, nursery areas, foraging and predator avoidance. Waterfowl, shore birds and aquatic mammals use plants to forage on and within, and as nesting materials and cover. Though plants are important to the lake, nutrient enrichment and the spread of exotic species can cause overabundance of plants. Excessive plant populations can negatively affect fish populations, fishing and the recreational activities of property owners. In this situation, it is advantageous to manage the lake and its aquatic plants for the maximum benefit of all users. To be able to do this effectively it is necessary to know the plant species present in the lake and their relative abundance and location. A map of the lake showing the plant population locations and densities will greatly aid management projects.

Quantifying the aquatic plant populations of a lake is not an easy task. Additionally, sampling procedures used to collect aquatic plant data that can be statistically analyzed are complicated and time and cost intensive. Consequently, the CLMP is using qualitative techniques that allow volunteer monitors to generally assess the aquatic plants in their lake. This assessment may be viewed as a "snapshot" of the species of plants in the lake, their general location and relative abundance. Although not quantitative, this CLMP component provides valuable information about a lake's aquatic plants that is often missing in many lake and aquatic plant management programs.

C7. Exotic plant watch component:
Exotic plants are a significant threat to the health of Michigan lakes. Species such as Eurasian milfoil, curly-leaf pondweed, and hydrilla can quickly spread across a lake and impair human, fish, and wildlife use of the resource. However, exotic species can be managed effectively through early detection and rapid response.

This component trains volunteers how to recognize and effectively sample selected exotic plants. It is intended for lake communities that currently do not have exotic species or are managing existing populations and have them under good control. The program will have less value for lake communities that currently have exotic species covering large areas. However, it can help these lake communities identify new exotics that may invade the lake. Upon discovering exotic plants in a lake, the lake community has the option of pursuing outside assistance in proper control and eradication.

C8. How Results are Evaluated
Data collected in the CLMP are used to assess water quality/trophic status conditions, nutrient enrichment, and water quality changes and trends in lakes enrolled in the program. Volunteer collected CLMP data are evaluated with professionally collected side-by-side data, other quality control data and data from other state agency monitoring programs. These data are collectively utilized to assess the water quality status and update the trophic status classification of Michigan's inland lakes.

The Carlson TSI approach is used for updating trophic status classification of Michigan's inland lakes (Carlson 1977). The TSI equations for calculating the individual trophic state indicators are listed in Table 3.

Table 3. Carlson TSI Equations

$TSI_{SD} = 60 - 33.2 \log_{10} SD$	where, SD = Secchi depth transparency (m)
$TSI_{TP} = 4.2 + 33.2 \log_{10} TP$	TP = total phosphorus concentration (ug/l)
$TSI_{CHL} = 30.6 + 22.6 \log_{10} CHL$	CHL = chlorophyll *a* concentration (ug/l)

Individual TSI values are calculated for each trophic state indicator. An overall TSI is determined from the mean of the individual TSI values and the trophic status classification is determined based on the criteria listed in Table 4.

Table 4. Michigan Inland Lakes Trophic Status Classification Criteria					
Trophic State	**Carlson TSI**	**TP (ug/l)**	**SD-Trans. (ft)**	**SD-Trans. (m)**	**Chl-a (ug/l)**
Oligotrophic	<38	<10	>15	>4.6	<2.2
Meotrophic	38-48	10-20	7.5-15	2.3-4.6	2.2-6
Eutrophic	48-61	20-50	3-7.5	0.9-2.3	6-22
Hypereutrophic	>61	>50	<3	<0.9	>22

A trend analysis is done for lakes that have eight or more years of Secchi disk transparency or total phosphorus data. A regression analysis is done and an apparent trend line fitted to the data. Figure 1 illustrates the annual mean transparency results over time with the apparent trend line for Corey Lake, St. Joseph Co. It should be noted that Corey Lake has been in the volunteer monitoring program continuously from the beginning in 1974 to the present and all of the measurements have been taken by the same volunteer over the entire time. This is a tremendous set of long-term data for this lake.

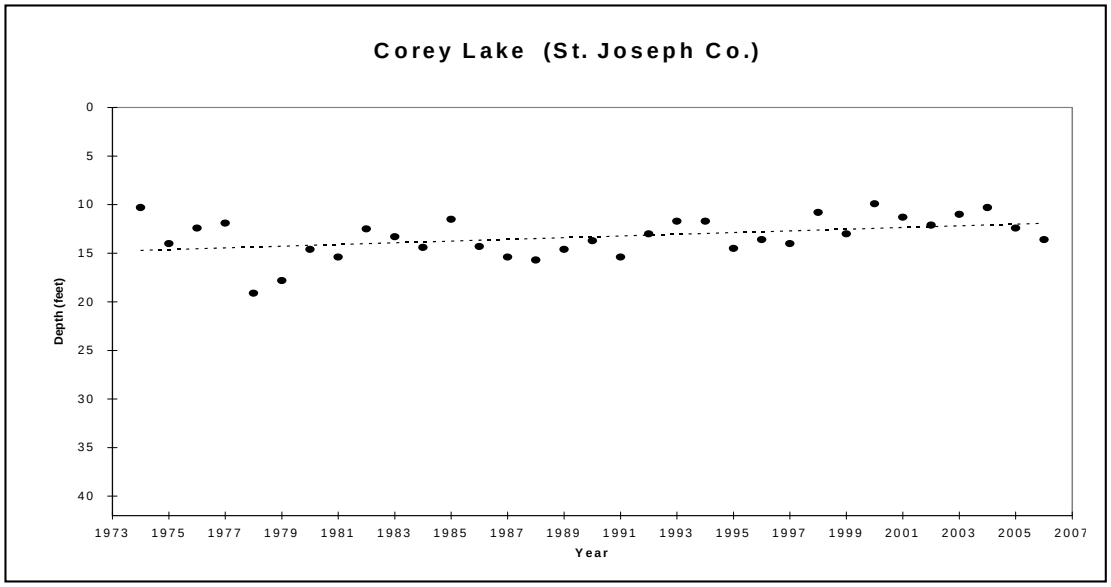

Figure 1. CLMP Annual Mean Transparency – Corey Lake, St. Joseph Co.

Figure 2 illustrates the spring total phosphorus concentration over time with the apparent trend line for Long Lake, Iosco Co. This is another lake with a long-term history of volunteer monitoring.

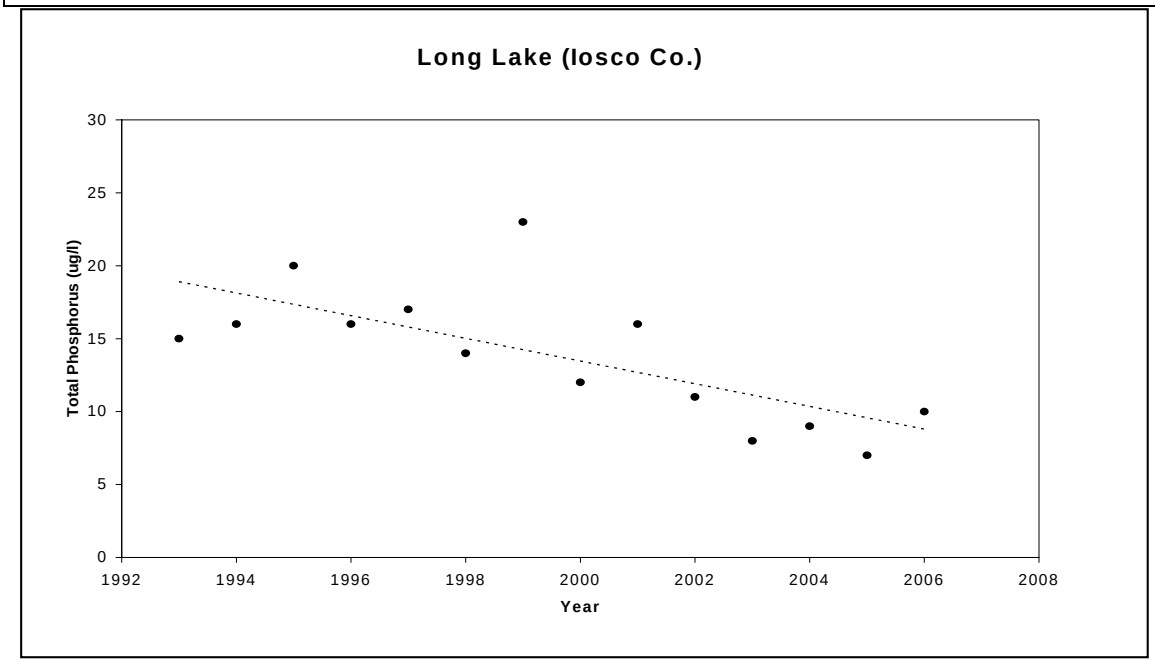

Figure 2. CLMP Annual Spring Total Phosphorus – Long Lake, Iosco Co.

These data are provided to the volunteer monitors to show apparent approving, declining, or stable trends for these trophic state indicators in their lakes. The long-term data are tracked by the MDEQ to identify lakes that may need increased management activities. These data have also been evaluated to identify regional and state-wide trends (Bruhn and Soranno, 2005).

C9. Program Timetable

Table 5 is a general timetable for the CLMP. A complete and detailed monthly timetable is provided in Appendix 1.

Table 5. Monthly Work Task within the CLMP Sampling Schedule

Date	Task
August	Review registration materials and revise as necessary
September	Distribute registration materials
Nov. – Dec.	Review sampling literature and revise as necessary; prepare equipment
Jan. – Mar.	Receive registration materials
March	Review training materials and revise as necessary
April	Give training, distribute sampling literature and equipment
April - Sept	Volunteer sampling, side-by-side sampling, laboratory analysis
October	Data recording
November	Data analysis
Dec-Jan	Daft annual report and produce graphs for lakes with 8+ years in program,
February	Print and distribute annual report, annual program review

D. Data Quality Objectives for Measured Parameters

D1. Precision, Accuracy, and Measurement Range

The precision, accuracy and measurement range for the CLMP parameters are listed in Table 6.

Table 6. CLMP Parameter Precision, Accuracy and Measurement Range

Matrix	Parameter	Precision	Accuracy	Measurement Range
Water	Secchi Disk Transparency	± 5%[a]	± 0.5 feet[a]	0.4 – 62 feet[b]
Water	Total Phosphorus (Spring)	± 14%[c]	± 11.5%[d]	<5 – 120 ug/l[b]
Water	Total Phosphorus (Late-Summer)	± 13%[c]	± 21%[d]	<5 – 470 ug/l[b]
Water	Chlorophyll *a*	± 25%[c]	± 33%[d]	<1 – 98 ug/l[b]
Water	Temperature	± 10%[a]	± 0.3 °C[e]	-5 – 45 °C[e]
Water (550A and 95D)	Dissolved Oxygen	± 10%[a]	± 0.3 mg/l[e]	0 – 20 mg/l[e]
Water (Pro20)	Dissolved Oxygen	± 10%[a]	± 0.3 mg/l[e]	0 – 50 mg/l[e]

a CLMP general observations
b CLMP data range
c CLMP volunteer replicate (QA/QC) data
d CLMP side-by-side (QA/QC) data
e YSI model 550A, 95D, Pro20 meters specifications

Secchi disk transparency, dissolved oxygen and temperature measurement precision are determined through field observations during side-by-side sampling events. Total phosphorus and chlorophyll *a* measurement precision are determined from annual volunteer replicate sample data based on a cumulative relative percent difference analysis.

Accuracy of the Secchi disk transparency measurements is determined through field observations during side-by-side sampling events. Accuracy of total phosphorus and chlorophyll *a* measurements are determined from annual side-by-side sampling data for these parameters based on a relative percent difference analysis. Accuracy of dissolved oxygen and temperature measurements are from manufacturer specifications for the YSI model 550A, 95D and Pro20 meters.

Measurement ranges for Secchi disk transparency, total phosphorus, and chlorophyll *a* are minimum and maximum values that have been measured in the CLMP. Measurement ranges for dissolved oxygen and temperature are from manufacturer specifications for the YSI model 550A, 95D, and Pro20 meters.

D2. Completeness, Comparability, and Representativeness

The lakes that are sampled in the CLMP are based on volunteer enrollment. A program goal is 90% participation for those lakes enrolled. A follow-up telephone survey is conducted annually with the volunteers on the lakes that are enrolled in the various CLMP parameters but do not complete the sampling or sample turn-in requirements.

For all CLMP parameters, comparability is addressed by the use of standardized VOPs and analytical methods by the volunteers and the MDEQ Lab. Comparability of data within and among parameters is also facilitated by the implementation of QA\QC techniques and performance and acceptance criteria. For all measurements, reporting units and format are specified, incorporated into the field data recording forms, and documented in the MiCorps Data Exchange (MDE). Comparability is also addressed by providing results of QA/QC sample data, such as estimates of precision and bias; conducting methods comparison studies and side-by-side sampling, and conducting interlaboratory performance evaluation studies (see Quality Control Requirements, p. 21, for details.

For the CLMP, the primary sampling station is established at the deep basin of the lake and is intended to represent the open water of the lake as the location to evaluate the trophic status of the lake during the summer growing season and long-term trends in nutrient enrichment in the lake. The individual sampling components designed for each parameter attempt to address representativeness within the constraints of a volunteer monitoring program. Holding time requirements for analyses ensure analytical results are representative of conditions at the time of sampling. Use of replicate and side-by-side sampling provides estimates of precision and bias.

E. Training Requirements

Training for all CLMP projects is held in conjunction with the MLSA annual spring conference in April or early May. MDEQ and MiCorps staff conduct the training sessions. Participants in the Secchi disk transparency and spring and summer phosphorus components are not required to attend a training session. The detailed monitoring instructions and procedures serve as self training materials for these parameters. However, participants in these three components, particularly first time participants, are encouraged to attend the training sessions. Volunteer training for all other parameters is required to receive monitoring supplies and participate in the advanced components. If volunteers are unable to attend the official annual training, the DEQ Contract Administrator, the Program Manager, or the Project Specialist may train the volunteer personally if circumstances allow this. Otherwise, the volunteers may receive training from a veteran CLMP volunteer with permission from the Contract Administrator, the Program Manager, and the Project Specialist. This permission is given based on the veteran volunteer's amount of experience and proven track record of accuracy and is done on a case by case basis.

Resource personnel are available throughout the summer sampling season to answer questions, and provide assistance with sample collection, handling, and species identification. In addition to training, volunteer samplers are provided detailed written monitoring procedures for each project in which they participate.

The effectiveness of volunteer training is assessed through the use of two types of evaluation surveys. The first, administered immediately after each training session at the MLSA annual spring conference, asks volunteer trainees to provide feedback on the clarity of training and suggestions for training improvement. A second evaluation survey is administered by program staff during side-by-side sampling visits, during which volunteer sampling performance is observed and deviations noted, and, following sampling, volunteers are given the opportunity to provide feedback on the sampling procedures, written instructions, training, and other program components. Program staff make use of the results of all evaluation surveys to improve program training, sampling procedures and instructions; and to address concerns specific to individual volunteers.

The exact training requirements for each component are detailed in the VOPs, included in Appendix 1.

F. Documents and Records

The CLMP relies extensively on printed forms and documents to facilitate a number of important tasks. Print materials are provided to volunteers for registration, training, sample collection and sample handling and delivery. Other documents are used for data storage, report writing and to facilitate communication between MDEQ and MiCorps personnel. Each parameter includes detailed instructions, data recording forms and the contact information of MDEQ and MiCorps personnel. The documents and forms used in the CLMP are in Appendix 1**,** including items such as the program application and waiver forms, training records, field data sheets, laboratory forms, quality control check forms, data record sheets, standard communications and ready to use template forms.

The retention longevity of forms and documents depends upon the purpose of the document. Administrative forms and letters, such as registration materials and waivers are retained three to five years. Data documents such as volunteer sampler field sheets and laboratory reporting forms are, as of this time, retained at the MDEQ central office indefinitely. These documents are still available from the early years of the former Self Help program.

Electronic data files are retained by the MDEQ Program Manager. The CLMP sample results are retained on the Laboratory Information Management System. The MDE files are retained on the MDE database. The database is housed on a MySQL database platform on a server at the Great Lakes Commission. The GLC backs up all of their server data daily, and retains back-ups for two weeks before overwriting. Records will be retained on the system as long as it remains in operation, and, by contract, would be turned over to the DEQ, should the GLC discontinue database maintenance.

G. Volunteer Operating Procedures (VOP)

(Sampling Design, Sampling Procedures, Sample Handling and Shipping)

The VOPs for each of the CLMP parameters are included in Appendix 1. Each project's VOP includes a description of the utility of the parameter being sampled, sampling design, equipment and supplies used, sampling procedures, sample labeling instructions, sample handling and preservation, shipping requirements, training requirements, safety precautions and technical support contacts. The sampling methods requirements are summarized in Table 7.

Table 7. CLMP Sampling Methods Requirements					
Matrix	Parameter	Sampling Equipment	Sample Holding Container	Method Sample Preservation	Maximum Holding Time
water	transparency	Secchi disk	none	none	immediately
water	total phosphorus	sample holding container	screw top, polypropylene bottle (250 ml)	freeze sample post-delivery acidification	6 months frozen
water	chlorophyll *a*	composite sampler	wide-mouth amber polypropylene bottle (250 ml)	filter and freeze sample	4 months frozen
water	dissolved oxygen and temperature	YSI 95, 550A, Pro20 meter	none, in-lake measurement	None	immediately
water and substrate	aquatic plants ID and mapping, exotic plant watch	plant rake	self-sealing plastic bags	dry in plant press & mount	indefinite

The volunteer sampling, sample handling, sample turn-in, and sample shipping schedules are designed to get the samples to the lab so they can be analyzed within the prescribed holding times for each parameter. If delays occur and holding times are exceeded, the data for these samples are coded and reported.

H. Laboratory and Analytical Methods

CLMP samples requiring laboratory chemical analysis (total phosphorus and chlorophyll *a*) are analyzed at the MDEQ state laboratory in Lansing.

In 2002 the CLMP late-summer total phosphorus samples were analyzed at a n approved commercial laboratory due to sample capacity constraints at the MDEQ state laboratory. Results for these samples have been coded accordingly in the CLMP records.

The information collected in the CLMP's Aquatic Plant Identification and Mapping Project is tabulated and analyzed according to the procedures outlined in Chapter Five (Mapping Aquatic Plants in the Lake) of the book *A Citizen's Guide for the Identification, Mapping and Management of the Common Rooted Aquatic Plants of Michigan Lakes* (Wandell and Wolfson 2000). A complete description of survey and data tabulation procedures is included in the VOP for this component which is included in Appendix 1. The data collected in the Aquatic Plant Mapping Project are qualitative. These data provide a general description of the lake's plant population, common species present and their relative abundance and location. The data products include a generalized map of the lake's plant populations and a data sheet of the species found and their relative lake-wide abundance.

I. Quality Control Requirements

Several types of quality control samples are collected in the field and performed in the laboratory in the CLMP. These quality control samples include:

Field bottle/preservative blank – Deionized water is added to clean sample bottles and the preservative is added for each parameter. The samples are delivered to the laboratory and they are analyzed to check for bottle and preservative purity.

Replicate field sample - Two samples collected at the same site, at the same time, using the same method, and independently analyzed in the same manner. These samples are used to determine the precision of the field sampling methods.

Side-by-side field sample - DEQ staff sample or make observations side-by-side with volunteers at least 10 times per year, dividing the visits between Secchi Disk/Chlorophyll, Spring Phosphorus, Summer Phosphorus, and

Dissolved Oxygen/Temperature. DEQ staff and volunteer collect samples or make observations at the same site and the same time. Volunteers use the VOP and the DEQ staff use agency Standard Operating Procedures (SOPs) (Appendix 2). Chemical samples are independently analyzed. Side-by-side sampling provides a check on the VOP and the reliability of the volunteer sampling.

Mail-in field sample: Volunteers mail in voucher samples of plants that they have identified. CLMP biologists double-check the identification.

Second independent reading - Biological samples requiring interpretation are analyzed by two professionals as a check on professional interpretation quality and analytical procedures.

Proficiency audit sample – Annually, samples are obtained from an independent quality control lab. The samples are prepared and analyzed according to the provided instructions. The results are then submitted to the source for evaluation. Participation in these studies is used as a means to independently monitor this method's performance and to compare its performance against that of the other participants.

These quality control samples are incorporated in the CLMP sampling components as outlined in Table 8.

Table 8. CLMP Quality Control Samples

QC Sample Type	Secchi Disk	Spring Total Phosphorus	Summer Total Phosphorus	Chlorophyll	Dissolved Oxygen & Temperature	Aquatic Plant Mapping	Exotic Plant Watch
Field bottle/preservative blank	NA	1%	1%	NA	NA	NA	NA
Replicate field sample	NA	10%	10%	10%	NA	NA	NA
Side-by-side field sample	10 total visits divided between these parameters					NA	NA
Mail-in field sample	NA	NA	NA	NA	NA	NA	10%

The following actions are taken when a quality control sample reveals a sampling or analytical problem.

Field bottle/preservative blank - Bottles are checked for contamination and the preservative is exchanged at the laboratory for a new allotment.

Replicate field sample - The problem is discussed with the volunteer sampler to identify any possible abnormal environmental conditions or nonconformity with sampling procedures.

Side-by-side field sample - Volunteer sampling procedures and equipment are reviewed for comparability with state agency standard operating procedures.

Mail-in field sample – In case of plant misidentification by the volunteers, CLMP biologists will revise the volunteers' final reports to reflect the corrected plant identification. This is done after communicating with the volunteers to ensure that this is the appropriate course of action (e.g. the voucher sample represents that plants they saw at all sites).

J. Equipment Testing, Inspection and Maintenance Requirements

At the beginning of each sampling season, the CLMP volunteers are directed to check their monitoring equipment for damaged or missing parts. An equipment checklist is included in the monitoring procedures for each parameter. Damaged or missing parts are replaced and the equipment is repaired prior to sampling.

For the total phosphorus components, new sample bottles are shipped to the volunteers prior to each sampling event. The sample bottles are capped at the laboratory supply facility prior to shipment. The volunteers are directed to request a replacement bottle should they receive an un-capped bottle.

A full sampling and filtering kit is provided at the annual training session to volunteers who are enrolled in the chlorophyll component for the first time. The full kit includes new equipment and supplies which are assembled and inspected by CLMP staff. A re-supply kit is provided to the volunteers who are continuing in the chlorophyll component. The re-supply kit includes replacement reagents and supplies for filtering and sample storage for each sampling event. Replacement parts for the sampling and filtering equipment are also available if needed.

For the dissolved oxygen and temperature component, the YSI Model 95, Model 550A, and Pro20 DO/temperature meters are checked and serviced each year prior to the monitoring season. Batteries and oxygen probe membrane caps and electrolyte solution are replaced for each meter. The meters are calibrated according to the manufacturer's specifications in the lab prior to distribution to the volunteers at the annual training session. The volunteers are instructed on meter calibration at the annual training session and the meters are re-calibrated by the volunteers prior to each use in the field. Should a meter fail to calibrate in the field, the volunteer is instructed to contract the CLMP program manager for the appropriate course of action. A replacement meter may be provided if necessary. At the end of the sampling season, the meters are returned and checked by the CLMP program manager prior to post-season storage. If a meter has been damaged or failed to function according to manufacturer's specifications it is returned to the manufacturer for repair. All pre- and post-season calibration and service records are kept by the CLMP program manager. Lake associations or volunteers who have purchased a YSI Model 95, Model 550A, or the Pro20 DO/temperature meters for individual lake use are instructed to follow the same pre- and post-season maintenance schedule as outlined for the CLMP program equipment.

K. Equipment Calibration

As described above, the YSI Model 95, Model 550A, and Pro20 DO/temperature meters are calibrated, prior to each monitoring event, according to the manufacturer's specifications. Calibration results are recorded on the dissolved oxygen and temperature data forms which are returned to the CLMP program manager at the end of each monitoring season. Calibration procedures are contained in the VOP for the dissolved oxygen and temperature component (Appendix 1).

L. Acceptance Requirements for Supplies

A number of supplies are required for the CLMP. A brief overview of the required supplies is listed here. For more detailed information, consult the individual parameter monitoring procedures included in Appendix 1.

The MDEQ laboratory provides all of the sample collection bottles and appropriate labels. MLSA staff assembles Secchi disks that may be purchased by the volunteer sampler. If the volunteer sampler chooses to build their own Secchi disk, instructions are provided. MDEQ and MiCorps staff assembles the chlorophyll *a* composite sampling equipment. The chlorophyll filter apparatus are purchased from a scientific supply company and given to volunteers during their training session. Volunteers assemble plant rakes according to detailed instructions in the monitoring procedures.

All supplies and equipment are inspected for problems and defects by MDEQ or MiCorps personnel before being given to the volunteer samplers. If any defects develop during sampling supplies and equipment are to be returned to MDEQ or MiCorps personnel for replacements. MDEQ and MiCorps personnel also inspect supplies and equipment being used by the volunteer samplers during side-by-side sampling.

Preservatives required for sample preparation, such as sulfuric acid (H_2SO_4), are provided by the MDEQ laboratory but are not handled by volunteers.

M. Outside Program Information Requirements

There are two special information requirements for the CLMP, hydrographic and topographic maps. Hydrographic maps are required to determine the deepest basin of the lake, which is the primary sampling location for several CLMP components. The maps are also useful in the aquatic plant mapping project. Individual lake hydrographic maps are available from Michigan Department of Natural Resources web-site (http://www.michigan.gov/dnr/0,1607,7-153-30301_31431_32340---,00.html). Additionally, Sportsman's Connections (http://www.sportsmansconnection.com/#top) offers books of hydrographic maps for Michigan counties. These maps are based upon work done by the MDNR's Institute for Fisheries Research over several decades. Maps are available for about 2000 Michigan lakes. If a map of the lake is not available the volunteer sampler must use a fathometer to locate the deepest spot in the lake.

Topographic maps are helpful to volunteers to obtain the altitude and, optionally, the latitude/longitude location of the lake to be sampled. These data are needed to calibrate the dissolved oxygen meter and identify the lake location. Topographic maps are available to the volunteers on the internet web-site http://www.topozone.com to look up and determine the altitude and location of their lake.

N. Data Management

For CLMP monitoring components that require sample handling and shipping to the MDEQ laboratory (spring and summer total phosphorus and chlorophyll *a*), a tracking log is maintained to maintain the chain of sample custody. The log records when sampling materials are delivered to the volunteer sampler, receipt of the samples into the MSUE processing office and delivery to the MDEQ laboratory and finally receipt of analytical results from the laboratory. The log allows for identification of missing samples as well as the tracking of samples to insure their analysis within required holding times.

Volunteer field sheets are used for all parameters. The field sheets are reviewed by the MDEQ program manager and MiCorps project specialists for completeness and discrepancies. If problems are identified on the field sheets the data may be 1) excluded from the program results if the problem is significant, 2) included in the results but the problem noted or 3) accepted. Table 9 provides a summary of data management actions when incomplete field sheets and improperly collected or handled samples.

Table 9. Data Management Actions for Completeness and Discrepancies

Parameter -condition	**Accept Data**	**Accept Data and Note Problem**	**Reject Data**
SD Transparency - sampling time	9 AM – 6 PM	+/- 1 hour outside sampling time	all other times
Total Phosphorus - sampling dates	5 day sampling window	+/- 1 week outside sampling window	all other dates
- sample bottle condition	normal condition	bottle over full – unable to stand up	bottle and/or cap cracked
- sample frozen	frozen	delivered un-frozen but collected within 4 hours of delivery and frozen prior to shipping	shipped un-frozen

Chlorophyll - sampling dates - foil wrapped vials - sample frozen - replicate sample	target sampling date +/- 5 days wrapped in foil frozen	+/- 6 to 10 days from sampling dates delivered un-frozen but collected within 4 hours of delivery and frozen prior to shipping	greater than +/- 10 days from sampling dates no foil or poorly wrapped shipped un-frozen not collected at same location as primary sample
All parameters - sampling location - other sampling event data (i.e. instrument calibration)	deep primary station complete and within tolerances	deep secondary station incomplete, but data within tolerances	non-representative location – shoreline, inlet, outlet, or other incomplete, and data beyond tolerances

If samples or measurements are properly collected by the volunteer sampler but incomplete in terms of adequate numbers for the data summary calculations (i.e seasonal averages, medians, TSI values, etc.) the data are reported but the data summary calculations are not included in the annual report.

Laboratory reporting forms are reviewed by the MDEQ program manager and the MiCorps project specialists. Any unusual or highly variable data are questioned. Unusual high or low data values may be compared with other values reported in the sampling run for consistency. They may also be compared to historical or other data sources for the lake in question. If necessary the laboratory may be asked to rerun the samples if holding times have not been exceeded.

Data from the laboratory reporting forms (spring and summer total phosphorus, chlorophyll) and field sheets (all parameters) are entered in the MDE by the volunteers via the internet or MiCorps data management personnel. Each volunteer data collector can gain password-protected access to the data entry system via an internet interface at www.micorps.net. Data can be entered via electronic forms that mirror the field forms. Critical fields are fixed with minimum and maximum value limitations that will not allow unreasonable data to be entered and help eliminate data entry errors. MiCorps and MLSA staff enter the remaining data into the system using the same web interface. Data sheets with missing or problem data are flagged for verification by the database manager. Once data are entered into the system, MiCorps staff briefly review all records (as they come in) to verify that data entries are reasonable before considering the data "accepted." Problematic data sheets are further reviewed and either rejected or flagged as "accepted, with comment", and a comment describing the problem is entered. All data that are accepted (with or without comment) are then available for public review through the data view web interface. DEQ staff are also entering data through this system for years prior to 2004.

Lab results for total phosphorus and chlorophyll *a* are submitted electronically from the DEQ Environmental Lab once or twice per year, as results are generated. The lab data are imported into the MDE after the metadata is completely entered. At this time there is not a universal set of lake identification codes, so lab records are manually matched with field records by comparing lake and county names. The lab data is then associated with the field records to complete the data entry process. During 2007, all CLMP sampling stations will be assigned a STORET code to facilitate data handling and reduce data management errors.

From the MDE, results are tabulated for reporting in the annual report. Means, medians, ranges, and trophic state index values calculations and dissolved oxygen/temperature profile graphs are compiled using Excel spreadsheet data management format. Formulas are checked for accuracy and computations are spot checked to assure the formulas have been correctly applied and to minimize calculation or data handling errors. Once all data have been entered and

reviewed for inclusion in the annual report, MiCorps staff randomly check the data entry for approximately 5-10% of the tabulated data for each parameter by comparing original field forms and lab analytical reports to the tabulated data.

O. Reports

An annual report is prepared each year for the CLMP and printed for distribution to the CLMP participants, MLSA offices, and MDEQ district offices. The report is included on the MiCorps web-site. An example annual report is included in Appendix 1.

The report includes a general description of lake classification, eutrophication, measures of eutrophication and each water quality parameter monitored in the CLMP. Complete sampling results for Secchi disk, spring and summer total phosphorus and chlorophyll *a* are presented in tables. Representative sample results for dissolved oxygen/temperature and aquatic plant identification and mapping are included in the report. Summary results for each parameter are included in the report. In addition to the annual report, each lake that has been enrolled in the CLMP Secchi disk transparency, summer total phosphorus, and chlorophyll components for eight years or greater receives an apparent trend-line graph for that parameter. Reporting errors in the prior annual report are identified in the current report.

P. Data Review, Validation and Verification Requirements

All CLMP field and laboratory data are reviewed by the MiCorps project specialists and the MDEQ program manager to determine if the data meet QAPP objectives. Decisions to reject or qualify data are made by the program manager and program specialists collaboratively after review and evaluation of the data.

Q. Data Validation and Verification Methods

The data are reviewed for outliers, unusual values, discrepancies between samples and replicates and discrepancies between volunteer collected data and MDEQ collected side-by-side data.

As noted previously, field collected data sheets are verified for acceptability during at least two points in the data review process. First, when the field sheets are entered into the data entry interface, the database is programmed to reject sheets with critical missing data or values exceeding criteria. Illegible or other problematic data sheets may be identified at this point. The data are further verified by the database manager after the sheets are entered into the system, but before they are made publicly available. Minor problems are noted in a comment field. All field forms remaining in the system are validated once the data entry error check is completed, and the error rate is below 5%. If any problems are identified the appropriate section of the table or the entire table is assessed and redone if necessary.

When problems are identified these data are compared with previously collected data to determine if they are within the target range of variability. If outside the target range of variability field sheets are reviewed to identify possible explanations. The volunteer sampler may be contacted to go over collection procedures, equipment performance, supplies used and unusual environmental conditions on the day of sampling. If necessary the sample may be rerun if still within holding times or the site may be re-sampled.

Replicate Sampling:

Each year a comparison is made of the volunteer collected samples and the replicates collected. Data from previous years to the current sampling event are plotted, graphed and assessed for agreement. Historically there has been a very high degree of agreement between the volunteer collected samples and replicates. Figure 3 illustrates the cumulative results for the replicate spring overturn total phosphorus samples since the quality assurance program was implemented in 1993. Figure 4 illustrates the cumulative results for the replicate late summer total phosphorus samples since this parameter was added to the CLMP in 1998. Figure 5 illustrates the cumulative results for the replicate summer chlorophyll *a* samples since this parameter was added to the CLMP in 1998.

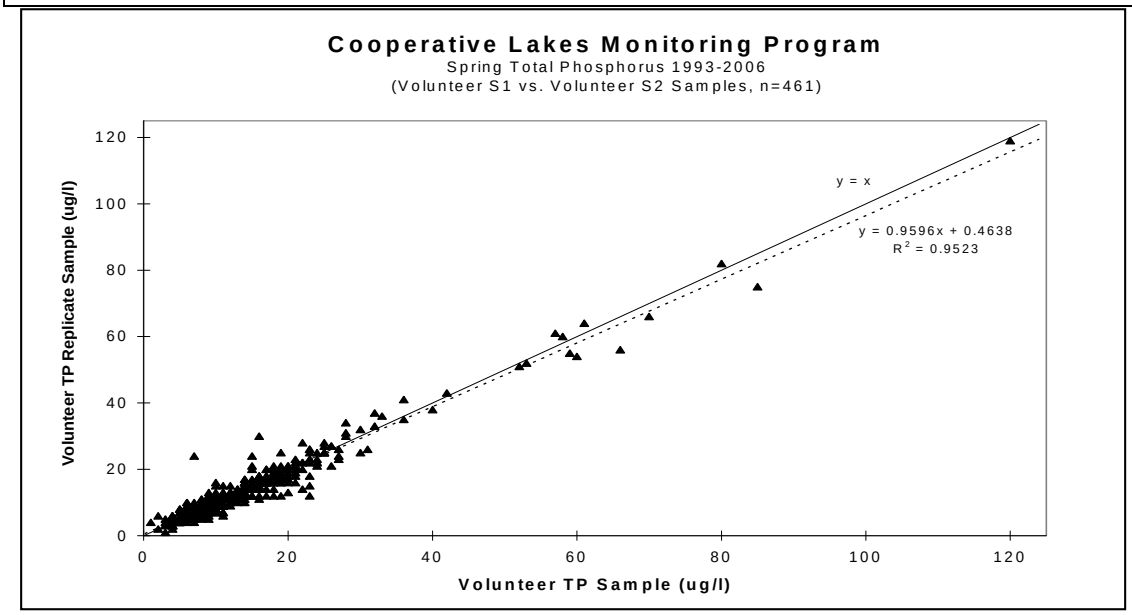

Figure 3. CLMP Spring Total Phosphorus Replicate Quality Assurance Samples.

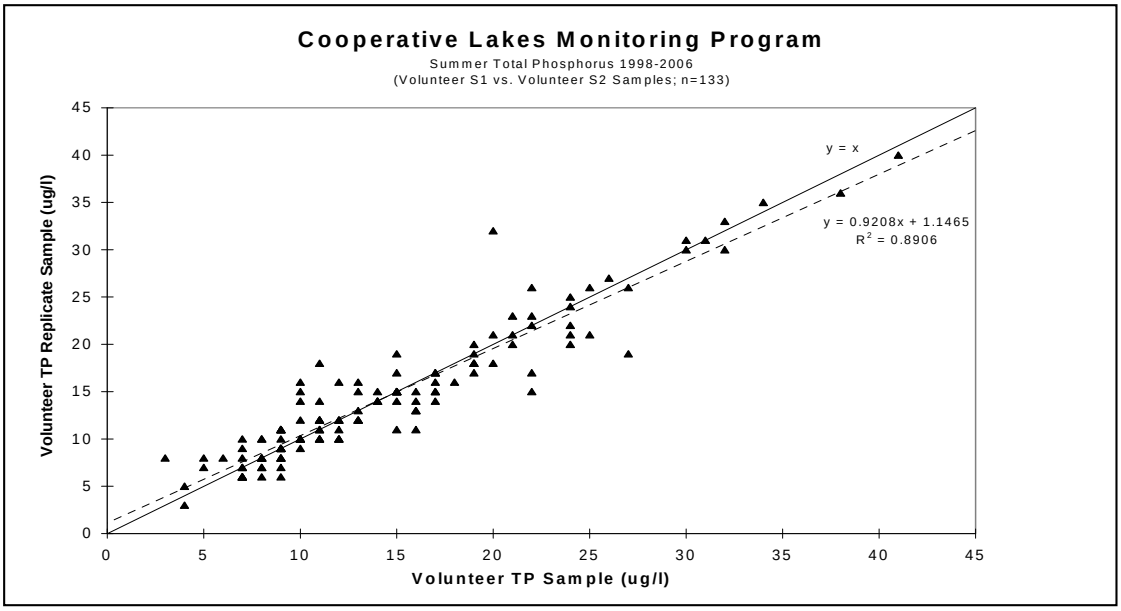

Figure 4. CLMP Late Summer Total Phosphorus Replicate Quality Assurance Samples.

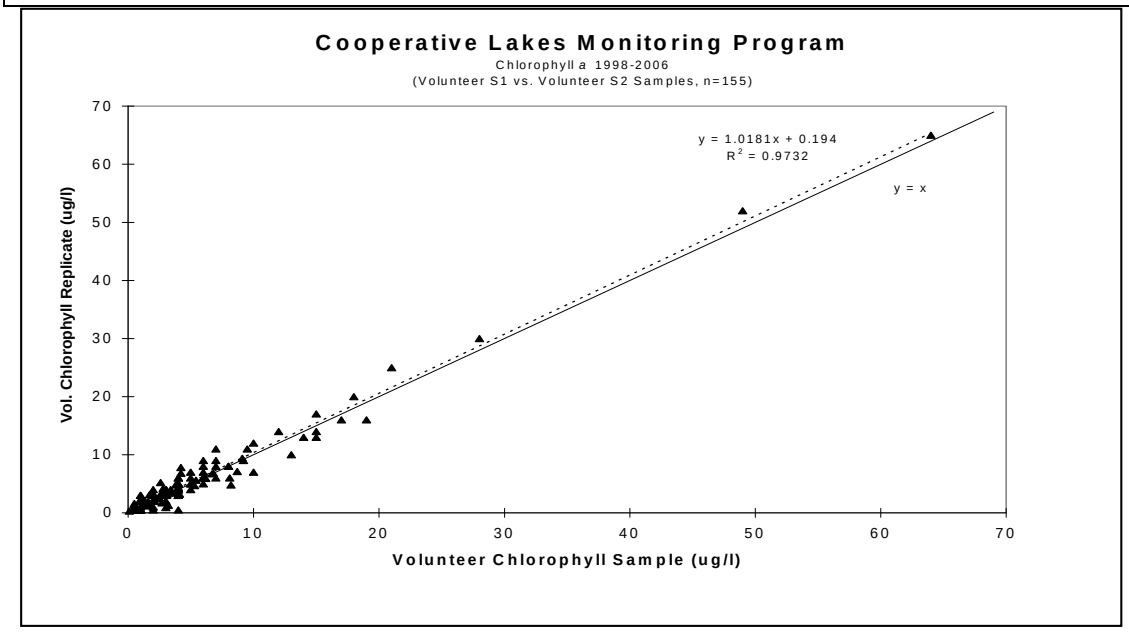

Figure 5. CLMP Summer Chlorophyll *a* Replicate Quality Assurance Samples.

The high correlation of agreement indicates that volunteer chlorophyll and phosphorus sampling are consistent.

Side-by-Side Sampling
In addition to the volunteer replicate agreement assessment, results of volunteer and professional sampling conducted side-by-side are compared annually. Data are plotted, graphed and assessed for agreement. Historically, there has been a high degree of agreement between results of the volunteer and professional side-by-side sampling efforts.

Phosphorus: DEQ samples yield slightly more phosphorus than volunteer samples, but there is no significant change in difference as phosphorus increases.
For spring phosphorus (Figure 6), both the intercept and slope are close to an ideal distribution (intercept of 0, slope of 1.0). The intercept (1.2767 ug/L) is significantly different from 0, indicating that DEQ sampling methods result in slightly more phosphorus per sample. The slope (1.0308) is above 1.0, but not significantly different from the ideal 1.0, indicating little change in the DEQ-Volunteer relationship as phosphorus increases.

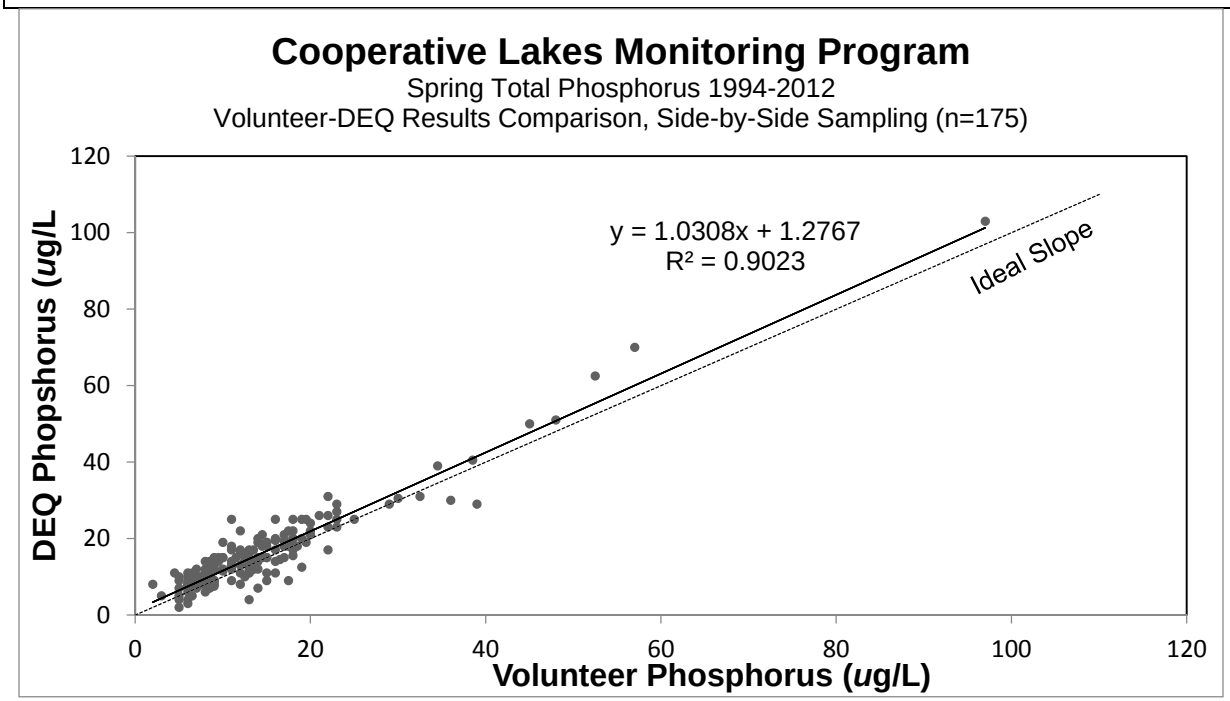

Figure 6. CLMP Spring Total Phosphorus Side-by-Side Quality Assurance Samples.

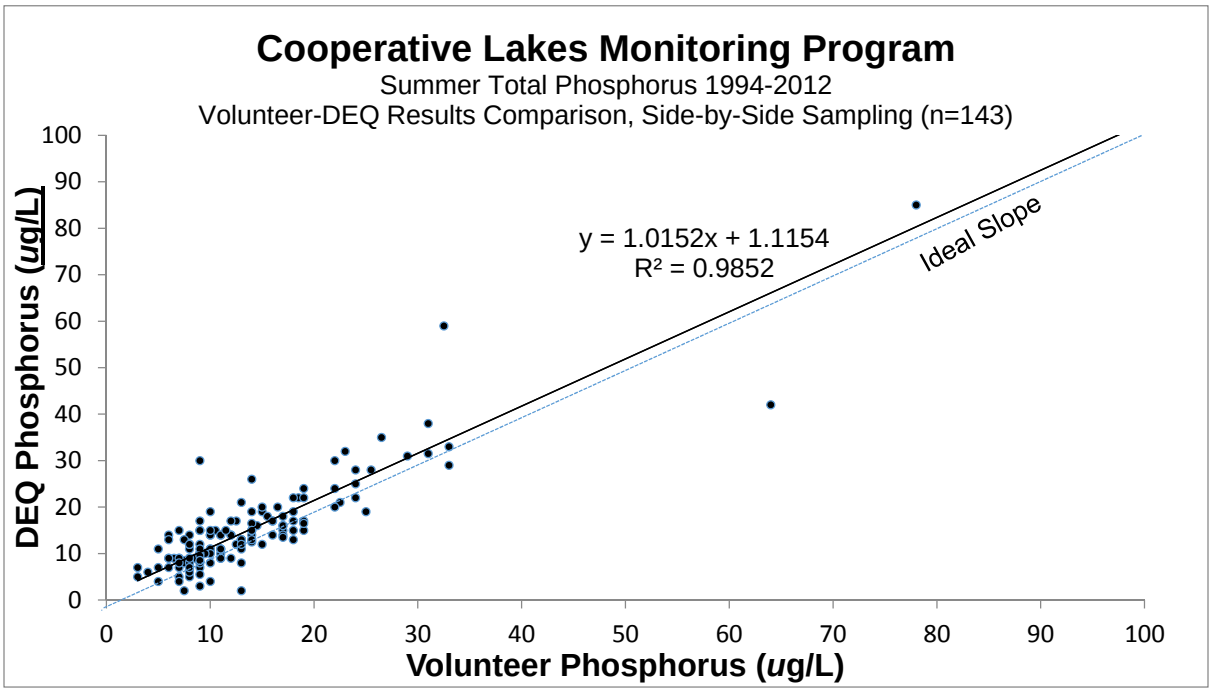

Figure 7. CLMP Late Summer Total Phosphorus Side-by-Side Quality Assurance Samples. Please note that a single very high summer phosphorus value (460-470 ug/l) was not depicted on the chart for illustration purposes, but was included in the analysis.

For Summer phosphorus (Figure 7), like Spring phosphorus, both the intercept and slope are close to, but slightly exceed, an ideal distribution (intercept of 0, slope of 1.0). The slope (1.0152) is slightly greater than the ideal 1.0, although the difference is not statistically significant. The intercept (1.1154 ug/L) is significantly different from 0,

The Spring and Summer phosphorus DEQ-Volunteer relationships are consistent. Slight but statistically significant higher DEQ intercepts, and slight but not significant slopes.

In lay terms, this means DEQ phosphorus values are consistently ~ 1 *u*g higher than volunteer values, and the relationship changes little as phosphorus increases.

The fractional but consistent exceedance of volunteer values by DEQ values likely results from the different preservation methods used by volunteers and DEQ. DEQ staff immediately preserve samples with sulfuric acid. However, sulfuric acid is not available to volunteers because of safety concerns.

Instead, volunteers preserve phosphorus samples by freezing, accomplished in home freezers upon return to shore after sampling. There may be a fractional loss of phosphorus from volunteer samples to sample container walls during the interval between sample collection and freezing.

Because of the lack of acidification, a small fraction of volunteer phosphorus may be lost to the sides of sample containers at each sample collection. This loss would not increase much with increasing phosphorus concentration if the available phosphorus binding sites were complexed by the initial fraction of phosphorus.

The side-by-side phosphorus comparisons indicate an acceptable degree of agreement between CLMP volunteer data and DEQ data.

Chlorophyll: Volunteer and DEQ results agree

For Chlorophyll (Figure 8), both the intercept and slope are close to an ideal distribution (intercept of 0, slope of 1.0). The intercept (0.4443 ug/L) is slightly above 0, but not significantly different from 0. The slope (1.0252) is slightly above 1.0, but not significantly different from the ideal 1.0.

The side-by-side phosphorus comparisons indicate an acceptable degree of agreement between CLMP volunteer data and DEQ data.

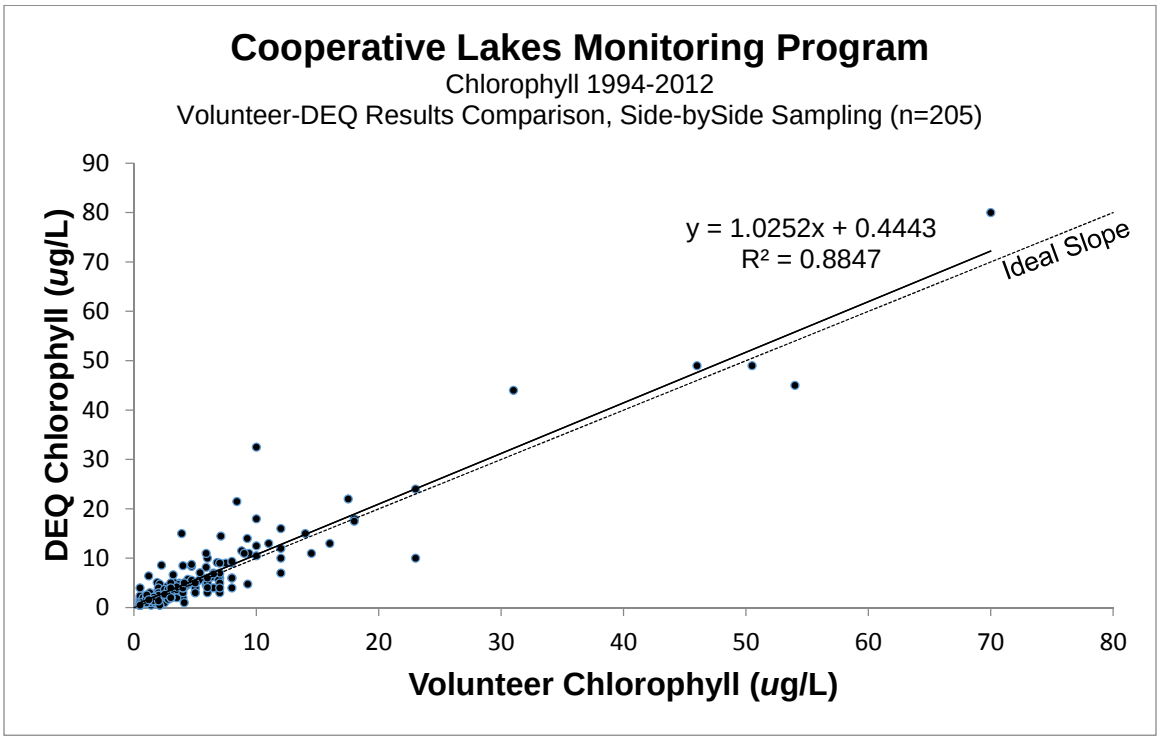

Figure 8. CLMP Chlorophyll *a* Side-by-Side Quality Assurance Samples.

R. Reconciliation with Data Quality Objectives

As soon as the data are reported from the laboratory for each CLMP parameter each year, the results are reviewed and evaluated both individually and collectively. The relative percent difference (RPD) is determined for the replicate and side-by-side data for the total phosphorus and chlorophyll parameters. An annual average RPD is calculated for each set of data and compared to the cumulative average RPD for each parameter. These data quality indicators are used to determine the precision and accuracy of the date as compared with the program specifications. If the data quality indicators do not meet the program specifications the data set will be evaluated and may be coded or discarded from the database. Individual data may also be coded if a problem was found in the sample collection, handling and shipping, processing, and laboratory analysis steps. The cause of failure will be evaluated and corrected. Any limitations on data use will be noted in the annual report and other documentation as needed. If failure to meet project specifications is found to be unrelated to equipment, methods, or sample error, specifications may be revised for the next sampling season and the QAPP will be updated.

S. References

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