WATER QUALITY MONITORING

2019

EUTROPHICATION / CLASSIFICATION OF LAKES

"EUTROPHICATION" THE PROCESS OF LAKE AGING

- Lakes age naturally and this process takes place over a long period of time, hundreds, even thousands of years.
- This process can be accelerated by human activities which take place on the shore and in the watershed.
- These activities increase the nutrients, mainly phosphorus, entering the lake.
- Symptoms of increased nutrients (phosphorus) in a lake are:

  INCREASED ALGAE & AQUATIC PLANT GROWTH
  DECREASED DISSOLVED OXYGEN

PREMATURE AGING (EUTROPHICATION) IS A SERIOUS PROBLEM AFFECTING LAKES.

CLASSIFICATION OF LAKES

THERE ARE THREE MAIN CATEGORIES TO DESCRIBE THE CONDITION OF A LAKE AS IT PROCEEDS THROUGH THE EUTROPHICATION PROCESS:

OLIGOTROPHIC
- early stage of eutrophication / very clear water
- low level of nutrients (phosphorus) resulting in a limited amount of algae and plant growth
- high dissolved oxygen throughout the summer

MESOTROPHIC
- intermediate stage of eutrophication / moderate water clarity
- moderate nutrient levels with moderate algae and plant growth

EUTROPHIC
- advanced stage of eutrophication / troubled waters
- high nutrient levels stimulating high algae and plant growth
- lakes which become depleted of dissolved oxygen during the summer
- lakes that may exhibit persistent "blue-green algae" blooms

THERE ARE ALSO SEVERAL TRANSITIONAL STAGES

- ULTRA-OLIGOTROPHIC
- **OLIGOTROPHIC**
- OLIGO-MESOTROPHIC ➤➤➤➤➤➤➤➤ **LAKE HUGHES WAS IN THIS CATEGORY IN 2010, 2011, 2012, 2016 & 2018**
- **MESOTROPHIC**
- MESO-EUTROPHIC
- **EUTROPHIC**
- HYPER-EUTROPHIC

SEE RSVL WATER TESTING RESULTS (SEPARATE DOCUMENTS)

THE INDICATORS OF WATER QUALITY THAT ARE MEASURED / EVALUATED TO DETERMINE THE STAGE OF EUTROPHICATION OF A LAKE

- **PHOSPHORUS**
- **CHLOROPHYLL *a***
- **TRANSPARENCY / DISSOLVED ORGANIC CARBON**
- **DISSOLVED OXYGEN**
- **AQUATIC PLANTS**
- **ALGAE (PERIPHYTON)**
- **EROSION / SEDIMENTS**

REFERENCES: RSVL "Réseau de surveillance volontaire des lacs" www.mddelcc.gouv.qc.ca/eau/rsvl
ONTARIO / VERMONT / MICHIGAN / EPA "Lake Monitoring Programs"

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