

ITEM 4  
MANAGER'S REPORT NO. 66  
COUNCIL MEETING 85/10/21

RE: LETTER FROM MR. L.C. DAVIS WHICH APPEARED ON THE AGENDA FOR THE  
1985 OCTOBER 15 MEETING OF COUNCIL (Item 4 a)  
DEER LAKE WATER QUALITY

ACTING MUNICIPAL MANAGER'S RECOMMENDATION:

1. THAT the recommendation as contained in the report from the Director  
Recreation & Cultural Services be adopted.

\* \* \* \* \*

1985 OCTOBER 15

TO : MUNICIPAL MANAGER  
FROM: DIRECTOR RECREATION & CULTURAL SERVICES  
RE : LETTER FROM MR. L.C. DAVIS REGARDING DEER LAKE WATER QUALITY

RECOMMENDATION:

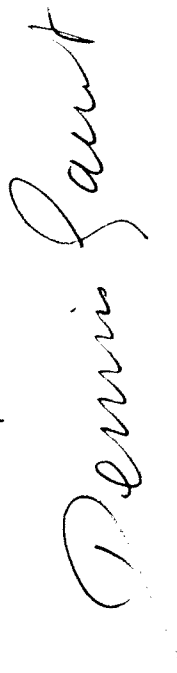
1. THAT a copy of this report be sent to Mr. L.C. Davis.

REPORT

Appearing on the Council Agenda for 1985 October 15 was a letter from Mr.  
Lawrence C. Davis expressing concern about the deteriorating condition of  
Deer Lake.

Mr. Davis' letter was referred to the Director Recreation & Cultural Services  
and the attached report on the subject was received by the Parks & Recreation  
Commission at its meeting of 1985 October 16.

The Commission approved the recommendation of the report.



DENNIS GAUNT  
Director Recreation &  
Cultural Services

PAL:ps  
Attach.

cc: Environmental Health

RE: LETTER FROM MR. L. C. DAVIS  
REGARDING DEER LAKE WATER QUALITY

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RECOMMENDATION:

1. THAT a copy of this report be sent to the Municipal Council and to Mr. L. C. Davis. 113

REPORT

I. INTRODUCTION

Attached (Attachment #1) is a letter from Mr. Lawrence C. Davis, a Burnaby resident, who has raised some concerns over the deteriorating condition of Deer Lake.

Mr. Davis' concern centers on the decline in lake quality and its concomitant loss of recreational opportunities as a result of continued aquatic weed growth. His concern is that with the spread of the lily pads and milfoil, the fishing opportunities have declined and canoeing and swimming have become potentially dangerous. He recommends dredging the lake bottom as a means of eliminating the problem.

The following report outlines the causes of the decline as reported in the Deer Lake Water Quality Study prepared by Beak Consultants Limited. Their recommended improvement measures, which are to be implemented over the next few years, are outlined. A comment on each of Mr. Davis' concerns is provided.

II. DEER LAKE WATER QUALITY STUDY

A water quality study was prepared in 1981 by Beak Consultants Limited to investigate the causes in the decline of water quality and to recommend mitigation and enhancement procedures to preserve and restore the lake's water quality.

The Consultants have concluded that Deer Lake is suffering from eutrophication; a natural aging process in lake evolution from inception to extinction. This process is a function of infilling by sediments and high nutrient input. This natural cycle has been accelerated in Deer Lake primarily because of urban development in the watershed. The result, as Mr. Davis has pointed out, is that Deer Lake has become more shallow while the added nutrients have promoted plant growth which could eventually cover the lake unless remedial steps are taken.

This natural cycle can be controlled and Beak Consultants have recommended several means of reversing the cycle. Approximately 20 different lake restoration techniques have been identified. Direct quotes from the Consultants on the two techniques mentioned by Mr. Davis are given below:

- A. Dredging: if Deer Lake is dredged, several metres of dredge depth would likely be necessary to produce the desired effect. While potentially rejuvenating the lake, dredging may not remove enough material to reach a sediment layer with less phosphorus concentration. Dredging may also severely alter lake hydrology. Too little is known regarding the inflow of the lake groundwater to tamper with this complex issue. The excessive cost, given the dubious benefit to the lake and its fish as well as not addressing the nutrient problem, renders dredging unfeasible for Deer Lake at this time.

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## II. DEER LAKE WATER QUALITY STUDY (Continued)

- B. Plant Management: harvesting rooted macrophytes at the right time of the year can prove a useful technique to remove both nuisance plants and nutrients from Deer Lake. At a 1982 estimated cost of \$1200/ha for harvesting (crude estimate for Aquatic Studies Branch harvester not including capital depreciation, Dr. Peter Newroth, Manager, Littoral Studies, pers.comm.), annual costs for Deer Lake are estimated at about 16 ha x \$1200 = \$19,200. A much less costly and perhaps more efficacious way of inhibiting the spread of nuisance plant growth and nutrient pumping to the lake water is the use of lake bottom screening, such as burlap or plastic. Costs for such a method would be minimal.

The final recommendations for the improvement in water quality are more complex and include the improvement of storm water entering the lake, diversion of storm drains carrying high sediment and nutrient loads, and construction of sediment ponds for the collection of both silt and pollutants. Implementation of this work is forthcoming pending a final report on water quality from Environmental Health. Much of this work will occur in conjunction with the development of the Oakalla Park lands proposed over the next five years.

As an interim measure, the Consultants have recommended 12 items for the management of Oakalla Park to maintain and improve the Deer Lake environment. These are presently being adhered to.

### III. MR. DAVIS' CONCERNS

#### 1. Spread of Eurasian Milfoil

Mr. Davis is concerned that Eurasian Milfoil is one of the weeds choking the lake and also submitted a newspaper article describing the Ministry of Environment's efforts at milfoil control. In fact, according to both Beak Consultants and the Ministry of Environment, the weeds in the lake are not Eurasian Milfoil. Also, no Provincial Government Programs exist for the eradication of the aquatic weeds common to Deer Lake.

#### 2. Swimming and Canoeing Safety

Mr. Davis has suggested that both swimming and canoeing are unsafe due to the weed growth. This same view is not held by Parks and Recreation staff. While there are submerged weeds throughout most of the lake, the designated swimming area at the eastern end is virtually weed free. However, as weeds become uprooted or broken off, the wind and waves may carry them onto the beach area, thus giving the appearance of being weed infested.

No other complaints have been received regarding the potential danger of the weeds to canoeists. The pond lilies occur in patches around the lake periphery so that most of the lake surface is open with unobstructed access for canoeists.

#### 3. Decline in Fishing Opportunities

The decline in fishing opportunities is directly related to the decline in water quality. The situation has now reached a point where rainbow trout will no longer reproduce naturally in Deer Lake. Therefore, the Ministry of Environment has been conducting an annual restocking program. This appears to be the best solution for continuing the fishing opportunity.

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III. MR. DAVIS' CONCERNS (Continued)

3. (Continued)

The alternative would be to improve the fish habitat which necessitates:

1. Dredging to deepen the lake and lower temperature.
2. Aerating the bottom of the lake to increase oxygen content.
3. Eradicating the coarse species of fish.
4. Reducing the nutrient income to the lake.
5. Improving the inlet habitats to supply spawning areas.

The first method is costly but may have to be considered some time in the future regarding general lake restoration. The second method may prove costly and inefficient considering the morphometric character of the lake. The third method was attempted without success in 1959. The fourth method is presently being suggested to address this and other problems in Deer Lake. The fifth method appears at present impractical to attempt, considering existing condition of the inlets.

Greater fishing opportunities would be developed as the lake is improved and the park is enhanced.

IV. CONCLUSION

The deterioration of Deer Lake water quality described by Mr. Davis is a natural process occurring at an accelerated rate because of urbanization. A water management study has been completed by Beak Consultants Limited which outlines measures necessary to improve and prevent further deterioration. Implementation of the Consultants' recommendations will be in the foreseeable future. Swimming, fishing and canoeing have been impacted to varying degrees but not to a point where people's safety is in jeopardy. These recreational opportunities will be improved as water quality is enhanced.

JWK:ka  
Attach.

cc: Environmental Health

ATTACHMENT #1

CORRESPONDENCE AND PETITIONS  
Regular Council Meeting  
1985 OCTOBER 15

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\*190 Watling. St.  
Burnaby. B.C.  
Tuesday, October.1 st 85  
V5JLV2

To, The Mayor & the Burnaby Council, Dear Sirs, As a resident of south Burnaby for almost fourty years and a family and many of our neighbours who have used Deer Lake extensivly over the years ~~###As###~~ for swimming, boating, canoeing, and also fishing it is a great shame to see what has happened to the lake in the last few years and I think that you and the Council will agree that we are very fortunate to have such a beautiful lake in our municipality.

It is my opinion and also others that use the lake for fishing, canoeing and boating and if the Municipality do not do something in the near future about the Lilly pads and the Mill Foil that is now Poluting the north and east side of the lake and the swimming area that the Municipality will lose the lake which would be a great shame,

A few years ago myself and a friend used to fish the north side of the lake but at the present time due to the Lilly Pads and the Mill Foil weed which are extending from the shore line for hundreds of feet into the lake and also due to the Mill Foil weed it makes it impossible to fish from the shore anymore.

I sincerely hope that you do not mind me suggesting that the Council apply to the Provincial Govt and The Federal Govt for a money grant and hire one of the Dredging ~~SEMAN~~ Companies to Pump out the north & the east side of the lake which would make it safer for the conoers and bouters that use the lake also when I was swimming in the lake this year I noticed that the Mill foil gets tangled in ones feet .

I am of the opinion that the lake could be pumped out from the shore line and all the Lilly pads and the muck that has been -- accumulating over the years could be sold or used on the market gardens for growing purposes .

Sincerely hoping for a favorable reply.

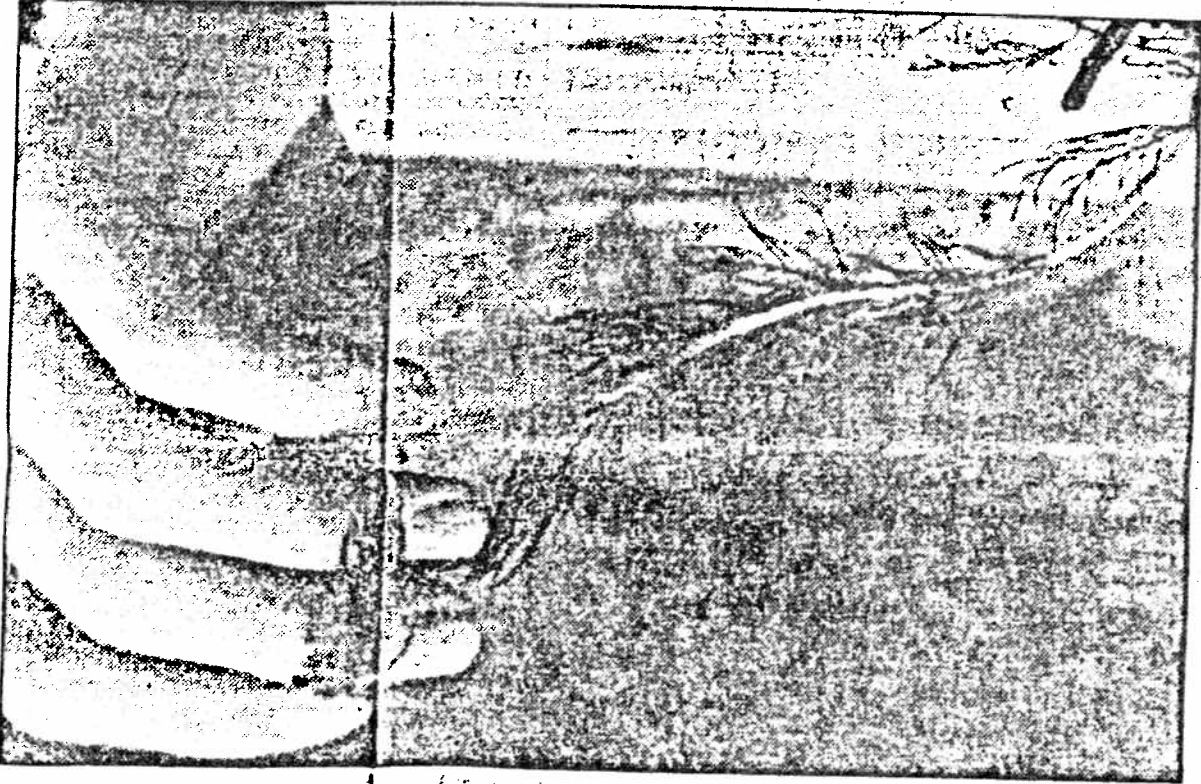
Yours very truly. Lawrence. C.Davis.  
4190 Watling. St.  
Burnaby. B.C. V5J ~~2R2~~  
1V2

INTERNAL DISTRIBUTION:

: - AGENDA 1985 OCTOBER 15  
: - COPY - MUNICIPAL MANAGER  
- DIR. REC. & CULT. SERI  
(FOR REPORT)

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EURASIAN WATER MILFOIL... economically and environmentally costly

array would be towed over weed-infested areas, just above lake bottom. Soar said fish would leave the area because of the boat's noise, so they would not be harmed. Some other aquatic plants would be harmed, but this damage could be minimized because the ultrasound beam can be directed. As for a possible hazard to humans, Soar said he has held his hand under the beam for about 40 seconds. He said he removed his hand because of the potential for cell damage, not because he felt pain. Currently, provincial and local governments use everything from root removal and lower water levels to control milfoil. Dense growths of the feathery, green weed have been blamed for fouling beaches and interfering with swimming, waterskiing, boating and fishing. An environment ministry publication also states that milfoil may adversely affect flood control, irrigation, drainage and fish spawning. -Newroth said in an interview that control programs peaked in 1980, when B.C. spent about \$2 million. Spending dropped to a low of about \$100,000 last year.

Sun Environment Reporter  
Victoria researcher Roger Soar  
uses sound to silently split apart  
the cells of an aggressive aquatic  
weed.

# HIGH WHINE FOILS MILFOIL

His target is Eurasian water milfoil, a weed that was detected in Okanagan Lake only in 1970 but has since spread as far west as Cultus Lake in the Fraser Valley.

His weapon is an ultrasound machine that sends sound waves — too high-pitched for humans to hear — through the water, causing high- and low-pressure areas, vibrating the weed's molecules. He says the cells of the milfoil weed are disrupted and split apart, killing a plant that invades and disrupts other aquatic plants.

Soar outlined his research Tuesday at the 25th annual meeting of the Aquatic Plant Management Society, held in Vancouver.

Peter Newroth, a milfoil expert with the B.C. environment ministry, described Soar's research as one of the most promising developments in the field.

In an interview, Soar said he hoped the presentation would spark some interest and financial support, because his financing runs out in October. Soar said the

has already reduced the exposure time to five seconds. Soar said several large transducers would be joined and submerged in an underwater array pulled by a boat. The

out of his basement. Soar said he is trying to develop a machine powerful enough to kill the milfoil with an ultrasound burst of about two seconds. He said he has already reduced the exposure time to five seconds. Soar said several large transducers would be joined and submerged in an underwater array pulled by a boat. The

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