

CANADA CENTRE FOR INLAND WATERS  
UNPUBLISHED REPORT

Deutscher



Environment  
Canada

Environnement  
Canada

Canada  
Centre  
For Inland  
Waters

Centre  
Canadien  
Des Eaux  
Intérieures



Patrick Deutscher  
Social Sciences Division  
Inland Waters Directorate, Ontario Region  
April 1976

UNPUBLISHED REPORT  
RAPPORT NON PUBLIE

TD  
7  
D48  
1976

UPPER GREAT LAKES WASTE LOADINGS TRENDS  
SIMULATION MODEL:

INTER-AGENCY DATA CONTRIBUTIONS

Patrick Deutscher  
Social Sciences Division  
Inland Waters Directorate, Ontario Region

April 1976

## INTRODUCTION

This is a collection of letters from various government agencies, both Canadian and American, which contributed to the data base of the Upper Great Lakes Waste Loadings Trends Simulation Model. The purpose of the collection is to document data used in implementing the model and to illustrate the problems of collecting data on environmental-economic relationships.

In some cases, the letters did not convey information that could be used. For instance, the first letter in the collection, from Energy, Mines, and Resources to the Social Sciences Division, explains why economic information may be unavailable due to the confidentiality provisions of the Statistics Act.

In several cases, the letters accompanied very large reports, printouts or documents. These have not been included in the collection. Normally, the accompanying letter indicates their contents and availability.

The letters contained in this document do not encompass all the sources of information used in the model. Information was also obtained through literature searches, independent data collection, and personal contact with other agencies. Other working papers of this series document different aspects of the model's data base.<sup>1</sup>

---

<sup>1</sup>Those interested should consult the following documents:

- Deutscher, P. Upper Great Lakes Waste Loadings Trends Simulation Model: Sources and Methodology for the Derivation of U.S. Industrial Waste Loads Coefficients. April 1976.
- ----- Upper Great Lakes Waste Loadings Trends Simulation Model: Sources and Methodology for the Derivation of Canadian Industrial Waste Loads Coefficients. April 1976.
- Muir, T. Upper Great Lakes Waste Loadings Trends Simulation Model: Industrial and Municipal Waste Treatment Sectors - Background Data. September 1975.
- Sonnen, C. A. and P. M. Jacobson. Estimates of Economic Activity in Regions of the Canadian Great Lakes Basin for the Period 1972-2020, Series A, Volume I. December 1974.

## FORMAT

The letters are arranged chronologically by country. The index numbers each letter sequentially, gives the date, the agency from which the communication originated, and a summary of the topic. All of the letters were destined for Social Sciences Division, Inland Waters Directorate, Ontario Region, of Environment Canada. In the index, the source of the information is identified by agency rather than by individual. The following acronyms are used:

DOE	-	Environment Canada
EMR	-	Energy, Mines, and Resources, Canada
EPA	-	Environmental Protection Agency, U.S.
GLBC	-	Great Lakes Basin Commission, U.S.
MDNR	-	Department of Natural Resources, Michigan
MOE	-	Ministry of the Environment, Ontario
WDNR	-	Department of Natural Resources, Wisconsin

Four principal topics are dealt with in this collection:

(1) Municipal Waste Loads, (2) Industrial Waste Loads, (3) Municipal Treatment Capacity, and (4) Industrial Treatment Capacity and Costs. The letters are arranged by topic in Table A.

# INDEX

CODE	DATE D/M/Y	AGENCY OF ORIGIN	MAIN TOPIC
<u>CANADA</u>			
C.1	25/7/74	EMR	Confidentiality of Data
C.2	26/8/74	MOE	Municipal Waste Loadings
C.3	30/8/74	MOE	Phosphorus Removal Capacity
C.4	13/9/74	DOE	Industrial Waste Loadings
C.5	12/2/74	MOE	Municipal Treatment Capacity
C.6	20/2/75	MOE	Industrial Waste Treatment Investments
C.7	22/5/75	MOE	Industrial Waste Treatment Investments
C.8	31/10/75	MOE	Per-Capita Municipal Waste Loadings
<u>UNITED STATES</u>			
U.1	7/3/75	EPA	Industrial Waste Loads
U.2	22/4/75	GLBC	Municipal Treatment Requirements and Capacity
U.3	27/5/75	GLBC	Industrial Expenditures on Waste Treatment
U.4	6/6/75	EPA	Industrial Waste Costs and Municipal and Industrial Waste Flows
U.5	6/8/75	MDNR	Per-Capita Municipal Waste Loads
U.6	11/8/75	WDNR	Estimate of Percentage Industrial Waste Removal
U.7	14/8/75	MDNR	Estimate of Percentage Industrial Waste Removal

TABLE A

## INTER-AGENCY DATA CONTRIBUTIONS BY TOPIC

TOPIC	REFERENCE NUMBER	
	CANADA	U.S.
Municipal Waste Loads	C.8	U.5
Industrial Waste Loads	C.4	U.1, U.4, U.7
Municipal Treatment Capacity	C.2, C.5	U.2, U.4
Industrial Treatment Capacity and Costs	C.3, C.6, C.7	U.3, U.4, U.6, U.7



Energy, Mines and  
Resources Canada  
Minerals

Énergie, Mines et  
Ressources Canada  
Minéraux

DS-1  
DS-2  
MAGTAPE  
JUL 31 1974

FILE	1321	
TO		
DATE	JUL 31 1974	
TO	NAME	DATE
Your file	Votre référence	
Our file	Votre référence	

Xerox  
P002

July 25, 1974

Mr. Albert S. Williams  
Social Science Division  
Canada Centre for Inland Waters  
P.O. Box 5050  
Burlington, Ontario  
L7R 4A6

Dear Mr. Williams:

With reference to our conversation of July 23, 1974, and your request to Miss Pilozzi of Statistics Canada, the following will illustrate for you how conformity with the Statistics Act prevents us from supplying the Statistics you want.

<u>Region Numbers</u>	<u>No. of Mines or Companies</u>	<u>Commodities</u>
1	3	Nickel, Copper, Iron
2	2	Copper, Gold, Zinc
3 & 4	2	Copper, Iron
5 & 6	4	Silica, Nickel, Copper, Iron
7	4	Salt, Uranium

You will see that, in all regions but two, there are too few companies to permit disclosure, even on an aggregate basis. In all instances, when the number of mines or companies is combined with the number of commodities, there is another restriction on disclosure because the number of observations is reduced. Seventeen of the mines are operated by two companies.

To make matters a bit more interesting, only two of these mines were in operation in 1951, eleven in 1961, and twenty-five in 1971. The historical series you wanted would be, therefore, somewhat distorted.

I trust that this information will convince you that problems of statistics availability are not illusory.

Yours truly,

J.P. Goddard  
Coordinator, Information Systems Division

cc. Miss Gina Pilozzi  
Statistics Canada

C.1.0



Ontario

Ministry of the  
Environment

FILE		
No.		
DATE AUG 26 1974		
To	Index	Date
JCHB		

135 St. Clair Avenue West  
Suite 100  
Toronto Ontario  
M4V 1P5

August 23, 1974.

Mr. J. P. H. Batteke,  
Canadian Co-Chairman,  
ULRG - WGP - A,  
Canada Centre for Inland Waters,  
Social Sciences Division,  
867 Lakeshore Rd.,  
BURLINGTON, Ontario.  
L7R 4A6.

Dear Mr. Batteke:

I am appending information confirming our telephone conversation regarding estimated "per capita" waste contributions for the five mass balance items being considered in the upper Great Lakes studies. The comparable U.S. figures have been pencilled in for your reference.

I would strongly suggest, however, that our figures be retained, at least in the Canadian computations. They are based upon a greater sampling frequency and a larger sampling of water pollution control plants than were considered in computing the U.S. data.

If you require any further clarification, please contact either myself or Mr. John Archer at 965-6963.

Yours very truly,

G. L. Van Fleet, Head,  
Municipal Sewage Works Unit,  
Pollution Control Branch.

GLVF/ps  
Attach.

C.2.0





Ontario

Ministry of the  
Environment

135 St. Clair Avenue West

Suite 100

Toronto Ontario

M4V 1P5

MEMORANDUM:

August 15, 1974.

TO: G. L. Van Fleet, Head,  
Municipal Sewage Unit,  
Pollution Control Branch.

FROM: J. Archer, Project Officer,  
Municipal Sewage Unit,  
Pollution Control Branch.

RE: ESTIMATED WASTE CONTRIBUTIONS FOR POPULUS IN THE  
UPPER GREAT LAKES DRAINAGE BASIN

As per your request of August 9, 1974, I have computed yearly per capita loadings for Total Dissolved Solids, Total Nitrogen, Chlorides, Reactive Dissolved Silica and Total Phosphorus for municipalities in the Upper Great Lakes Basin (See Table 1 below).

These loadings were computed from effluent data collected at direct discharge water pollution control plants over the past year. Values shown (pounds per capita per year) are representative of domestic wastes\* being discharged from municipal treatment plants.\*(includes commercial and light industrial contributions) No effort was made to differentiate between primary and secondary treatment. Values for Dissolved Reactive Silica are estimated because of lack of past data.

TABLE 1

ESTIMATED, PER CAPITA, WASTE CONTRIBUTIONS FOR  
POPULUS IN THE UPPER GREAT LAKES DRAINAGE BASIN

<u>U.S.</u>		<u>CANADA</u>
<u>Waste Parameter</u>		<u>Loading</u> <u>(Pounds/Capita/Year)</u>
From McGraw-Hill	Total Dissolved Solids	200
2.17	Total Nitrogen	9
7.1	Chlorides	30
35	Dissolved Reactive Silicate	3
6.8	Total Phosphorus (No P Removal)	2
2.2	Total Phosphorus (P Removal)	1
No value		

(6 municipalities)  
(Pop. 2,100 - 77,000)



Ontario

Ministry of the  
Environment

FILE / 3-20		
No.		
DATE SEP 05 1974		
To	Initials	Date
D.C.	JA	

135 St. Clair Avenue West  
Suite 100  
Toronto Ontario  
M4V 1P5

August 30, 1974.

Mr. D. Coleman,  
Social Sciences Research Division,  
Canada Centre for Inland Waters,  
867 Lakeshore Blvd.,  
Box 5050,  
BURLINGTON, Ontario.

Dear Mr. Coleman:

As per your request to Mr. G. L. Van Fleet,  
please find enclosed a list of all municipal water  
pollution control plants in the Upper Great Lake Basin.  
The plants having phosphorus removal are indicated with  
a red dot. The type of treatment is coded with a  
P for Primary; S for Secondary and CST for Communal  
Septic Tank, followed by the design flow of the particular  
installation.

If we can be of any further assistance, please  
do not hesitate to call.

Yours truly,

J. Archer,  
Project Officer,  
Municipal Sewage Works Unit,  
Pollution Control Branch.

JA/ps  
Attach.

C.3.0

UPPER GREAT LAKESMUNICIPAL TREATMENT INFORMATION

<u>Municipality</u>	<u>Treatment</u>	<u>Municipality</u>	<u>Treatment</u>
<u>ALGOMA</u>		<u>NIPISSING</u>	
Sault Ste. Marie (C)	P 8.0	● North Bay (C)	S 4.0 5
Elliot Lake (Twp.)	P 1.0	<u>ONTARIO</u>	
Wawa (T)	L 0.4	● Uxbridge (T)	S 0.475
<u>BRUCE</u>		● Beaverton (V)	L 0.28
Chesley (T)	L 0.17	● Cannington (V)	L 0.14
Kincardine (T)	L 0.32	<u>PARRY SOUND</u>	
Port Elgin (T)	L 0.72	● Parry Sound (T)	P 0.8
Walkerton (T)	S 1.0	● Powassan (T)	L 0.07
Wiarton (T)	L 0.15	<u>PERTH</u>	
<u>DUFFERIN</u>		● Listowel (T)	L 0.69 7
Shelburne (V)	L 0.13	<u>SIMCOE</u>	
<u>GREY</u>		● Barrie (C)	S 3.0
● Owen Sound (C)	P 3.0	● Orillia (C)	S 4.0
Durham (T)	S 0.29	Alliston (T)	S 0.80
Hanover (T)	S 0.8	● Bradford (T)	S 0.8
Meaford (T)	S 0.86	● Collingwood (T)	P 4.2
Markdale (V)	L 0.14	● Midland (T)	P 1.25
<u>HURON</u>		● Penetanguishene (T)	S 0.33
Clinton (T)	S 0.208	Stayner (T)	L 0.2
Exeter (T)	L 0.22	Beeton (V)	L .15
Goderich (T)	S 1.0	Elmvale (V)	L 0.044
Seaforth (T)	L 0.3	● Port McNicoll (V)	S .23
Wingham (T)	L 0.3	Tottenham (V)	L 0.14
<u>LAMBTON</u>		<u>SUDBURY</u>	
Foresth (T)	L 0.4	Sudbury (C)	S15
<u>MANITOULIN</u>		Capreol (T)	L 0.34
Little Current (T)	L 0.1	Coniston (T)	S 0.32
<u>MIDDLESEX</u>		Copper Cliff (T)	S 1.5
Lucan (V)	L 0.11	Espanola (T)	P 0.66
<u>MUSKOKA</u>		Levack (T)	S 0.32
● Bracebridge (T)	L 0.32	Lively (T)	S 0.292
		Chelmsford	S 0.3
		Falconbridge Townsite	S 0.1
		Neelon & Garson (Twp.)	L 0.76
		Onaping (I.D.)	S 0.144

A-100

UPPER GREAT LAKES  
MUNICIPAL TREATMENT INFORMATION

- Page 2 -

Municipality

Treatment

THUNDER BAY

Thunder Bay (C)	P 10.0
Longlac (Twp.)	S 0.25
Nipigon (Twp.)	P 0.25
Terrace Bay (Twp.)	L 0.055

WELLINGTON

Harriston (T)	L 0.28
Mount Forest (T)	S 0.3 — 7
Palmerston (T)	S 0.25

YORK

Aurora (T)	S 1.83
Newmarket (T)	S 2.0
Sutton	L .16

THUNDER BAY

Marathon (Twp.)	P 0.25
-----------------	--------

NIPISSING

Sturgeon Falls	S 1.0
----------------	-------

Municipality

Treatment



Environment  
Canada

Environnement  
Canada

Environmental  
Protection

Protection de  
l'Environnement

FILE 5745	
No.	
D.T. SEP 17 1974	
I	J.
D.E.C.	LC

September 13, 1974

Mr. D. E. Coleman  
Social Sciences Division  
Canada Centre for Inland Waters  
P. O. Box 5050  
Burlington, Ontario  
L7R 4A6

Dear Dell:

I might have known that your third request for information on the waste loadings study would arrive just after I had started my vacation. You seem destined to be kept in the dark as far as we are concerned. Now we'll probably discover that most of those here who would have useful information are on French language training.

You have asked for information on loadings and standards for the forestry, mining and manufacturing industries. With respect to loadings, we have relatively little specific data on the mining and manufacturing industries in the upper lakes, but we should be able to provide something on pulp and paper. What may be just as useful to you as data on specific plants in the area would be typical waste discharges in relation to various products and processes from which extrapolations could be made for your model. We would be prepared to provide this for a limited number of the types of industry you are interested in. For example, the most pertinent industries, would seem to be mining, pulp and paper, primary metals, metal finishing and chemicals. Chemicals may turn out to be too complex, but we can try.

With respect to standards, I am attaching out pulp and paper effluent regulations (which are under revision) petroleum refinery regulations, mercury (chlor-alkali industry) regulations and our proposed standards for the mining industry.

I confess to being unclear as to what you mean by "the five material balance parameters" to which you refer in your letter of August 21, 1974. Perhaps you could clarify this.

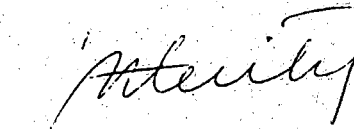
The typical discharge information and the specific pulp and paper data will take us some time to corral in a useable form. It may not be available much before the end of October. Even then I am apprehensive about the full extent of the data we may be able to obtain.

2 . . .

C.4.0

However, we will make an effort and will suggest that the person here who will be responsible for the work maintain close communication with you until either you are satisfied, or our information is exhausted.

Yours sincerely,



J. F. Herity

INTER-AGENCY CONTRIBUTIONS TO THE

WASTE LOADINGS MODEL

DATA BASE

CANADA

Ministry of the  
Environment

Telephone: 965-6967

135 St. Clair Avenue West  
Suite 100  
Toronto Ontario  
M4V 1P5

February 12, 1975

Mr. P. Deutscher,  
Social Sciences Division,  
Canada Centre for Inland Waters,  
867 Lakeshore Road,  
P. O. Box 5050,  
BURLINGTON, Ontario.  
L7R 4A6

Dear Mr. Deutscher:

Re: Communal Sewage Works in Ontario

FILE 1273-2		
No.		
DATE Feb 15/75		
To	Initials	Date
(TD)		

Further to our telephone conversation on February 6, 1975, I am now pleased to provide you with a "print-out" showing the following information pertaining to communal sewage works in Ontario:

- alphabetical listing by municipality name and class
- works name
- works type
- works capacity in MGD
- works ownership eg. - Ministry Plant  
Non-Ministry Plant

I trust that this is the information that you require. If you have any questions or if I can be of further assistance feel free to contact me.

Yours very truly,

*A. Burlachenko*

A. Burlachenko, Project Officer,  
Municipal Sewage Works Unit,  
Pollution Control Branch.

AB/bls  
encl.

C.5.0





Ontario

Ministry of the  
Environment

965-6975

February 20, 1975

135 St. Clair Avenue West

Suite 100

Toronto Ontario

M4V 1P5

Mr. Pat Deutscher,  
Social Sciences Division,  
Inland Waters Directorate,  
P.O. Box 5050,  
Burlington, Ontario.  
L7R 4A6

Dear Mr. Deutscher:

FILE 1373-2		
No.		
DATE Feb 27/75		
To	Initials	Date
P. Deutscher		

Enclosed is information re estimated capital expenditures for industrial waste treatment works by major classification for the years 1957 to 1973. As indicated, these figures are based on the Ministry's approval certificates at the design stage and an inflation factor could be used, such as the year-to-year engineering construction index, to bring the figures more closely in line with the actual money spent. Also the figures do not cover pretreatment systems installed by industry connected to municipal sewers where further treatment is provided by the municipality. It was suggested that if you wish further information in this regard that you contact Mr. F. Chrome, City Engineer of Oshawa, who is an executive of the Municipal Engineers Association, which organization may be able to help you.

We will also forward the 1974 information shortly and you agreed to forward a copy of the report in which the information is to be used.

If you have any further questions I shall be pleased to oblige.

Yours truly,

J. B. Patterson,  
Supervisor,  
Industrial Approvals Section,  
Environmental Approvals Branch.

JBP/ep

C. 6.0

ESTIMATED CAPITAL EXPENDITURE  
FOR INDUSTRIAL WASTE TREATMENT WORKS  
1957-1973

Industry Classification	THOUSANDS OF DOLLARS				
	1957-65	1965-73	* Percentage of Total Cost 1965-73	No. of Certificates 1965-73	1957-73
Basic Iron & Steel	5,320	34,180	16.1	30	39,570
Chemical	8,463	15,718	7.4	150	24,281
Food	1,018	7,029	3.3	121	8,043
Metal Working, Plating & Finishing	398	9,885	4.7	64	10,283
Mining & Metallurgical	21,941	62,161	29.3	108	84,102
Miscellaneous Manufacturing	3,433	11,983	5.6	86	15,416
Petroleum & Petrochemicals	22,561	17,056	8.0	103	39,617
Pulp & Paper	33,952	39,797	18.7	56	73,749
Service Industries	152	14,130	6.7	49	14,282
Tanning & Rendering	600	311	0.1	7	911
Textiles	52	208	0.1	4	260
TOTAL COST	**\$98,060	\$212,454	100.0	787	\$310,514

\* Percentage based on estimated costs for treatment works approved by Ministry to be spent by industry: July 1965 - December 1973.

\*\* This total is based on figures presented by industry as having been spent prior to implementation of the approval program by Ministry.



Ontario

PART OF  
ATTACHMENTS  
EXCLUDED

Ministry of the  
Environment

May 22, 1975

135 St. Clair Avenue West  
Suite 100  
Toronto Ontario  
M4V 1P5  
965-6975

Mr. Pat Deutscher,  
Social Sciences Division,  
Inland Water Directorate,  
P.O. Box 5050,  
Burlington, Ontario.  
L7R 4A6

FILE 1373-2		
No.		
DATE MAY 27 1975		
1.		Date
PD		

Dear Mr. Deutscher:

Re: Listing of Industrial Certificates  
of Approval and Concurrences  
issued in 1974

As requested recently, we are enclosing a copy of the listing of the industrial certificates of approval and concurrences that were issued during 1974.

Also enclosed are revised copies of the Estimated Capital Expenditures for Industrial Waste Treatment Works by Major Classification - 1957-1974. The final listing of the certificates of approval brought to light a change in the final totals. These copies will replace those given to you at our recent meeting.

If you have any further questions I shall be pleased to oblige.

Yours truly,

J. B. Patterson, P.Eng.,  
Supervisor,  
Industrial Approvals Section,  
Environmental Approvals Branch.

JBP/ep

C. 7. 0

ESTIMATED CAPITAL EXPENDITURE  
FOR INDUSTRIAL WASTE TREATMENT WORKS  
BY MAJOR CLASSIFICATIONS  
1957-1974

<u>Industry Classification</u>	<u>THOUSANDS OF DOLLARS</u>		<u>Total 1957-74</u>
	<u>1957-73</u>	<u>1974</u>	
Basic Iron & Steel	39,570	5,750	45,320
Chemical	24,281	2,013	26,294
Food	8,043	20	8,063
Metal Working Plating & Finishing	10,283	55	10,338
Mining & Metallurgical	84,102	2,144	86,246
Miscellaneous Manufacturing	15,416	32	15,448
Petroleum & Petrochemical	39,617	5,373	44,990
Pulp & Paper	73,749	5,952	79,701
Service Industries	14,282	960	15,242
Tanning & Rendering	911	253	1,164
Textiles	260	-	260
	<u>\$310,514</u>	<u>\$22,552</u>	<u>\$333,066</u>

CONCURRENCES Total No. 18 - \$4,219

Unlike previous years concurrences have not been classified.



Ontario

Ministry of the  
Environment

Telephone: 965-1655

135 St. Clair Avenue West  
Suite 100  
Toronto Ontario  
M4V 1P5

October 31, 1975

Mr. J. P. H. Batteke,  
Co-Chairman Working Group A,  
Chief, Social Sciences Division,  
Canada Centre for Inland Waters,  
Environment Canada,  
P. O. Box 5050,  
BURLINGTON, Ontario.  
L7R 4A6

Dear Sir:

Re: Per Capita Municipal Loadings  
for Upper Great Lakes Populus

FILE 1135 J.S.D.-2	
No.	
DATE DEC 03 1975	
To	File
J.P.H.	

As per your request please find attached a list of per capita municipal waste loadings, representative of untreated domestic wastes for the populus of the Upper Great Lakes Basin. It must be emphasized however, that these values were produced for use by the Upper Lakes Reference Group Sub-Committees only and must not be used for computations in any other Lakes Basin.

Data for eleven municipalities were reviewed to obtain the attached values. Total sample numbers ranged from 25 to 270 and were collected over the past 2½ years.

If you have any further questions or if we can be of any further assistance, please do not hesitate to call.

Yours truly,

J. Archer, CET,  
Project Officer,  
Municipal Sewage Works Unit,  
Pollution Control Branch.

JA/bls  
encl.

C. 8. 0

PROVINCE OF ONTARIO  
UPPER LAKES REFERENCE GROUP  
WORKING GROUP "C"  
PER CAPITA MUNICIPAL WASTE LOADS  
(Expressed as Lbs./Year)

<u>PARAMETER</u>	<u>PER CAPITA LOADING</u>
Total Phosphorus	2.7
Total Nitrogen	15.0
Total Dissolved Solids	220
Chlorides	30.0
Dissolved Reactive Silicates	5.5
Total Suspended Solids	72.0
Oil	NA
Sulphate	25.0
NH <sub>3</sub>	8.5
Phenol	0.01
Cyanide	NA
Aluminum	NA
Boron	NA
Bromine	NA
*Cadmium	0.003
Calcium	25.0
*Chromium	0.01
Copper	0.06
Fluoride	NA
Iron	1.1
*Lead	0.05
Magnesium	7.5
Manganese	0.07
Mercury	0.00015

| c. 8.1 |

<u>PARAMETER</u>	<u>PER CAPITA LOADING</u>
*Nickel	0.01
Potassium	4.1
Sodium	21.0
Titanium	NA
Zinc	0.1
BOD	65.0

\*Concentrations in sewage were less than detection limit in many instances. Values shown are estimates.

INTER-AGENCY CONTRIBUTIONS TO THE

WASTE LOADINGS MODEL

DATA BASE

UNITED STATES

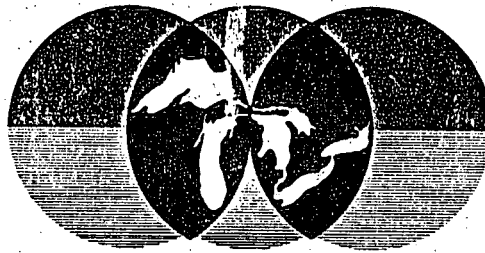


ROUTING AND TRANSMITTAL SLIP		ACTION
1 TO (Name, office symbol or location) J. P. H. Batteke, Chief Social Science Division	INITIALS	CIRCULATE
	DATE	COORDINATION
2 Canada Center For Inland Waters Environment Canada	INITIALS	FILE
	DATE	INFORMATION
3 P.O. Box 5550 Burlington, Ontario L7R 4H6	INITIALS	NOTE AND RETURN
	DATE	PER CON- VERSATION
4	INITIALS	SEE ME
	DATE	SIGNATURE
<b>REMARKS</b> <p>RE: IJC-ULRG Work Group A Industrial Waste Data</p> <p>I am enclosing two (2) sets of supplemental data for most of the companies covered by our survey of NPDES permits, for the five (5) mass parameters (Cl, N, P, TP, Si) (2) If you have any questions call me at the number list below.</p> <p>Do NOT use this form as a RECORD of approvals, concurrences, disapprovals, clearances, and similar actions.</p>		
<b>FROM</b> (Name, office symbol or location) John McGuire, U.S. EPA. 230 S. Dearborn, Chicago IL.		DATE 3/7/75 PHONE 312-353-1458

OPTIONAL FORM 41  
AUGUST 1967  
GSA FPMR (41CFR) 100-11.206

9 (11-70) 1970 (1) 406-308 5041-101

U.1.0



## Great Lakes Basin Commission

Frederick O. Rouse  
Chairman

State of Illinois  
Natural Resources Development Board  
State of Indiana  
Department of Natural Resources  
State of Michigan  
Department of Natural Resources  
State of Minnesota  
State Planning Agency  
State of New York  
Department of Environmental Conservation  
State of Ohio  
Department of Natural Resources  
Commonwealth of Pennsylvania  
Department of Environmental Resources  
State of Wisconsin  
Department of Natural Resources

Department of Agriculture  
Department of the Army  
Department of Commerce  
Department of Health,  
Education & Welfare  
Department of Housing &  
Urban Development  
Department of the Interior  
Department of Justice  
Department of State  
Department of Transportation  
Environmental Protection Agency  
Federal Power Commission  
Great Lakes Commission

April 22, 1975

Mr. John P. Batteke  
Chief Social Sciences Division  
Canada Centre for Inland Waters  
867 Lakeshore Road  
Burlington, Ontario

Dear Mr. Batteke:

Enclosed are the identified data inputs for the waste loadings policy simulation model, Version No. 3, dated March 6, 1975. The attached data reflects those areas in the March 6, 1975, version of the simulation model highlighted for the Great Lakes Basin Commission data inputs.

It is our understanding that areas identified as appropriate for GLBC judgmental input do not require preliminary estimates prior to our visit to CCIW. Judgmental inputs on behalf of GLBC should be simulated at the time of our visit to CCIW.

If there are any questions concerning the attachments, please feel free to contact us as soon as possible.

As Rob Reed discussed with Del Coleman, we would appreciate receiving a copy of the initial run of the simulation model once it is completed in order to assist us in preparing for developing appropriate judgmental inputs.

Sincerely yours,

Eugene A. Jarecki  
Comprehensive Basin Planner

Enclosure

cc: Eugene Pinkstaff

FILE 1135 G 5-		
No.		
DATE April 29/75		
To	Initials	Date
JPB		

U.2.0

# WASTE LOADINGS POLICY

## SIMULATION MODEL

Data Inputs fo Version Number 3  
(Coded as: WLP SIM Model/3)

March 6, 1975

ITEM: MTMC 11

Line No. 311

Values for base year of municipal treatment capacity, treatment plant capacity in gallons per year, per type of treatment plant, per region, for the base year.

Table 1 is taken from Appendix 7, Water Quality, Great Lakes Basin Framework Study. The figures in Column A represent total estimated wastewater flows for the U.S. portion of Lakes Superior and Huron to be treated by either municipal or industrial treatment systems. Information is not readily available as to the type of treatment plants now in operations for these regions.

The municipal wastewater flows includes the total of domestic, commercial, and industrial wastewater anticipated to be treated in municipal wastewater treatment facilities. Industrial wastewater anticipated to be treated in industry-owned wastewater treatment facilities is included under the industrial sector.

Only a proportion of the total population is served by municipal treatment systems, ranging from 27% in PSA 3.1 to 50% in PSA 3.2. No estimations are provided for PSA 1.1 or 1.2. Below are the projected proportion of population to be served by municipal treatment facilities for the various time horizons.

### PLANNING SUBAREA 3.1

Year	Subarea Population	Population Served by Municipal Treatment Facilities
1970	142,064	38,000
1980	164,300	53,000
2000	208,700	85,000
2020	267,000	130,000

### PLANNING SUBAREA 3.2

Year	Subarea Population	Population Served by Municipal Treatment Facilities
1970	1,094,201	550,000
1980	1,246,800	693,000
2000	1,600,500	1,046,700
2020	2,057,400	1,503,000

$$\frac{x}{y} = ? \text{ unknown}$$

U.2.1

ITEM: MT Cost

Line No. 333

Cost of additional municipal treatment facilities. \$ per gallon of yearly capacity, per type of treatment plant.

Table 1, Columns B and C presents the estimated total costs to meet projected municipal wastewater flows for each region, including both capital and operation/maintenance costs.

ITEM: ITCFAC

Line No. 337

Industrial treatment capacity factor. Factor, inverse of sum of investment for pre-base year period, by industry group.

NA / Information by industrial group is not available in-house at this time. A continued search will be made to determine if alternative data sources are available.

ITEM: PCWT01

Line No. 900

Per capita water usage. Average annual usage in gallons, per capita.

Table 2 presents the base and projected per capita daily water usage for the Lake Superior and Lake Huron drainage basins. Table 2 is taken from the Great Lakes Basin Framework Study, Appendix 6, Water Supply.

TABLE 1

		A Year 1970			B			C		
		Wastewater Flow in mgd <sup>1/</sup>		AWT <sup>1/</sup>	Total Capital Cost in millions of dollars		Avg. Annual O & M in millions of dollars			
		munic.	indus.	no.	munic.	indus.	AWT	munic.	indus.	AWT
Lake Superior Plan Area	1.0	44.7	55.2							
Planning Subarea	1.1	32.7	31.5							
Minn.		23.5	31.5							
Wisc.		9.2	—							
Planning Subarea	1.2	12.0	23.7							
Mich.		12.0	23.7							
Lake Huron Plan Area	3.0	85.0	465.3							
Planning Subarea	3.1	5.0	12.3							
Mich.		5.0	12.3							
Planning Subarea	3.2	80.0	453.0							
Mich.		80.0	453.0							
Year 1970-1980										
Lake Superior Plan Area	1.0	48.1	44.4		19.8			2.5		
Planning Subarea	1.1	37.1	23.6		12.8			1.7		
Minn.		28.1	23.6		8.0	7.0	6.9	1.2	1.0	0.7
Wisc.		9.0	—		4.8			0.5		
Planning Subarea	1.2	11.0	20.8		7.0			0.8		N.P.
Mich.		11.0	20.8		7.0			0.8		N.P.
Lake Huron Plan Area	3.0	111.2	417.7	13	70.05			4.2		
Planning Subarea	3.1	7.2	9.7	1	6.05			0.6		
Mich.		7.2	9.7	1	6.05			0.6		
Planning Subarea	3.2	104.0	408.0	12	64.0			3.6		
Mich.		104.0	408.0	12	64.0			3.6		
Year 1980-2000										
Lake Superior Plan Area	1.0	55.9	39.7		12.8			5.4		
Planning Subarea	1.1	43.7	23.6		7.3			4.4		
Minn.		34.2	23.6		3.8			3.9	2.4	2.0
Wisc.		9.5	—		3.5			0.5		
Planning Subarea	1.2	12.2	16.1		5.5		N.P.	1.0		N.P.
Mich.		12.2	16.1		5.5		N.P.	1.0		N.P.
Lake Huron Plan Area	3.0	175.0	261.8	13.0	79.1			8.3		
Planning Subarea	3.1	12.0	9.8	1.0	8.1			1.0		
Mich.		12.0	9.8	1.0	8.1			1.0		
Planning Subarea	3.2	163.0	252.0	12.0	71.0			7.3		
Mich.		163.0	252.0	12.0	71.0			7.3		
Year 2000-2020										
Lake Superior Plan Area	1.0	67.3	61.0		16.4			6.4		
Planning Subarea	1.1	52.3	34.9		9.1			5.2		
Minn.		42.2	34.9		4.8			4.6	2.4	2.0
Wisc.		10.1	—		4.3			0.6		
Planning Subarea	1.2	15.0	26.1		7.3		N.P.	1.2		N.P.
Mich.		15.0	26.1		7.3		N.P.	1.2		N.P.
Lake Huron Plan Area	3.0	263.2	363.8	15.0	108.6			11.4		
Planning Subarea	3.1	18.2	17.8	1.0	10.6			1.2		
Mich.		18.2	17.8	1.0	10.6			1.2		
Planning Subarea	3.2	245.0	346.0	14.0	98.0			10.2		
Mich.		245.0	346.0	14.0	98.0			10.2		

1/ Accumulative to last year in period.

2/ Includes costs for needed advanced waste treatment facilities.

3/ Included in municipal cost figures.

4/ Costs assumed to be private, and no further cost development will be made.

N.P. = Appendix indicates that no needs exist.

Blank spaces indicate data are not available.

TABLE 2

## BASE AND PROJECTED MUNICIPAL WATER SUPPLY

Planning Subarea	1970 Population Served (Thousand)				1970 Municipal Water Use (mgd)				Per Capita (gpcd)
	Total	From Great Lakes	From Inland Lakes & Streams	From Groundwater	Total	From Great Lakes	From Inland Lakes & Streams	From Groundwater	
1.1	261.2	154.6	6.0	100.6	33.1	19.9	0.5	12.7	127
1.2	121.7	69.4	8.5	43.8	15.3	8.7	1.1	5.5	126
3.1	57.9	27.8	-	30.1	7.0	3.4	-	3.6	121
3.2	708.0	510.5	7.8	189.7	125.6	90.6	1.4	33.6	177

U.2.4

Planning Subarea	1970		1980		2000		2020	
	Population Served (Thousands)	Total Water Use (mgd)	Population Served (Thousands)	Total Water Use (mgd)	Population Served (Thousands)	Total Water Use (mgd)	Population Served (Thousands)	Total Water Use (mgd)
1.1	261.2	33.1	277.8	40.0	326.1	50.8	382.7	62.9
1.2	121.7	15.3	111.4	14.3	115.3	15.7	125.9	17.9
3.1	57.9	7.0	70.0	8.8	97.0	12.7	137.0	19.0
3.2	708.0	125.6	851.6	159.6	1,205.3	238.2	1,662.2	345.6



# Great Lakes Basin Commission

FILE 1135 G-5		
No.		
DATE JUN 02 1975		
To	Initials	Date
J. B. B.		

May 27, 1975

**Frederick O. Rouse**  
Chairman

State of Illinois  
Natural Resources Development Board  
State of Indiana  
Department of Natural Resources  
State of Michigan  
Department of Natural Resources  
State of Minnesota  
State Planning Agency  
State of New York  
Department of Environmental Conservation  
State of Ohio  
Department of Natural Resources  
Commonwealth of Pennsylvania  
Department of Environmental Resources  
State of Wisconsin  
Department of Natural Resources

Mr. John Batteke, Chief  
Social Sciences Division  
Inland Waters Directorate  
Ontario Region  
P.O. Box 5050  
Burlington, Ontario L7R-4A6

Dear Mr. Batteke:

In response to your letter dated May 5 to Mr. Eugene Pinkstaff, Gene Jarecki has asked me to provide additional backup materials concerning industrial expenditures for waste water treatment. I have enclosed copies of tables from the 1972 U.S. Environmental Protection Agency "Economics of Clean Water Study." From this information, it is possible to derive generalized industrialized waste treatment expenditures.

As I indicated to Tom Muir in my letter dated May 8, updated information should be available from the National Commission on Water Quality Study concerning industrial waste treatment costs. However, at the present time, this information is not available and the expected date when such information could be released is between three to six weeks away.

In the meantime, I would strongly urge that the information contained in the 1972 EPA Study be utilized with care. The standard deviation for most of the data samples were highly skewed.

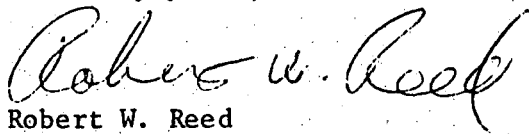
As I indicated to Tom Muir, I will contact the National Commission on Water Quality later this month to check on the status of their industrial waste treatment expenditure coefficients as to their availability. Outside of this source, relevant information is just not available

U.3.0

Mr. John Batteke  
May 23, 1975  
Page Two

which can reliably portray the expenditures in the region of the upper lakes. The closest thing to this is the data contained in the 1972 EPA Study, the limitations of which I mentioned above. Beyond this, one must rely upon subjective policy judgments as to what may be and could be the situation in regards to industrial waste treatment expenditures. Unfortunately, at the current time, there is no consensus upon what these figures may be in the United States.

Sincerely yours,



Robert W. Reed  
Water Resources Planner

Enclosure

cc: Eugene Pinkstaff



The following tables from the 1972 U.S. Environmental Protection Agency Report on "The Economics of Clean Water" can be used to determine relative costs estimates by industrial sectors for waste treatment expenditures for the Upper Lakes modeling effort. Tables 3 through 22 can be utilized to determine industrial waste discharges by industrial sector for the Western Great Lakes Region. The Western Great Lakes Region includes Wisconsin, Minnesota, and the Upper Peninsula of Michigan which borders on Lake Superior. This area in the tables seems to be most closely associated in demographic and economic terms with the Upper Lakes area and, thus, is outlined in the tables as the most appropriate category to be utilized. The Eastern Great Lakes category would include areas which are distinctly different in their social-economic characteristics and, therefore, have been not identified as being useful input into the modeling effort.

The 14 categories of industrial processes are assumed to form a complete coverage of industrial waste discharges of the region. By utilizing tables 3 through 22 as providing the base upon which one can generate the numerical figures concerning the amounts of waste discharge, then it is possible to develop costs estimates for the region utilizing the cost figures developed in tables 25 through 39.

I have included these various tables, all of which present the data somewhat differently, because I am still unclear as to how your primary data is set up. It is quite possible that you will only need to use two of these tables. However, in order to insure a complete coverage, I have included those tables which seem to address the data needs that you requested although from slightly different points of view.



UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY  
REGION V

230 SOUTH DEARBORN ST.  
CHICAGO, ILLINOIS 60604

June 6, 1975



FILE		
No.		
DATE JUN - 9 1975		
To	Initials	Date
JPHB		

John P.H. Batteke  
Chief, Social Sciences Division  
Canada Centre for Inland Waters  
Environment Canada  
867 Lakeshore Road  
P.O. Box 5050  
Burlington, Ontario L7R 4A6

Dear John:

We are enclosing some information which may help to estimate modeling inputs for the Upper Lakes Reference Group, Work Group A, Study Item IV.

- 1) Estimated Industrial Waste Costs, U.S. Upper Great Lakes Basin
- 2) Estimated Municipal and Industrial Waste Flows, U.S. Upper Great Lakes Basin

This information and the material you supplied on Study Item IV, "Future Trends of Waste Loadings", has been sent to the U.S. members, Work Group A, and to Eugene Jarecki.

Sincerely,

*Eugene Pinkstaff*

Eugene Pinkstaff

Enclosures  
as stated

U.4.0

U. S. Upper Great Lakes Basin  
Estimated Municipal and Industrial Wastewater Flows

Planning Subarea U. S. Upper Great Lakes Basin - Wastewater Flows  
(PSA) Million Gallons per Day, MGD

	1970	1980	2000	2020
PSA 1.1 - Lake Superior West				
Municipal	32.7	37.2	43.7	52.3
Industrial (1)	31.5	23.6	23.6	34.9
PSA 1.2 - Lake Superior East				
Municipal	12.0	11.0	12.2	15.0
Industrial	23.7	20.8	16.1	26.1
PSA 3.1 - Lake Huron North				
Municipal (2)	5.0	7.2	12.0	18.2
Industrial (3)	12.3	9.7	9.8	17.8
PSA 3.2 - Lake Huron South				
Municipal (2)	80.	104.	163.	245.
Industrial (3)	453.	408.	252.	346.

(1) No industrial flow reported for Wisconsin part of PSA 1.1.

(2) Total domestic, commercial and industrial wastewater anticipated to be treated in municipal wastewater treatment facilities.

(3) Industrial wastewater anticipated to be treated in industry-owned wastewater treatment facilities.

Source: Great Lakes Basin Framework Study (GLBFS), Appendix No. 7, Water Quality, Draft No. 2, March 1973.

Upper Great Lakes Basin Estimated Cost  
of Industrial Waste Treatment

1. Capital in-place 1972 was computed as follows:

- (a) First an earnings ratio was computed. This ratio is computed using national earnings for a given industry (2) and the given planning subarea (PSA) for the industry (3) i.e.

$$\frac{\text{PSA earnings}}{\text{national earnings}}$$

This ratio was computed for 1962, 1968, and 1969 and an average was computed.

- (b) National in-place 1972 (1) multiplied by the earnings ratio equals PSA capital in place.

2. Annual Cost Best Practical Treatment 1972.

This is computed by multiplying the U.S. costs for existing and project plans to meet best practical treatment (1) by earnings ratio for the PSA.

3. Annual Cost Best Practical Treatment 1990.

The 1972 cost multiplied by the PSA's Index of Production for 1990 (3).

4. Annual Cost Best Practical Treatment 2010.

The 1972 cost multiplied by the PSA's Index of Production for 2010 (3).

5. Scenario 3. Water use scenario 3 (the eight least efficient regions move closer to the median regional efficiency in 1968). It appears the most likely scenario for 1972 - 1977 because it represents a realistic adjustment in water use by older plants. Page 31 and 32 of reference 1.

REFERENCES

1. The Economics of Clean Water - 1973,  
U.S. Environmental Protection Agency, page 42.
2. Obers Projections - 1972,  
U.S. Water Resources Council, Washington, D.C., page 38.
3. Upper Great Lakes Basin Report (U.S. side),  
Project 2.2.2.1., Economic Conditions and Activities  
(except fishing and recreation) pages 3-8 and 10 & 11.

UPPER GREAT LAKES BASIN  
ESTIMATED COST OF INDUSTRIAL WASTE TREATMENT  
PLANNING SUBAREA 1.1

	SIC Code	1 Capital in-place 1972 (in 1972\$)	2 Annual Costs Best Practical Treatment 1972 (1972\$) Scenario 3	3 Annual Costs Best Practical Treatment 1990 (1972\$) Scenario 3	4 Annual Costs Best Practical Treatment 2010 (1972\$) Scenario 3
Animal Feedlots	02	151,470	81,510	144,270	220,890
Food and Kindred	20	399,750	886,830	1,507,610	2,447,650
Textile Mill Prod.	22	61,420	240,700	515,100	1,090,370
Lumber and Wood Prod.	24	18,700	919,700	2,280,860	4,506,530
Paper and Allied Prod.	26	3,408,600	2,804,400	5,973,370	12,619,800
Chemical and Allied	28	991,020	485,550	1,111,910	23,379,200
Pet. Ref. and Allied	29	1,453,960	472,700	779,960	1,337,740
Rubber and Plastics	30	170,550	185,090	396,090	838,460
Leather and Prod.	31	9,130	70,550	150,980	319,590
Stone, Clay, Glass, Conc.	32	120,350	155,210	332,150	703,100
Primary Metals	33	1,449,700	685,900	891,670	1,111,160
Fab., Metals	34	157,200	72,800	274,460	878,700
Nonelec. Mach.	35	80,370	70,030	197,490	506,320
Elec. Machinery	36	31,800	21,600	79,700	235,010
Trans. Equip.	37	175,130	65,570	242,610	633,410
TOTAL		8,579,150	7,218,140	14,878,230	29,827,930

NOTE: This table has been typed from written material received.

U.4.3

UPPER GREAT LAKES BASIN  
ESTIMATED COST OF INDUSTRIAL WASTE TREATMENT  
PLANNING SUBAREA 1.2

	SIC Code	1 Capital in-place 1972 (in 1972\$)	2 Annual Costs Best Practical Treatment 1972 (1972\$) Scenario 3	3 Annual Costs Best Practical Treatment 1990 (1972\$) Scenario 3	4 Annual Costs Best Practical Treatment 2010 (1972\$) Scenario 3
Animal Feedlots	02	68,850	37,050	62,620	80,030
Food and Kindred	20	120,250	266,770	450,840	680,260
Textile Mill Prod.	22	17,760	69,600	158,690	352,180
Lumber and Wood Prod.	24	2,640	129,840	192,160	276,560
Paper and Allied Prod.	26	908,600	747,840	2,191,170	5,302,190
Chemical and Allied	28	286,560	140,400	265,360	450,680
Pet. Ref. and Allied	29	35,680	11,600	26,450	58,700
Rubber and Plastics	30	20,400	53,520	122,030	270,810
Leather and Prod.	31	2,640	20,400	46,510	103,220
Stone, Clay, Glass, Conc.	32	34,800	44,880	102,330	227,090
Primary Metals	33	106,820	50,540	88,450	119,270
Fab., Metals	34	3,930	1,820	1,820	1,820
Nonelec. Mach.	35	30,780	26,820	109,690	354,560
Elec. Machinery	36	38,160	25,920	25,920	25,920
Trans. Equip.	37	50,604	18,960	72,620	218,610
TOTAL		1,728,510	1,645,960	3,916,660	8,521,900

NOTE: This table has been typed from written material received.

UPPER GREAT LAKES BASIN  
ESTIMATED COST OF INDUSTRIAL WASTE TREATMENT  
PLANNING SUBAREA 3.1

	SIC Code	1 Capital in-place 1972 (in 1972\$)	2 Annual Costs Best Practical Treatment 1972 (1972\$) Scenario 3	3 Annual Costs Best Practical Treatment 1990 (1972\$) Scenario 3	4 Annual Costs Best Practical Treatment 2010 (1972\$) Scenario 3
Animal Feedlots	02	78,030	41,990	105,810	165,860
Food and Kindred	20	19,500	43,260	43,260	43,260
Textile Mill Prod.	22	22,200	87,000	214,890	510,690
Lumber and Wood Prod.	24	7,700	378,700	1,177,760	2,825,100
Paper and Allied Prod.	26	179,400	147,600	360,140	844,270
Chemical and Allied	28	1,190	0	0	0
Pet. Ref. and Allied	29	267,600	87,000	241,890	510,690
Rubber and Plastics	30	25,500	66,900	165,240	392,700
Leather and Prod.	31	3,300	25,500	62,990	149,690
Stone, Clay, Glass, Conc.	32	43,500	56,100	138,570	329,300
Primary Metals	33	129,710	61,370	137,470	236,890
Fab., Metals	34	157,200	72,800	328,330	977,700
Nonelec. Mach.	35	97,470	84,930	119,750	187,700
Elec. Machinery	36	47,700	32,400	169,130	586,440
Trans. Equip.	37	0	0	0	0
TOTAL		1,080,000	1,185,550	3,265,230	7,760,290

NOTE: This table has been typed from written material received.

U. 4.5

UPPER GREAT LAKES BASIN  
ESTIMATED COST OF INDUSTRIAL WASTE TREATMENT  
PLANNING SUBAREA 3.2

	SIC Code	<sup>1</sup> Capital in-place 1972 (in 1972\$)	<sup>2</sup> Annual Costs Best Practical Treatment 1972 (1972\$) Scenario 3	<sup>3</sup> Annual Costs Best Practical Treatment 1990 (1972\$) Scenario 3	<sup>4</sup> Annual Costs Best Practical Treatment 2010 (1972\$) Scenario 3
Animal Feedlots	02	1,927,800	1,037,400	1,089,270	1,659,840
Food and Kindred	20	975,000	2,163,000	4,801,860	9,236,010
Textile Mill Prod.	22	22,200	87,000	252,300	513,300
Lumber and Wood Prod.	24	17,600	865,600	2,397,710	5,236,880
Paper and Allied Prod.	26	478,400	393,600	999,740	2,192,350
Chemical and Allied	28	21,730,800	10,647,000	39,131,010	76,658,400
Pet. Ref. and Allied	29	4,192,400	1,363,000	2,671,480	5,193,030
Rubber and Plastics	30	875,500	2,296,900	5,351,780	11,392,620
Leather and Prod.	31	113,300	875,500	2,039,920	4,342,480
Stone, Clay, Glass, Conc.	32	1,493,500	1,926,100	4,487,810	9,553,460
Primary Metals	33	7,935,200	3,754,400	7,546,340	13,065,310
Fab., Metals	34	3,733,500	1,729,000	6,016,920	16,131,570
Nonelec. Mach.	35	684,000	596,000	1,406,560	3,027,680
Elec. Machinery	36	699,600	475,200	1,867,540	5,825,950
Trans. Equip.	37	485,300	181,700	490,590	1,104,740
TOTAL		45,364,100	28,391,400	71,550,830	165,133,620

NOTE: This table has been typed from written material received.



STATE OF MICHIGAN



NATURAL RESOURCES COMMISSION

CARL T. JOHNSON  
E. M. LAITALA  
DEAN BRIDGEMAN  
HILARY F. SNELL  
HARRY H. WHITELEY  
JOAN L. WOLFE  
CHARLES G. YOUNGLOVE

WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING, LANSING, MICHIGAN 48926  
HOWARD A. TANNER, Director

WATER RESOURCES COMMISSION

C. WILLIAM COLBURN  
JOHN E. CLAB  
CHARLES D. HARRIS  
JOHN H. KITCHEN, M.D.  
CLEAMON E. LAY  
STANLEY QUACKENBUSH  
JOHN E. VOGT

August 6, 1975

Mr. Eugene Pinkstaff  
Chief, Technical Services Section  
Surveillance & Analysis Division  
U.S. Environmental Protection  
Agency  
Region V  
230 South Dearborn Street  
Chicago, Illinois 60604

Dear Mr. Pinkstaff:

I have completed your request to Mr. W. E. McCracken of June 30, 1975 relative to Waste Loading Coefficients for Municipalities and have attached the same. I wish to make a few comments regarding the attachments to clarify my work:

1. For Michigan loadings, twelve sewage treatment plants were selected as representing the majority of the population. The data used in computing these loadings were obtained from point source monitoring surveys, compliance monitoring reports and staff reports.
2. For Wisconsin loadings I used an article published in 1974 by the Wisconsin Department of Natural Resources entitled "Surveys of Toxic Metals in Wisconsin". This report contains data from 35 sewage treatment plants serving 85% of the population.
3. Outside of this Wisconsin report, I did not attempt to obtain information on additional parameters from Wisconsin, nor did I contact Minnesota for loading information. However, where information gaps exist you probably should use Michigan information.

As requested, all waste loading information supplied in the attachment, represents "before treatment waste loads".

Very truly yours,

WATER RESOURCES COMMISSION

Thomas A. Newell  
Sanitary Engineer

FILE 1372-2	
AUG 15 1975	



TAN/cs  
Enclosure

U.S.O

# MUNICIPAL WASTE LOADS

(LBS./CAPITA/YEAR)

July 25, 1975

	<u>MICHIGAN</u>	<u>WISCONSIN</u>
POPULATION*	3,800,000	2,300,000
<u>PARAMETER</u>		
Silica	45.3	N/A
Total Suspended Solids	99	N/A
Oil	9.0	N/A
Sulphur	70	N/A
NH3-N	5.6	N/A
Phenols	0.003	N/A
Cyanide	0.18	N/A
Aluminum	6.0	N/A
Boron	0.0006	N/A
Bromine	N/A	N/A
Cadmium	0.02	0.01
Calcium	0.39	0.38
Chromium	61	N/A
Copper	0.52	0.10
Fluoride	0.75	N/A
Iron	12	N/A
Lead	0.30	0.10
Magnesium	18	N/A
Manganese	19	N/A
Mercury	0.001	0.001
Nickel	0.28	N/A
Potassium	8.1	N/A
Sodium	64	N/A
Titanium	N/A	N/A
Zinc	0.78	0.29
BOD	99	N/A

\* Population used in computing loads and is not the entire population of each state.

N/A = Loads unobtainable from the sources used to complete the table.



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

L. P. Voigt  
Secretary

BOX 450  
MADISON, WISCONSIN 53701

August 11, 1975

IN REPLY REFER TO: 8250

Mr. Eugene Pinkstaff  
U.S. Environmental Protection Agency - Region V  
230 South Dearborn  
Chicago, Illinois 60604

Dear Mr. Pinkstaff:

Enclosed is the information you requested for the Wasteload Modeling Study, Upper Lake Reference Group. This is our best available estimate of percentage of industry waste removal. This information applies to only the Wisconsin portion of the Western Lake Superior.

We have reviewed the Documentation of Sources and Calculations for the Industrial Waste Loading Coefficient and also the (Koppers Company) in Wisconsin. The document seems well prepared.

With regard to the social, institutional, and technological inputs for ULRG, Mr. Robert Reed of GLBC sent us five specific variables. We have reviewed the figures he has prepared and they seem generally accurate. However, the population decrease for Sub-Area 1.1 is much higher than we have expected. The State of Wisconsin predicts about 1.5% decrease for the four counties in Wisconsin by 1990. Unless the situation in Minnesota is much different, it is difficult to imagine a 11% decrease by 2020 for Sub-Area 1.1

Sincerely,

Rahim Oghalai, Supervisor  
Interstate Planning Coordination  
Water Resources Planning Section

RO:ng  
Enc.

U.6.0

## ESTIMATES OF PERCENTAGE OF INDUSTRY WASTE REMOVAL

U.S. SECTION

## REGIONS (PLANNING SUBAREAS)

Industry Group	Lake Huron South	Lake Huron North	Lake Superior East	Lake Superior West	Comments
<u>Mining:</u>				<i>Waste Only</i>	
Metal				N/A	
Coal				N/A	
Crude Petroleum & Natural Gas				N/A	
Non-Metallic, except fuels				N/A	
<u>Manufacturing:</u>					
Food & Kindred Products				20% ✓	
Textile mill Products				N/A	
Apparel & other fabric products				N/A	
Lumber products and furniture				20% ✓	
Paper & allied products				50%	2 Paper mills
Printing & Publishing				N/A	
Chemicals & allied products				N/A	
Petroleum refining				20%	engineering
Primary metals					
Fabricated metals & ordnance				N/A	
Machinery, excluding electrical				N/A	
Electrical machinery and supplies				N/A	
Motor vehicles & equipment				N/A	
Transportation equip., excl. mtr. vehs.				N/A	
Other manufacturing				N/A	

U.S. 1

JOHNSON  
VITALA  
HIDGREN  
F. SNELL  
H. WHITELEY  
WOLFE  
ES G. YOUNGLOVE



WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING, LANSING, MICHIGAN 48926  
HOWARD A. TANNER, Director

August 14, 1975

Eugene Pinkstaff  
U.S. Co-Chairman  
U.S. EPA - Region V  
230 South Dearborn  
Chicago, Illinois 60604

Dear Gene:

This letter is in response to two requests for review, by the states, of material relating to industrial waste load coefficients for the Upper Lakes Reference Group Study.

The material that was sent to you on July 8 from Mr. Batteke contains America Waste Loading Coefficients Documentation of Sources and Calculations. We have reviewed this material and found it to be accurate as it was obtained directly from the NPDES permit applications from each industry. There are, however, a couple of problems with this information. First of all, the list of industries is not complete as the first page, third paragraph of the document, would lead you to believe. However, with the exception of the power generation facilities, the list appears to be fairly complete for all the major industries in the basin. If this material is to represent a sample of the industries in the basin, it would appear that the sample is biased in that only the major industries are represented.

The second problem relating to the material which was sent to you on July 8, is in regard to how this material is going to be used. The information provided on the forms lists the quality of the discharge at the time the applicant applied for the permit. It does not represent the level of treatment that the industry must achieve in order to meet the permit requirements. Most of the permits in this basin have been issued and that type of information should now be available. The permit conditions are usually written in concentrations which is compatible to the type of projections that are being developed in the model. As the industry expands, the waste load to the river and to the Great Lakes will therefore increase. However, some industries have ultimate load limits established on a pound/day basis. As the industry expands, improved treatment must be provided in order to keep the pollutants within the allowable pound/day load limit. Will the modeling study take this into account?

U. T. D



Mr. Pinkstaff

-2-

August 14, 1975

1  
The material that was sent out from your office on August 4 regarding our best estimates on percent removal of waste from various industrial groups cannot be answered at this time. The information in the table is too general for each industry. I would suggest that the request be reconsidered and that specific wastes for each industry be listed and that this request be limited to the significant forms of waste from each industry.

Very truly yours,

BUREAU OF WATER MANAGEMENT



Delbert Johnson, In Charge  
Water Resources Planning Unit

DJ:clp  
cc: R. Reed

U. 7.1

# ESTIMATES OF PERCENTAGE OF INDUSTRY WASTE REMOVAL

U.S. SECTION

Industry Group	REGIONS (PLANNING SUBAREAS)				Comments
	Lake Huron South	Lake Huron North	Lake Superior East	Lake Superior West	
<u>Mining:</u>					
Metal				1/73 7/75	Except Reserve Mining Co. J. discharges on the quality of water affect with some mining effluents
Coal				NA	Need no treatment to meet applicable standards.
Crude Petroleum & Natural Gas				NA	
Non-Metallic, except fuels				NA	
<u>Manufacturing:</u>					
Food & Kindred Products				NA	
Textile mill Products				NA	
Apparel & other fabric products				NA	
Lumber products and furniture				50%	
Paper & allied products				10%	
Printing & Publishing				NA	
Chemicals & allied products				NA	
Petroleum refining				80%	
Primary metals				Prohibitive only	No direct discharge / 0 mtr. U.S.S. Co. discharge only
Fabricated metals & ordnance				100%	
Machinery, excluding electrical				NA	
Electrical machinery and supplies				NA	
Motor vehicles & equipment				NA	
Transportation equip., excl. mtr. vehs.				NA	
Other manufacturing					

U.7.2

## DISCUSSION OF QUESTIONS RAISED BY MICHIGAN

### I. U.S. Waste Loading Coefficients.

- (1) Are corrections for waste loading coefficients needed for the power industry in Michigan?
- (2) Are corrections for waste loading coefficients needed because only the major industries are used to calculate the sample waste load coefficients which were applied to all industries? This has caused a bias in the coefficients because only the data for the major industries is used, and the data for the minor industries may be different. The question is whether there is a significant difference.
- (3) Future level or quantity of discharge the industry must achieve to meet permit requirements. This information is available, especially in Michigan, but not supplied. Is it needed or does the computer program calculate a future percent waste removal that provides a discharge equal to future permit requirements.
- (4) Some industries have ultimate load limits on a pound/day basis which cannot be exceeded. Is this accounted for in the model? What are these effluent limitations and where should they be applied in the model?

### II. Estimates of Percentage of Industrial Waste Removal.

- (1) The request for best estimates of percent removal of various industrial groups cannot be adequately answered, at least in Michigan, because the request for each industry is too general. To best quantify this data in Michigan, the specific waste discharged from each industry group should be listed, and this list should be limited to significant waste discharge parameters in each industry group. It should be recalled that the ULRG has requested loading estimates for all parameters for which data is available. It therefore seems that some best estimate of percent removal for all parameters is needed. However some grouping of parameters with a common percent removal seems reasonable, i.e., BOD and COD, heavy metals, anions such as chloride and sulphate, and oil and grease and some types of organic compounds.



9950

ENVIRONMENT CANADA LIBRARY BURLINGTON



3 9055 1016 7292 0