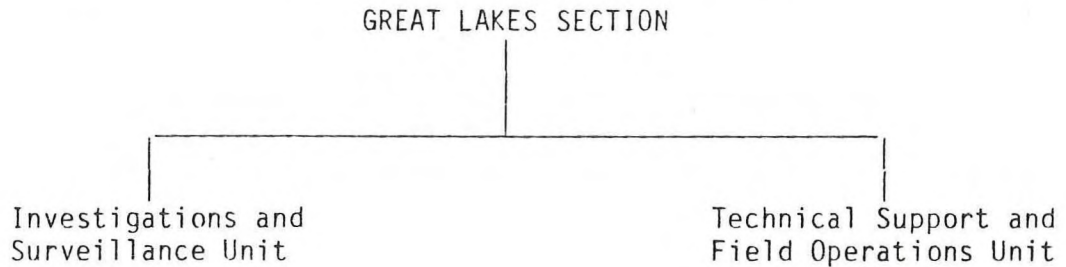


## GREAT LAKES SECTION

The Great Lakes Section consists of 28 professional and technical staff organized on the basis of two units as shown below:



### GOAL

To provide for the protection and enhancement of receiving water quality and the aquatic ecosystem in the nearshore waters of the Great Lakes and the connecting channels.

### GREAT LAKES SECTION OBJECTIVES

- Assess the quality of the aquatic ecosystem (water quality, sediment quality and biota) in the Great Lakes and connecting waterways to determine water use suitability for aquatic life, recreation and water supply.
- Investigate areas of degradation, and define impact and cause (source) of water use interference.
- Assess the effectiveness of remedial programs and controls and recommend abatement measures.
- Investigate and identify emerging problems; provide early warnings of and speedy response to new issues.
- Ensure compliance with the international and the Canada-Ontario Great Lakes Water Quality Agreements and their requirement for annual scientific updates on inputs and conditions of the Great Lakes.

A brief description of each of the units is given below.

### INVESTIGATIONS AND SURVEILLANCE UNIT

#### GOAL

To identify and assess areas of non-compliance and emerging problems related to water quality and the aquatic ecosystem in the Great Lakes and to recommend effective control programs.

#### OBJECTIVES

- Assess the degree to which jurisdictional control requirements are being met.

- Provide definitive information on the location, severity, areal or volume extent, frequency and duration of non-achievement of the objectives, and to determine the need for more stringent control requirements.
- Provide information for measuring local and whole lake response to control measures using statistical analysis and other analytical techniques.
- Assess the impact of new developments and of pollution sources.
- Fulfill the Ministry's commitment to the Canada-Ontario Agreement and International Joint Commission on Great Lakes Surveillance.

#### ACTIVITIES

- Carry out investigations of Great Lakes water, sediment and biota (in cooperation with Regional and other Branch staff) to assess the effectiveness of point and non-point source control measures (e.g. investigation of dredging and lakefilling operations at the Toronto Eastern Headland; impact of pulp and paper mill discharges in Lake Superior).
- Assess changes in water quality of the Great Lakes and connecting channels and identify emerging problems (e.g. water quality monitoring at Nanticoke, pre- and post-industrial development).
- Maintain a high level of knowledge of the sources and fates of pollutants in the aquatic environment; contribute to research activities ongoing in the Great Lakes scientific community (e.g. environmental effects of contaminated sediments).
- Advise and aid Ministry staff on new approaches to water quality assessment and data analysis (e.g. water quality zonation of Hamilton and Toronto Harbours using cluster analysis).
- Participate in Ministry, inter-government and international committees (e.g. International Joint Commission; Canada-Ontario Agreement) and cooperative projects pertinent to Great Lakes and connecting channel water quality surveillance.

#### Technical Support and Field Operations Unit

##### GOAL

To provide specialized technical support in physical limnology and transport and dispersion modelling and supportive field services to the Great Lakes investigations and surveillance programs.

## OBJECTIVES

Assess the physical behaviour and characteristics of Great Lakes nearshore for use in the assessment of pollutant dispersion and transport.

Develop contaminant dispersion models to predict pollutant transport and dispersion.

Develop guidelines for the design and location of outfalls and intakes.

Define effluent requirements for municipal and industrial outfalls based on receiving water impact.

Define mixing zones (limited use zones) for point-source discharges.

Provide survey vessels and coordinate field sampling programs for Great Lakes investigative and surveillance programs.

Provide electronic data analysis and data management in support of Great Lakes scientific investigations and reportings.

Ensure up-to-date techniques for instrumentation and sampling of the Great Lakes, quality assurance and quality control.

## ACTIVITIES

Assess efficiency of intakes and outfalls and mass balance exchanges between bays and lakes (e.g. Collingwood Township discharge to Mary Ward Shoals, Main STP Toronto, Rondeau Bay).

Assess effluent discharges and allowable pollutant concentrations (e.g. industrial discharges to St. Clair River).

Assess chemical transport and dispersion in nearshore areas of connecting channels (e.g. Niagara River, St. Clair River, St. Marys River.)

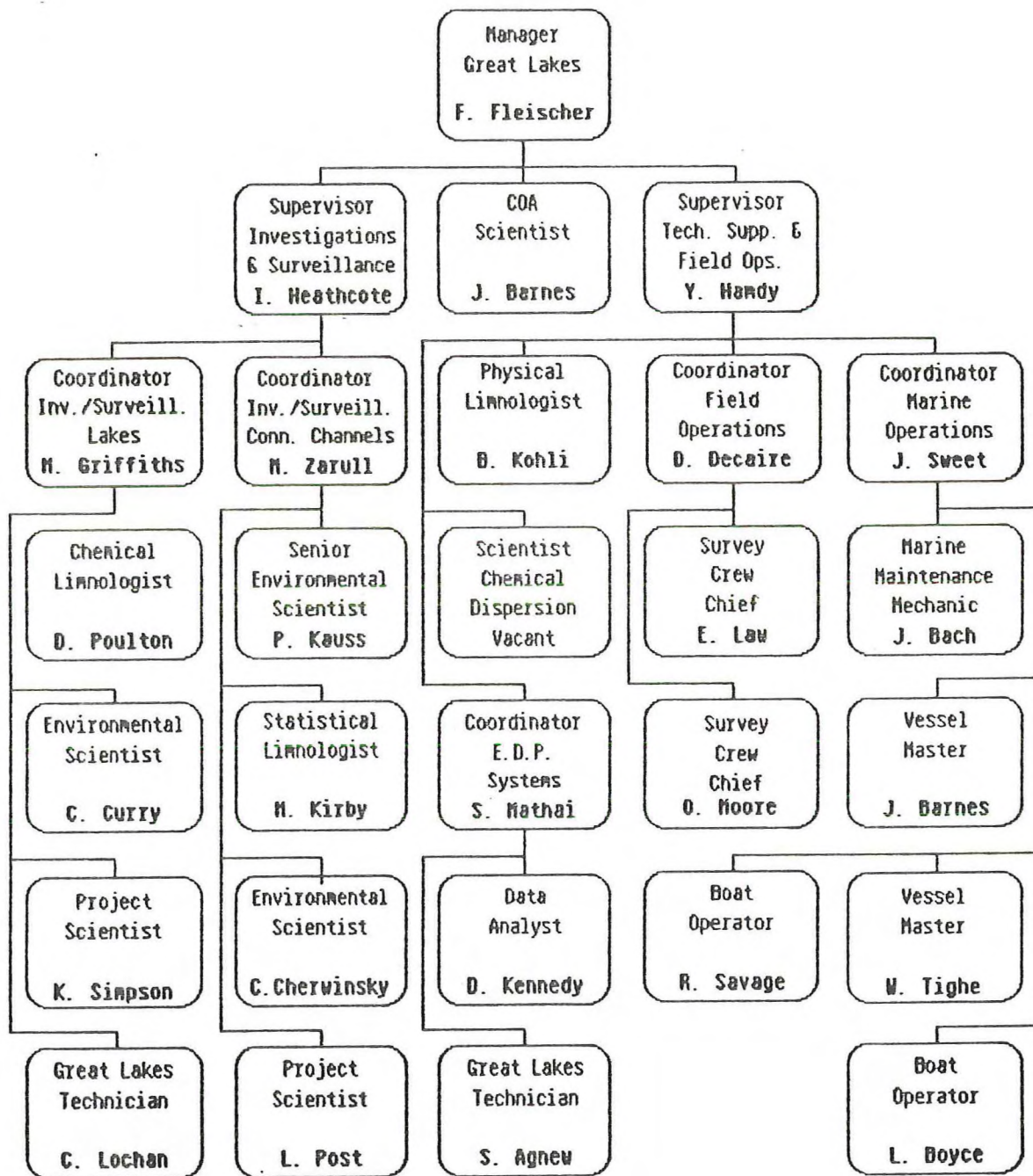
Develop new and updated field instrumentation and sample collection methodologies (e.g. plume tracking instrumentation).

Ensure reliable and accurate data collection (e.g. assessment of new centrifuge).

Maintain reliable and accurate data storage and retrieval (e.g. Great Lakes sample information system SIS).

Electronic statistical analysis and plotting to accurately present scientific results (e.g. data plotting and concentration contouring).

# GREAT LAKES SECTION



GREAT LAKES SECTION

STAFF	POSITION TITLE	DESCRIPTION	KEY WORDS
F.C. Fleischer	Manager, Great Lakes Section	Manages Great Lakes Section and co-ordinates other Great Lakes surveillance programs of the Ministry; acts as Ministry representative to the Canada-Ontario Agreement (COA) and various International Joint Commission (IJC) Committees on Great Lakes Water Quality.	Great Lakes Program Co-ordinator, IJC and COA.
J. Barnes	Canada-Ontario Agreement Scientist	Annual documentation and reporting of the Branch's Great Lakes surveillance activities under the 1982 Canada-Ontario Agreement (COA). Secretary to the federal-provincial COA Surveillance Committee.	Canada-Ontario Agreement, Program Accounting.
Y. Hamdy	Supervisor, Technical Support and Field Operations	Supervises the Great Lakes Field Operations and modelling services in physical limnology, dispersion and chemical transport in the Great Lakes and Connecting Channels.	Dispersion modelling, chemical transport, outfall. assessments, physical processes; field operations and EDP services.
B. Kohli	Physical Limnologist	Physical limnology of nearshore areas of the Great Lakes and connecting waterways, water movements and circulation.	Current metering, nearshore movement, effluent dispersion.
Vacancy	Scientist, Chemical Dispersion	Develops computer models for fate and transport of chemicals and suspended sediment in connecting channels and nearshore areas, embayments, etc.	Computer modelling, chemical dispersion.

GREAT LAKES SECTION

STAFF	POSITION TITLE	DESCRIPTION	KEY WORDS
S. Mathai	Co-ordinator EDP System	provides expertise and overall coordination of all computerized data management systems (e.g. SIS) and analysis activities; trains and oversees data analysts.	Computer data analysis, data management, LIS-SIS, statistical analysis.
D. Kennedy	Data Analyst	Responsible for data analysis and tabulation, graphical presentation and technical reporting of data; provides technical assistance to the scientists.	Computer analysis, tabulation, computer graphics.
S. Agnew	Technician	Assists in the application of computer programs related to statistical and dispersion analysis, computer programs documentation and electronic data management; assists in developing instrumentation electronics and software packaging.	Computer programs, electronics, graphics.
D. Decaire	Co-ordinator, Field Operations	Co-ordinates Great Lakes field operations plans; ensures the quality of procedures, equipment and instrumentation; develops instrumentation.	Great Lakes field operations, instrumentation.
E. Law	Survey Crew Chief	Supervises field survey teams in biological, water and sediment surveys; formulates survey plans.	Great Lakes field surveys, cruise planning, sampling.
O. Moore	Survey Crew Chief	Supervises field survey teams in biological, water and sediment surveys; formulates survey plans.	Great Lakes field surveys, cruise planning, sampling.

GREAT LAKES SECTION

STAFF	POSITION TITLE	DESCRIPTION	KEY WORDS
J. Sweet	Marine Operations Co-ordinator	Directs the operation, manning and maintenance of Ministry survey vessels on the Great Lakes.	Marine Operations, Great Lakes survey vessels.
J. Bach	Marine Maintenance Technician	Ensures repairs and maintenance of marine vessels and mechanical equipment on vessels and boats.	Marine engines and equipment maintenance.
R. Savage	Boat Operator	Operates survey vessels on the Great Lakes; ensures vessels and equipment are in good order.	Boat operations - Great Lakes.
L. Boyce	Boat Operator	Operates survey vessels on the Great Lakes; ensures vessels and equipment are in good order.	Boat operations - Great Lakes.
Capt. W. Tighe	Vessel Master	Operates large survey vessels on the Great Lakes and interconnecting channels; ensures that the vessels and equipment are in good working order.	Great Lakes vessel operations, navigation, marine safety,
Capt. J.B. Barnes	Vessel Master	Operates large survey vessels on the Great Lakes and interconnecting channels; ensures that the vessels and equipment are in good working order.	Great Lakes vessel operations, navigation, marine safety.

GREAT LAKES SECTION

STAFF	POSITION TITLE	DESCRIPTION	KEY WORDS
Dr. I. Heathcote	Supervisor, Great Lakes Investigations and Surveillance	Supervises Great Lakes Investigations and Surveillance programs; advises on remedial and preventative pollution abatement measures; represents the Branch IJC Surveillance Work Group; coordination of Ministry surveillance and investigative activities on the Great Lakes and connecting waterways.	Great Lakes surveys planning; aquatic ecosystem studies, Limnology, sedimentation processes; IJC Surveillance Work Group
Dr. M. Zarull	Co-ordinator, Investigations and Surveillance - Connecting Channels	Oversees the work of scientists conducting impact assessments of Ontario and U.S. pollutant sources, and investigations of degradation to aquatic ecosystem quality in the Great Lakes' Connecting Channels.	Great Lakes water quality, biology; transboundary pollution, international committees; Hamilton Harbour 1975-1984; Lake Superior Chairman (IJC) (1983-85).
Dr. P. Kauss	Senior Environmental Scientist	Investigation of organic and inorganic local and transboundary hazardous contaminant pollution and water quality problems in the connecting channels of the Great Lakes; development of recommendations for remedial measures by Ontario and the U.S.; provides specialty expertise in the occurrence and fate of organic and inorganic contaminants in the Great Lakes ecosystem; clam biomonitoring, emerging problems.	Transboundary contamination; fate and transport of chemicals (organic and inorganic); biomonitoring; Niagara R., St. Clair R., Detroit R., St. Lawrence R., St. Clair-Detroit R. representative.
Vacant	Statistical Limnologist	Great Lakes expert on statistical analysis, sampling design and statistical sampling analysis, statistical modelling of chemical, physical and biological parameters in the nearshore zones of the Great Lakes.	Statistical analysis, network and sampling design; statistical validity of Great Lakes data; statistical modelling.



GREAT LAKES SECTION

STAFF	POSITION TITLE	DESCRIPTION	KEY WORDS
C. Cherwinsky	Environmental Scientist	Conducts intensive water quality studies of critical water use areas to define impact of effluent discharges (industrial and municipal); prepares recommendations for control.	Water quality investigations; pulp and paper mill impacts, Lake Superior (1981-1984);
L. Post	Scientist, Connecting Channels	Scientific investigations and surveillance in the Great Lakes connecting channels and formulation of abatement measures for areas of concern.	Water quality, connecting channels; Niagara R.; St. Lawrence-Niagara R. representative.
M. Griffiths	Co-ordinator, Investigations and Surveillance - Lakes	Oversees the work of scientists conducting investigations and surveillance of water quality along the Ontario shorelines of the Great Lakes; advises on the environmental conditions and potential for beneficial use of these waters; recommends remedial or preventative measures to meet local, provincial and international water quality objectives.	Nearshore water quality, chemical and biological behaviour; Lake Ontario, Toronto Waterfront; Lake Ontario representative.
Dr. D. Poulton	Chemical Limnologist	Conducts investigations in lakes, interprets chemical contaminants and water quality data for the assessment and development of water quality management options; applies sophisticated and complex analytical and predictive computer techniques for analyzing the data and predicting the effects of various control and management options.	Chemical limnology, computer modelling, inorganic chemistry of sediments; Hamilton Harbour (1975-1984), Lake Ontario representative (1984-85).

GREAT LAKES SECTION

STAFF	POSITION TITLE	DESCRIPTION	KEY WORDS
C. Curry	Environmental Scientist	Coordinates the Section's policy and guideline development and work planning activities internally and with other branches, the Regions, and external Great Lakes agencies; plans and conducts scientific investigations and surveillance.	Policy and planning liaison, co-ordination of work programs, lab. sample submissions.
K. Simpson	Great Lakes Scientist	Scientific investigations and surveillance in the Great Lakes and formulation of abatement measures for areas of concern.	Nearshore water quality; computer analysis; Lake Erie representative.
C. Lochan	Technician	Assists scientists in analyzing and presenting Great Lakes technical data and in preparing technical reports; oversees the implementation and reporting of routine field programs and data collection activities specific to water quality.	Technical reports, graphics, data tabulation, analysis.