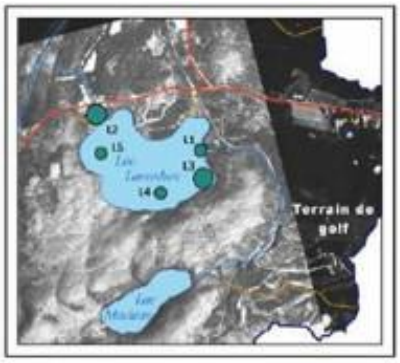
ASSOCIATION DU BASSIN VERSANT DU LAC
BLUE SEA

Lac Laverdure

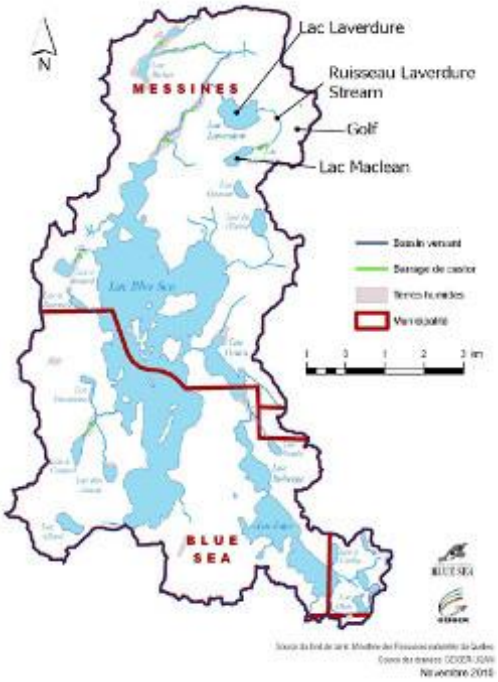
Initial Assessment - The 2010 GEIGER Report

Lac Laverdure is a small lake situated in the north end of the Blue Sea Lake watershed. At the request of one of its residents, the 2010 GEIGER Report team took five water samples from the lake on 12 August 2010. These samples suggested that the overall state of Lac Laverdure was mesotrophic, with an average phosphorus concentration much higher than that in Blue Sea Lake (ie, 17.6 µg/l vice 6.5 µg/l). Given the small number of cottages on the lake and the absence of farming in the local area, the team concluded that the principal human sourceof the lake's phosphorus was likely the nearby golf course. In their report, recommended that discussions be held with the owner of that facility to find ways to reduce the inflow of phosphorus into Lac Laverdure.



Concentration de phosphore (µg/L) Phosphorus Content (µg/L)	
L1	13,73
L2	28,42
L3	23,35
L4	11,06
L5	11,86
moy/av	17,68

In response to these findings, the Association proposed to the municipalities that a consultant be problem and to recommend ways to reverse the lake's deterioration.



The 2012 ABV des 7 Study

Accordingly, in the Spring of 2012, ABV des 7 was contracted to conduct this study. Their report, which was issued in the Fall of that year, provided a general description of the lake and its watershed, focusing principally on the state of the lake's shoreline and on that of Laverdure stream which flows from Lac Maclean along the golf course to Lac Laverdure. ABV des 7 also queried the golf course owner re general maintenance practices (eg: the use of pesticides and ferilizers), and examined the vegetated "buffer zones" on and near the course. They took four water samples - two from Lac Maclean, one from a marsh near the golf course that is fed by Laverdure stream, and one from that stream just before it empties into Lac Laverdure.

Because the phosphorus concentrations in the samples taken from Lac Maclean and Laverdure stream were in the oligotrophic range while that of the sample taken from the marsh was in the mesotrophic range, they concluded that Lac Laverdure's excessive inflow of phosphorus likely originated in the area where the stream passed by the golf course. As to the source of the phosphorus, they attributed that principally to the golf course but did note that the presence of beaver dams in the area was probably a contributing factor.

Based on its findings, ABV des 7 recommended that, to improve Lac Laverdure's water quality:

- all lakeside residents comply with the MRC's interim shoreline regulations;
- wider vegetated buffer zones be established along the Laverdure stream and the golf course waterways; and
- the golf course initiate "greener" fertilizing practices.

To read the report, (*French only*), please click here (*7.1 MB*).

The 2013 Groupe Hémisphères Study

Given the general nature of ABV des 7's assessment and recommendations regarding the golf course, the Association felt that a more in depth study was required. Accordingly, with funding from the municipalities and the agreement of the golf course owner, the Association contracted with Groupe Hémisphères in the Spring of 2013 to conduct another review of Lac Laverdure's phosphorus problem, but this time with a greater focus on the golf course's possible contribution to this situation.

The Groupe Hémisphères consultant conducted a general assessment of the Lac Laverdure watershed, and quickly eliminated both water drainage and lake-side septic system contamination as likely sources of excessive phosphorus inflow. Based on water and soil samples taken on the golf course, he determined that the phosphorus levels on the course were satisfactory for such a facility. He found that the course was being managed in an environmentally responsible manner, employing many excellent environmental practices including an exemplary pesticide program and limited fertilizer use.

Noting the strong presence of beavers in the wetlands bordering the golf course, he concluded that beaver activity in the wetlands - which covers an area equal to that of the course - played a significant role in elevating the phosphorus concentration in the Laverdure stream. The consultant concluded that phosphorus inflow into Lac Laverdure was strongly influenced by:

- the heavy population of beavers that inhabit the area surrounding Laverdure stream,
- the narrowness of the vegetated bands along the waterways, and
- the maintenance requirements of the golf course.

The Groupe Hémisphères report, which was issued in Fall 2013, recommended that:

- action be taken to control beaver activity in the area;
- those sections of the golf course that border or include waterways incorporate more and wider bands of vegetation;
- the amount of fertilizer used on the golf course as whole be reduced as much as possible; and
- only phosphorus-free fertilizer be used near waterways.

The report also included detailed suggestions on how to enhance the landscaping of the course to reduce the inflow of phosphorus.

Follow-up Action

Subsequent to the issue of the report, the Association met separately with the golf club owner and with the municipalities to discuss the findings and future action. It was agreed that the Municipality of Messines and the Association would meet with the golf club owner to determine what assistance they could provide in implementing the report's recommendations. It was also agreed that, with funding from both municipalities, the Association would hire a "beaver expert" to study what can be done to address the beaver dam issue both near the golf course and in other areas of the watershed.