ISSN 0912-7410

No.5 NOVEMBER 1987

NEWSLETTER

INTERNATIONAL LAKE ENVIRONMENT COMMITTEE FOUNDATION

— For Better Lake Management —

This Newsletter is also available in Japanese.

LAUNCHING OF ILEC FOUNDATION

In order to establish a basis for its activities, including securing a stable and independent source of revenue, International Lake Environment Committee (ILEC) spent months striving to meet the requirements of becoming a foundation.

On September 1st of this year, the ILEC Foundation came into existence through grants of competent authorities such as the Environment Agency and the Ministry of Foreign Affairs of the Japanese Government.

ILEC Foundation was launched as a public-service corporation, and the articles of association for the constitution of the foundation were drawn up to be suited to the Civil Law of Japan, and its organization was also arranged by the time.

ILEC Foundation made a start with an initial endowment of 200 million yen, which was appropriated by Shiga Prefectural Government, and intends to make efforts continuously to increase its endowment with contributions from nongovernmental firms.

Outlines of the Foundation described in the Articles of Association are as following:

1. Objectives and Business

ILEC Foundation's objectives and business are proportionate to those of ILEC, and are as follows:

(Objectives)

The objectives of the Foundation are to promote international cooperation in conservation of lake environments; to promote environmentally sound management of world lakes through encouraging investigations and research on rational and suitable methods of harmony between environmental management and suitable development; and to promote the international exchange scientific knowledges of the lake environmet.

(Business)

(1) To collect and provide information, data on environmental aspects of lakes in all parts of the world.
(2) To promote scientific research on the environmental management of lakes.
(3) To assist the developing countries with the environmental management of lakes and the planning of environmentally sound development of lakes.
(4) To promote training on technical and managemental aspects of lake environments.
(5) To promote interchange with the governmental agencies, regional agencies, and research institutes in the world in order to achieve the objectives of the Foundation.
(6) To undertake any other business which will become necessary to achieve the objectives of the Foundation.

2. The Board of Directors

As an administrative organization, the Board of Directors is provided in the Foundation.

Mr. Kei Yamazaki, a former Vice-Minister of Environment Agency was appointed as chairperson of the Board of Directors, representative of the Foundation.

First meeting of the Board of Directors was held on September 7th, 1987, at Biwako Hotel, Otsu, Japan. In the meeting, the ways of management of properties, the operative rules of the Foundation, and so forth were decided.

(Members of the Board of Directors)

Chairperson Mr. Kei Yamazaki	Former Vice-Minister, Environment Agency
Vice-Chairperson Mr. Takeshi Goda	Professor, Setunan Univ.
Vice-Chairperson Michio Hashimoto	Policy Advisor on Environment, Shiga Prefectural Government
Managing Director Shigeaki Akutagawa	Director, Department of Civil life and Environment, Shiga Prefectural Government
Director Keikichi Kihara	Professor, Chiba Univ.
Director Tatuo Kira	Director, Lake Biwa Research Institute, Shiga Prefectural Government
Director Yatsuka Saijo	Professor, Nagoya Univ.
Director Kouji Muraoka	Director, Water and Soil Environment Division, The National Institute for Environmental Studies

Director Akio Morishima	Professor, Nagoya Univ.

3. Council and Councilor

Council and Councilor are provided to examine (or inspect) the operation of the Board of Directors.

(Councilors)

Dr. C. E. Baure	Chairperson, Engineering and Environment Committee, World Federation of Engineering Organzations (WFEO)
Prof. Nobuo Egami	Director, The National Institute for Environmental Studies
Prof. Ichiro Kato	Advisor to Environment Agency; Emeritus Professor, Tokyo Univ.
Prof. Jiro Kondo	President, Science Council of Japan; Emeritus Professor, Tokyo Univ.
Prof. Shuichi Mori	Rector, Shiga Univ.; Emeritus Professor, Kyoto Univ.
Prof. Azuma Okuda	Emeritus Professor, Kyoto Univ.
Mr. Senkuro Saiki	Former Representative, Permanent Mission of Japan to UNEP.
Prof. Tsunahide Shidei	Emeritus Professor, Kyoto Univ.
Mr. Minoru Ueda	15th Minister, Environment Agency
Prof. Richard A. Vollenweider	Senior Scientist, Canada Centre for Inland Waters; Professor at McMaster Univ.
Prof. Kiyoo Wadachi	President, Central Environmental Pollution Council

4. Scientific Committee

The Committee is serves as the advisory committee on scientific matters of the business of the Foundation.

All fifteen members of the Scientific Committee had previously been members of ILEC, and Prof. Kira, previous ILEC's Chairperson is appointed as a chairperson in the same manner.

5. Advisors

Advisors are also provided for the advisory group on managing matters of the Foundaion, and following five presons were appointed.

(Advisors)

Mr. Bunbei Hara	National Diet Member (House of Councilors); 13th Minister, Environment Agency
Mr. Osamu Uno	President, Kansai Federation of Economic Organizations
Mr. Minoru Inaba	Governor, Shiga Prefectural Government
Mr. Sukio Iwatare	National Diet Member (House of Representatives); Secretary, Unions of Diet Members for Nature Conservation
Mr. Masayoshi Takemura	National Diet Member (House of Representatives); Secretary, Unions of Diet Members for Problems on Global Environment

BUREAU MEETING IN COPENHAGEN

The Bureau Meeting of ILEC was held at Admiral Hotel in Copenhagen on the 23rd and 25th of September, 1987.

The bureau members discussed and approved the following items as the agenda for the next General Meeting. Other ragular members who were in Copenhagen for the Guideline workshop also took part in the meeting as observers.

Item discussed and approved (Agenda) were

1 Report of the establishment of ILEC Foundation
- 1-1 Report of the establishment of ILEC Foundation
- 1-2 Draft amendment of Constitution of ILEC for the Scientific Committee in the ILEC Foundation
- 1-3 Transference of the assets of ILEC to ILEC Foundation
- 1-4 Utilization of Portable Water-Quality Instruments (kits)

2 ILEC Projects
- 2-1 ILEC/UNEP Joint Project "Promotion of Environmentally Sound Management of Lakes"
- 2-2 UNEP/ILEC/UNCRD Joint Project "Experts Group Workshop"
- 2-3 Outline of "Survey of the State of World Lake In-depth case report (Draft)"

3 ILEC's cooperation in the Third World Lake Conference "Balaton '88"

4 Contribution for UNEP's Project of Compilation "Lakes of the World"

5 Requests for ILEC's cooperation from other organization
- 5-1 Request for ILEC's cooperation from Chinese Research Academy of Environmental Science
- 5-2 Request for ILEC's cooperation from SIL in the African Great Lakes Workshop focused on L. Tanganyika
- 5-3 Request for ILEC's cooperation from Tanzania for Mtera Reservioir Management Project

6 Proposals for Lake Environment Youth Educational Programme (ILEC Youth Programme) from ILEC Members (Prof. S. E. Jørgensen and Prof. C. E. Bauer)

7 Nominees for next ILEC Scientific Committee Members

8 Contents of ILEC NEWSLETTER No.4

Participants of the Meeting

(Bureau Members)

Prof. T. Kira, Prof. C. E. Bauer,
Prof. R. A. Vollenweider, Prof. T. Goda,
Prof. M. Hashimoto,

(Observers)

Prof. H. Löffler, Prof. S. E. Jørgensen,

Prof. J. G. Tundisi, Prof. Liu H., Dr. Zhang J.
(Adviser of Secretariat)
Mr. H. Sakimura; Chief, Supporting Measures Branch, UNEP
(Secretariat)
Mr. H. Kotani, Mr. T. Nagase

GUIDELINE WORKSHOP IN COPENHAGEN

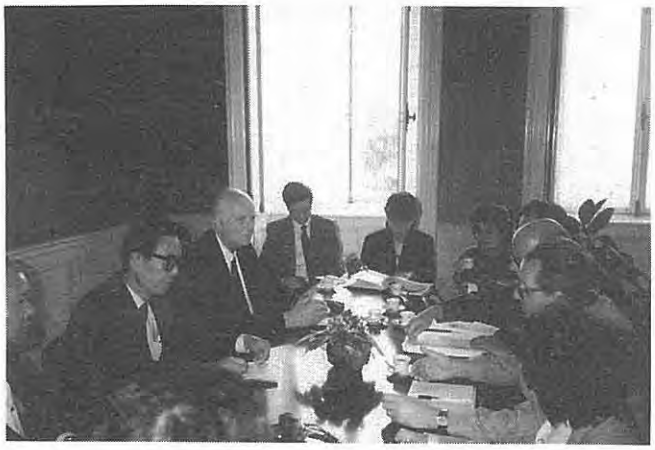
The working discussion for compiling the Guideline Books on sound management of lakes and their catchment areas was held at Admiral Hotel in Copenhagen on the 24th and 25th of September, 1987.

In the discussion, the Key subjects to be included in the Guideline Book Ⅰ, titled "Watershed and Littoral Lake Management", and Guideline Book Ⅱ, titled "Socio-Economic Aspects of Lake and Their Catchment Areas", were agreed upon.

Participants of the discussion were:

Prof. Jørgensen (Representative the Guideline Working Group), Prof. J. G. Tundisi, Prof. R. A. Vollenweider and prof. Liu H. as the members of the Working Group; and Prof. Kira, Prof. T. Goda, Dr. C. E. Bauer, Prof. H. Löffler, Dr. M. Hashimoto, Dr. Zhang J. and Mr. H. Sakimura as consultants.

CONSULTATION ON THE 3RD WORLD LAKE CONFERENCE



The ILEC Bureau Members had a consultative meeting with the executive preparatory members of the 3rd World Lake Conference, "Balaton '88", at Festetics Castle, the conference site of Balaton '88, Keszthely, Hungary on the 29th of September, 1987, following the Bureau Meeting in Copenhagen.

In the meeting, ways of promoting a cooperative relationship among Hungary/UNEP/ILEC were discussed.

Participants in the meeting were:

Hungary
Dr. János Salánki (Chairperson of the Organizing Committee, Director, Balaton Limnological Research Institute, Vice-president of IUBS., ILEC Member)
Dr. S. Herodec, Ms. Eszter Sgovenyi M.A., Dr. Karoly Misley, Ms. Judit Stefko-Vermus, Ms. Eva Blassa, Mr. Sellei Ivan

UNEP
Mr. Hisao Sakimura (Chief of Supporting Measures Branch of UNEP, Advisor to ILEC)

ILEC
Prof. T. Kira (Chairman of ILEC), Dr. C. E. Bauer (Vice-chairman of ILEC), Prof. T. Goda (Treasurer of ILEC), Mr. H. Kotani (Senior Secretary of ILEC), Mr. T. Nagase (Secretary of ILEC)

"SURVEY OF THE STATE OF WORLD LAKES—INTERIM REPORT Ⅰ" PUBLISHED

The Interim Report Ⅰ, a part of the output of the ILEC/UNEP Survey of the State of World Lakes Project has been published.

The Project was planned and promoted to provide the fundamentally important information concerning world lakes and their basins. The output of the project should be of great help not only to the administrators and researchers who are involved in the management of individual lakes, but also for making general guidelines of lake management.

The Project is also intended to develop the objectives of "Data Book of World Lakes" edited by LBRI (Lake Biwa Research Institute, Shiga Prefectural Government) and NIRA (National Institute for Research Advancement) for LECS '84 (Shiga Conference '84 on Conservation and Management of World Lakes Environment).

As for the method of data collection, questionnaire sheets were circulated to assumed data sources such as researchers and administrative agencies of various countries. Therefore, the Report is made with the cooperation and collaborations of many contributors.

Main data items dealt with in the Report are:

A. Location
B. Introductory description of the lakes
C. Physical dimensions
D. Physiogrphic features
E. Lake water quality

F. Biological features
G. Socio-economic conditions
H. Lake utiliazation
I. Deterioration of lake environment and hazards
J. Wastewater treatment
K. Improvement works in the lake
L. Development plans
M. Legislative and institutional measures for upgrading the lake environment
N. Sources of data

Naturally, some of these items do not apply to every lake.

The format of this Report is an A-4 size, loose-leaf filing system, convenient for easy addition and replacement of data in the future.

Collected data of almost fifty lakes, including Lake Biwa are included in this Interim-Report. An in-depth study and examination of specific aspects or phenomenon concernig some of these lakes is scheduled.

The Interim-Report will be circulated in February, 1988 to individuals and organizations involved in lake environmental management and lake research institutes of the world.

(For more detailed information, please call the ILEC Secretriat).

1ST EXPERT GROUP WORKSHOP: On River/Lake Basin Approach to Environmentally Sound Management of Water Resources

An Expert Group Workshop on River/Lake Basin Approach to Environmentally Sound Management of Water Resources will be held under the joint sponsorship of the International Lake Environment Committee (ILEC), the United Nations Centre for Regional Development (UNCRD), and the United Nations Environment Programme (UNEP) from February 8th to 19th, 1988 in Otsu and Nagoya, Japan.

Past experiences in many countries provide examples of water resources development projects in which major dams and reservoirs are built, with little consideration of the resultant environmental and social impacts throughout the drainage basin. Solutions to this type of problem will be discussed by some 30 scientists, researchers, water resources administrators, and planners.

A panel of international experts will present research papers covering key concepts and methodologies of the drainage basinwide approach to environmentally sound management of water resources: e.g. Takeshi Goda, Water Environmental Monitoring and Indicators; Maynard M. Hufschmidt, A conceptual Framework for River/Lake Basin Approach to Water Resources Management; Bindu N. Lohani, Environmental Impact Assessment of Water Resources Development Projects-Practices and Procedures in Developing Countries in Asia; Yasuo Shimazu, 'Soft Approach' to Watershed Management-Case Histories from Japan with Special focus on the transferability of the Japanese Experience.

The program will be highlighted by the presentation and discussion of the following nine case studies: Lobo-Broa Reservoir and its upper Catchment Area in Brazil, Dian Chi Lake in China, Sagling Dam/Citarum and its Upstream Area in Indonesia, Lake Victoria Basin in Kenya, Laguna Lake Region in Philippines, Songkhla Lake Basin in Thailand, Kasumigaura Lake Basin in Japan, Yahagi River Basin in Japan and Lake Biwa Basin in Japan.

One of the primary goals of the workshop will be to discuss ways of developing the papers presented during the workshop into a meaningful set of training materials for water resources managers, planners, and administrators.

Field trips to Lake Biwa and to Yahagi River Basin will also be featured during the 12-day workshop, the first half of which will be held at Lake Biwa Research Institute in Otsu and the second half at UNCRD office in Nagoya.

For further information, please contact either:

Director
United Nations Centre for Regional Development
Nagono 1-47-1, Nakamura-ku, Nagoya 450, Japan
Telephone: 052-561-9378
Cable: UNCENTRE NAGOYA
Telex: J59620 UNCENTRE

or:

Chairperson
International Lake Environment Committee Foundation
4-1-1, Kyomachi, Otsu, Shiga 520, Japan
Telephone: 0775-25-1076
Cable: ILEC OTSU
Telex: 5464850 ILEC J

— Monthly Meeting in ILEC Staff Room —

UNCRD/ILEC/UNEP Joint Expert Group Workshop Report Published

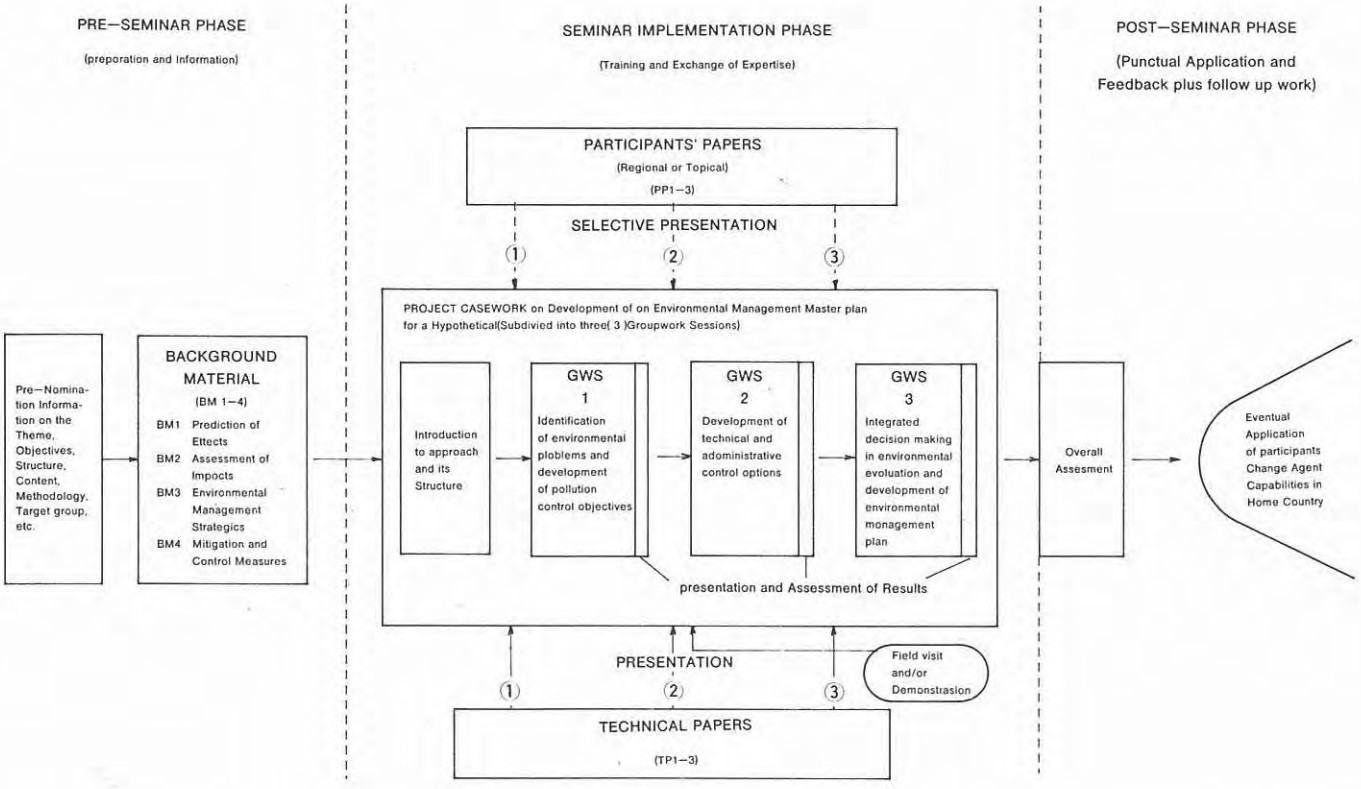
The United Nations Centre for Regional Development (UNCRD) has published the report of the "Expert Group Workshop on Environment Planning Management for Local and Regional Development: Focus on Training Aspects Derived from Studies of Inland Waters. The workshop held in Otsu and Nagoya, Japan between the 10th and 21st of November, 1987", was jointly sponsored UNCRD, The International Lake Environment Committee (ILEC), and United Nations Environment Programme (UNEP).

This is the first published report resulting from ILEC training project activities.

This report consists of two parts. Part 1 presents the guidelines for development training programmes on Environmental Planning and management for local and regional development, focusing on inland waters; and Part 2 is the summary of proceedings of the Workshop.

In this report, the project case work method is the suggested "Training Approach and Method", and its conceptual model is schematically shown in Figure 1.

Figure 1 : Conceptual Model of Project Case Work Based Seminar Training Approach Showing the Inter-relationship of Different Programme Inputs



Source: Gunter Tharun, "Approaches and Methods of Training in Enviromental Planning and Management for Local and Regional Development" (Paper presented at the Expert Group Workshop on Environmental Planning and Management for Local and Regional Development:
Focus on Training Aspects Derived from Studies of Inland Water Management, Otsu and Nagoya, Japan, 10—21 November 1986: UNCRD, ILEC, and UNEP).

LAKES OF THE WORLD

LAKE BALATON

History and geography

Lake Balaton is the largest lake in Central Europe with a surface area of 596 km² and an average depth of 3.2 m. The lake has existed in a tectonic basin since the northern European ice cover disappeared. Its area was halved in 1863, when a control gate was built on the single outflow, the Siócanal, connecting the northeastern basin with the Danube.

The watershed area is 5776 km² including the lake. To the west around the Zala River it is mainly hilly, alluvial land, to the south there are low hills of sand and loesses, with some marshland, while the northern part is characterized by higher hills of dolomitic limestone and volcanic rock.

The total water inflow to Lake Balaton ($570\times10^6 m^3\ yr^{-1}$) balances evaporation losses, while the outflow ($400\times10^6 m^2\ yr^{-1}$) is roughly equal to the precipitation. Four separate basins in the lake can be distinguished in hydrological and water quality terms. From west to east their surface areas increase while those of the corresponding subwater-sheds decrease, the ratios being 72:11:3:1.

Physical, chemical and biological characteristics

The lake is normally covered by ice for two months. The water warms up rapidly, reaching a summer temperature of 25°C. Due to the strong wave action and frequent sediment re-suspension, only 4% of the total area is covered by higher vegetation.

The water contains 400 g m^{-3} calcium, magnesium and bicarbonate, and is opalescent as a result of the intense biogenic lime precipitation. The average pH is 8.4 in the water and 8.0 in the interstitial water.

The allochtonous organic load is negligible in comparison to the autochtonous production. The most limiting plant nutrient is usually phosphorus, the phosphate concentration being constantly below 1—2 mg m^{-3}. The bulk of the organic matter produced is mineralized by bacteria. Zooplankton production seems to be low relative to the general trophic state of the lake. The most abundant fish is the bream, while the top predator is the

pike-perch.

The eutrophication problem

The first signs of eutrophication were recognized in the 1950s, but the process has speeded up since the late 1960s. Since then primary production and biomass of algae have increased by a factor of two and eight in the northeastern and southwestern basins, respectively. Since species with smaller cell volumes have become dominant, the number of algae has increased much more than the biomass (50 times). At the present time the northeastern areas are mesotrophic, while the southwestern ones are hypertrophic with regular summer blooms of nitrogen-fixing blue-green algae.

Eutrophication could be related to the order of magnitude increase in nutrient loading during the past 20—25 years. 56% of the total catchment area is cultivated. Between 1950 and the mid 1970s, fertilizer use has increased 60—70 times. Up to 30 years ago there were no large-scale livestock farms in the region at all, while in the early 1980s 1000—1500 kg d^{-1} phosphorus was discharged from liquid manure. Another important factor was the fourteen-fold increase in tourism between 1950 and 1978, when the number of visitor-days reached 8 million. The drinking water supply increased five-fold between 1960 and 1978. The development of the wastewater treatment system was not so rapid as that of the water supply, and phosphorus was not removed from the sewage.

Water quality management

In 1979 the Water Management Development Program for Lake Balaton was accepted by the Council of Ministers, with a time scale of 30 years and a budget of 3.6×10^{10} Ft (7.3×10^{8} $). The objective for 1981—1990 is to arrest water quality deterioration, while the ultimate goal is to restore the water quality of the early 1960s.

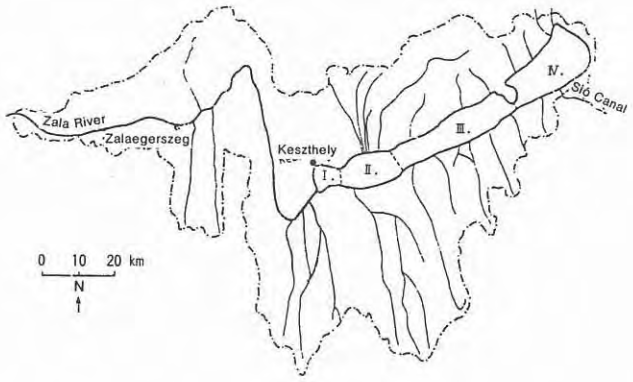
In the last few years sewage has been diverted from about two thirds of the recreational area. Chemical phosphorus removal has been introduced at the remaining treatment plants along the shoreline and in some large towns in the watershed. In this way the biologically available phosphorus loading of the whole lake (0.78 mg $m^{-2}d^{-1}$) has been reduced by 20%, including a 68% reduction in the northeastern basin.

The first part of a 70 km² reservoir system was opened in 1985 at the mouth of the Zala River contributing 90% of the available phosphorus loading of the southwestern basin (3.69 mg $m^{-2}day^{-1}$). The reservoir retains about 50% of dissolved phosphorus, as with other, smaller reservoirs created on heavily polluted southern inflows.

Further steps include the control of liquid manure discharges and a soil protection program.

Vera Istvánovics
Balaton Limnological Research Institute
of the
Hungarian Academy of Science

Figure 2 : LAKE BALATON AND ITS WATERSHED



INFORMATION

Professor G. Fred Lee and R. Anne Jones of the Department of Civil and Environmental Engineering of the New Jersey Institute of Technology have published a summary paper of the OECD and post-OECD eutrophication studies which appeared in the World Health Organization Water Quality Bulletin. At this time, over 400 waterbodies located in various part of the world make up the database for this modeling approach. The Vollenwider OECD Eutrophication Study results can be used to predict the impact of altered land use and wastewater discharges on eutrophication-related water quality in many lakes, reservoirs and estuaries. Drs. Lee and Jones paper provides guidance on the use of this modeling approach for this purpose.

Drs. Lee and Jones have also published a paper in Environmental Science and Technology discussing the approach that may be used to evaluate the impact of detergent phosphate bans or other phosphorus limitation approaches on eutrophication-related water quality. They have reported that an excess of a 20% alteration in the total phosphorus load to a waterbody is necessary before the public can expect to perceive a change in the eutrophication related water quality of the waterbody.

Copies of Drs. Lee and Jones' papers devoted to these, as well as other topics, can be obtained by writing:

G. Fred Lee, Ph. D., P.E.,
Distinguished Professor
Department of Civil and Environmental Engineering
New Jersey Institute of Technology
New Jersey 07102

THIRD INTERNATIONAL CONFERENCE ON THE CONSERVATION AND MANAGEMENT OF LAKES "BALATON '88"

September 11—17, 1988

The "Balaton '88" Conference will be held in the town of Keszthely, the so-called "capital" of Lake Balaton. Keszthely has been inhabited continuously since the neolithic age, yet the present population is a mere 23,000.

In 1797, the enlightened Count Festetics founded Europe's first agricultural institute, presently known as the University of Agricultural Sciences. During the 19th century Keszthely developed into an important cultural center.

The conference will be held in the famed Festetics Palace. This beautiful building was constructed in the 18th century in the baroque style, and has maintained its present form since the 19th century.

ADDED ATTRACTIONS

In addition to the scientific programme and plenary sessions, the "Balaton '88" programme will include a journey to the Balaton Limnological Research Institute of the Hungarian Academy of Sciences in the city of Tihany, followed by dinner and wine-tasting in the famous wine-growing region of Badacsony.

A field trip to "Kis Balaton" reservoir is also scheduled.

The social programme includes a welcoming reception, a concert (extra charge required), and a farewell party.

Participants are encouraged to bring their wives. The "Ladies' Programme" includes both of the outings mentioned above, the social events, and a guided tour of Festetics Palace.

PRE-CONFERENCE SEMINAR
September 10—11

"Modelling of Lakes" will be the subject of a seminar conducted by Professor S. E. Jørgensen, of the International Society of Ecological Modelling.

POST-CONFERENCE STUDY TOUR
September 17—19

This programme begins with a visit to Velencei To, a popular recreational lake near Budapest. Although its surface covers 26 square kilometers. Its mean depth is only 1 to 2 meters. Large portions of the lake are covered by reeds which are rich in water-fowl and botanical rarities. A sediment removal programme has made other portions of the lake suitable for swimming and other water sports.

The following day begins with a guided sightseeing tour of Budapest, followed by an excursion to Danube Bend. Participants of the excursion will be able to appreciate the beaty of the landscape and the ecology, as well as the economic importance of the second largest river in Europe. The historical towns of Szentendre and Visegrad will also be visited.

Registration forms and additional details concerning "Balaton '88" will be made available by writing to:

Congress Bureau MTESZ
P. O. Box 451, H—1372
Budapest, Hungary

CALL FOR ARTICLES
Those who wish to contribute to ILEC Newsletter are invited to send manuscripts to the secretariat.

INTERNATIONAL LAKE ENVIRONMENT COMMITTEE FOUNDATION
Secretariat
4-1-1 Kyomachi, Otsu, Shiga 520, Japan
Tel : 0775-25-1076 Tlx : 5464850 ILEC J Fax : 0775-23-1581
Cable : ILEC OTSU