Oneida County Lake Management Planning Grant:

Dissolved Oxygen Meter

FINAL REPORT

(Completion Date: December 2010)

Grant/Project Number: SPL-222-10

Prepared for:
Wisconsin Department of Natural Resources

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Sponsor

Oneida County Land & Water Conservation Department

Project Title

Dissolved Oxygen Meter

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SPL-222-10

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PROJECT OBJECTIVES & ACCOMPLISHMENTS:

The following includes a list of objectives completed for the 2010 Lake Management Planning Grant:

1. Obtain an easy to use, reliable instrument for the measurement of dissolved oxygen in lakes throughout Oneida County.

In June of 2010, the Oneida County Land & Water Conservation Department (LWCD) purchased a dissolved oxygen (D.O.) meter and probe from the Hach Company (See Appendix A for verification of the equipment purchase)

2. To share and have available for checkout the dissolved oxygen meter, probe, and cable to trained individuals.

Shortly after acquiring the D.O. meter, it was made available for the public to check out during water quality monitoring surveys. Individuals using the equipment were given an "Instruction Guide" and CLMN water quality data sheet (Form 3200-099). See Appendix E for the equipment check-out list, along with monitoring instructions.

3. Offer available training for the use and disinfection of the meter hosted by Oneida County.

On June 18th and July 8th of 2010, the LWCD hosted CLMN workshops at the Kemp Natural Resources Station (Woodruff) and at Bonnie's Lakeside Resort (Three Lakes), respectively. Pontoon boats were rented for the workshops, which allowed workshop participants an opportunity for some on-the-water training. Besides demonstrating techniques on surveying aquatic plants, participants were shown how to use the D.O. meter and secchi disk to monitor water quality. Five people participated in the June 18th workshop, whereas 21 people participated in the July 8th workshop. See Appendices C and D for documentation of the CLMN workshops.

4. Enter data into the Citizens Lake Monitoring Network

All individuals who borrowed the D.O. meter were instructed to enter the survey data into the surface water integrated monitoring system (SWIMS) database, and to return a copy of the field data sheet with the meter. The field data sheet was then used to verify that the CLMN volunteer had indeed entered the data into the SWIMS database. All survey data has been entered. See Appendix F for copies of the raw field data sheets as well as the reports generated from the SWIMS database.

5. Validate calibration of meter periodically by comparing with Winkler Method titrations

On December 20, 2010, Lawrence Eslinger and Sandra Wickman successfully validated the calibration of the D.O. meter with the Winkler Method. From a sample of tap water, the D.O. meter read 8.74 mg/L of dissolved oxygen, whereas the Winkler Method resulted in a reading of 8.8 mg/L. See Appendix G for documentation of the calibration procedure.

6. Provide a written summary on costs, available training and number of citizens trained, checkout request, and results of 2010 monitoring

See Project Conclusion for a summary on the associated costs, along with the number of citizens trained. See Appendix E for the equipment checkout list and Appendix F for the copies of the field data sheets and monitoring reports.

PROJECT CONCLUSION:

The "Total Project Costs" for this project were set at $2,260.00. The D.O. meter and its associated parts, equaling $1,555.75, were the only requested, and granted, WDNR purchases for this project. A "Local Share" of $704.00 was expected to be encumbered by Oneida County. Administrative costs and in-kind services were estimated to achieve the "Local Share" determination. See the attached "Oneida County Local Cost Share Documentation" table for specifics. The following figures detail the administrative and in-kind contributions:

Administrative Costs: 11 hours x $28.37 = $312.00 (rounded)
Ordering equipment = 2 hours
Familiarization with equipment/ developing easy-to-use instructions/ coordinating equipment use/ etc. = 7 hours
Validation of meter calibration with Winkler Method = 2 hours

In-kind Services: 36 hours x $12.00 = $432.00
The D.O. equipment was checked out a total of 6 times, and monitoring of dissolved oxygen content occurred on 5 different waterbodies. Individuals using the equipment were asked to keep track of the amount of time in which it took them to monitor dissolved oxygen (see "Dissolved Oxygen Meter Sign-out Sheet"; Appendix E). In addition to the 6 equipment sign-outs, seven other people (noted on field data sheets or in reports), were indicated to have assisted with data collection in the field. Therefore, a total of 15 volunteer hours were recorded during the 2010 season for D.O. monitoring.
15 hours x $12.00 = $180.00

Also, the Oneida County Land and Water Conservation Department offered two CLMN training workshops in which 26 volunteers were trained to use the D.O. meter and monitor for dissolved oxygen. Twenty-one of those volunteers' hours were available for in-kind services for the Oneida County grant (see Appendix D). Therefore, we appropriated one hour (of the 21 volunteers applicable) of each three hour workshop to contribute to the in-kind services for this grant.
21 hours x $12.00 = $252.00

Local Share = $312.00 + $432.00 = $744.00

Therefore, as required in the contract agreement, Oneida County has satisfied the "Local Share" requirements for this project. Please reimburse the Oneida County Land and Water Conservation Department the remaining **$389.00** for the purchase of the D.O. meter.

INSERT 'ONEIDA COUNTY LOCAL COST SHARE DOCUMENTATION'

APPENDICES

APPENDIX A

Invoice, payment information, and receipts for purchase of HQ30d Digital Meter, LDO101 Dissolved Oxygen Probe with cable, and Field Case

APPENDIX B

List of lakes tested with D.O. profile

Burrows Lake
6/22/10

Depth (ft.)	Temp. (^{o}F)	D.O. (mg/L)
3	73	7.94
6	73	7.99
9	71	7.77
12	70	6.69
15	69	4.62
18	68	1.79

Burrows Lake
7/24/10

Depth (ft.)	Temp. (^{o}F)	D.O. (mg/L)
3		7.99
6		7.89
9		7.69
12		6.77
15		5.88
18		0.18

Blue Lake (East)
6/30/10

Depth (ft.)	Temp. (^{o}F)	D.O. (mg/L)
3	71.1	8.68
15	70.7	8.64
20	67.4	5.99

Blue Lake (West)
6/30/10

Depth (ft.)	Temp. (^{o}F)	D.O. (mg/L)
3	70.1	8.83
15	69.5	8.84
20	66.4	10.06
40	57.7	6.86

Continued

Fuller Lake
7/06/10

Depth (ft.)	Temp. (^{o}F)	D.O. (mg/L)
1	80.6	7.06
2	78.4	7.22
3	77.2	7.50
4	76.8	7.59
5	76.6	7.82

Tom Doyle Lake
8/14/10

Depth (ft.)	Temp. (^{o}F)	D.O. (mg/L)
1	79	7.90
3	79	7.90
6	79	7.92
9	78	7.86
12	77	7.88
15	74	4.75
18	65	0.21
21	59	0.21

Hancock Lake
6/24/10

Depth (ft.)	Temp. (^{o}F)	D.O. (mg/L)
1	74.6	8.88
3	74.3	8.92
6	74.1	8.91
9	72.3	6.65
12	67.4	2.22
15	63.9	0.18
18	60.8	0.10

APPENDIX C

Pictures from Citizen Lake Monitoring Network (CLMN) Workshops

APPENDIX D

Attendance sheets from CLMN Workshops

APPENDIX E

Checkout sheet for Dissolved Oxygen Meter use and Instruction Guide

APPENDIX F

Monitoring datasheets & CLMN reports

APPENDIX G

Documentation of the validation procedures for calibration of the D.O. meter