BLLB 2022
Lake Management Subcommittee Recommendation

Assessment Process

- Due to the limited time available with resignation of RLS, meetings took place with the following firms, and bid proposals were received.
- **RLS** was used as a historical reference for scope of service and expense
- **PLM** offers lake management services in addition to their treatment services
- **Progressive AE** provides similar services as RLS and manages many local lakes
- **GVSU AWRI** was consulted due to their testing expertise, neutrality, and successful local projects

Comparison of Services

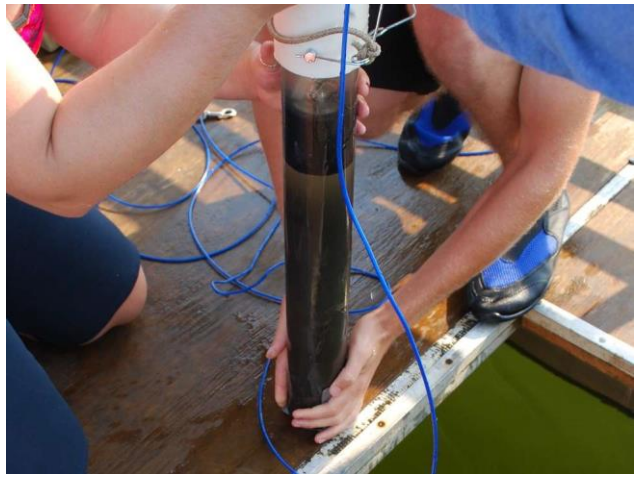
(Water Quality Monitoring Excluded)

- RLS, Progressive and PLM all provide very similar services
- PLM did included Newsletter production and distribution as well as E.coli monitoring in their proposal

	Restorative Lake Sciences	progressive ae	PLM Lake & Land Management Corp	Grand Valley State University
Annual Progress Report	✓	✓	✓	N/A
Meeting Attendance	✓	✓	✓	✓
Consulting	✓	✓	✓	✓
Assistance with Assessments	✓	✓	✓	N/A
Newsletter Production and Distribution	✗	✗	✓	N/A
Bathymetric/Depth Survey Mapping	✓	✓	✓	N/A
Aquatic Surveys with GPS Mapping	✓	✓	✓	N/A
Treatment Bid Assistance and Invoice Review	✓	✓	N/A	N/A
Treatment Reports with Maps and Products Used	✗	✗	✓	N/A
Evaluation of Treatments	✓	✓	✓	✓
Water Quality Monitoring	✓	✓	✓	✓
Water Quality Analysis and Recommendations	✓	✓	✓	✓
E.coli Monitoring	✗	✗	✓	N/A

Lake Management vs. Water Quality Monitoring

- The recommendation is to separate out water quality monitoring
- There is a huge range in potential tests, locations, frequency, and expense
- GVSU's Annis Water Resources Institute can perform water testing and/or review testing from others
- Bid proposals were received with options for each firm handling the testing as well as without testing, with GVSU handling the testing
- This does not include actual treatment expenses



Lake Management

Lake Management Expense

(Water Quality Monitoring Excluded)

Restorative Lake Sciences

Included	
Meeting Attendance (12)	$3,500
GPS Aquatic Surveys and Treatment oversight	$3,825
Assessment of Treatments	$2,550
Review contractor invoices	$425
Annual Progress Report	$1,700
Technical Assistance	Incld
Newsletter Assistance	Incld
TOTAL:	**$12,000**

Optional	
Water Quality Monitoring	$10,000
Additional Evaluation Items	$85/Hr

progressive ae

Included	
Monthly GPS Aquatic Surveys May-Aug	Incld
Digitize Shoreline Aerial Photography	Incld
Bathymetric Depth Scan/Map	Incld
Geo-Referenced Maps for Treatment	Incld
Coordinate Plant Control Activities	Incld
Confer with BLLB Re Contractor	Incld
Maintain Electronic Database of Treatments	Incld
Post Treatment Assessment Surveys	Incld
Project Mgt Assistance	Incld
Review Contractor Invoices	Incld
Assist with Organization Proceedings	Incld
Provide Support Data for EGLE Permits	Incld
TOTAL:	**$11,500**

Optional	
Meeting Attendance As-Needed	$160/Hr
Water Quality Testing via GVSU	

PLM Lake & Land Management Corp

Included	
Meeting Attendance (Spring/Fall)	Incld
AVAS Aquatic Vegetation Survey (Fall)	$875
AVAS Survey (Spring/Optional)	$875
Lake Management Plan/Review (Fall)	$1,200
Treatment Reports with Maps	Incld
Newsletter Production and Distribution	$775
E.Coli Monitoring (Optional)	$300
Possible Fuel Surcharge of 1.5%	$60
TOTAL:	**$4,085**

Optional	
Bathymetric Depth Mapping	$2,100
Additional Project Mgt/Consulting	$150/Hr
Water Quality Monitoring	
Inlet/Storm Drain Sampling	

Water Quality Testing

Water Quality Testing

Restorative Lake Sciences	Grand Valley State University	PLM Lake & Land Management Corp
2020	**Recommended**	**GVSU Match**
Frequency: (2) Early Spring and Late Summer/Fall	**Frequency:** (6) Monthly May-Oct	**Frequency:** (6) Monthly May-Oct
Locations: (2) Basins and Tributaries	**Locations:** (4) Deep lake sites	**Locations:** (4) Deep lake sites
Depths: (2) Depths	**Depths:** (2) Depths	**Depths:** (2) Depths
Tests: water temperature, dissolved oxygen, pH, turbidity, total dissolved solids, conductivity, total phosphorus, soluble reactive phosphorus, total kjeldahl nitrogen, total suspended solids, chlorophyll-a, Secchi transparency, and algal community composition	**Tests:** - Temperature, DO, turbidity, conductivity, and pH using a YSI Sonde - Chlorophyll a via spectrophotometry - TP (total phosphorus), SRP (soluble reactive phosphorus), NH3 (ammonia), NO3 (nitrate), and TKN (total Kjeldahl nitrogen) using Standard Methods - Total fecal coliform via Colilert methodology - Microcystin concentration using ELISA - Phytoplankton community structure to finest possible taxonomic level (collection via Van Dorn bottles; analysis via light microscopy) - Final report will summarize the data and results identify possible threats to Bear Lake, and offer recommendations.	**Tests:** Similar to GVSU Includes Possible 1.5% Fuel Surcharge
TOTAL: $10,000	**TOTAL: $18,238**	**TOTAL: $23,193**

Subcommittee Recommendation

Recommendation

- PLM for Lake Management Services plus Newsletter and E.Coli Monitoring
- GVSU's monthly testing at 4 locations and 2 depths
- Comparable expense to previous years, but considerably more services, tests, and analysis

Lake Management		
	Meeting Attendance (Spring/Fall)	Incld
	AVAS Aquatic Vegetation Survey (Fall)	$875
	AVAS Survey (Spring/Optional)	$875
	Lake Management Plan/Review (Fall)	$1,200
	Treatment Reports with Maps	Incld
	Newsletter Production and Distribution	$775
	E.Coli Monitoring (Optional)	$300
	Possible 1.5% Fuel Surcharge	$60
	PLM Total	**$4,085**

Water Quality Testing		
	Frequency: (6) Monthly May-Oct	
	Locations: (4) Deep lake sites	
	Depths: (2) Depths	
	Tests: - Temperature, DO, turbidity, conductivity, and pH using a YSI Sonde - Chlorophyll a via spectrophotometry - TP (total phosphorus), SRP (soluble reactive phosphorus), NH3 (ammonia), NO3 (nitrate), and TKN (total Kjeldahl nitrogen) using Standard Methods - Total fecal coliform via Colilert methodology - Microcystin concentration using ELISA - Phytoplankton community structure to finest possible taxonomic level (collection via Van Dorn bottles; analysis via light microscopy) - Final report will summarize the data and results identify possible threats to Bear Lake, and offer recommendations.	
	GVSU AWRI Total	**$18,238**

GRAND TOTAL $22,323

Laketon
Township
North
Muskegon