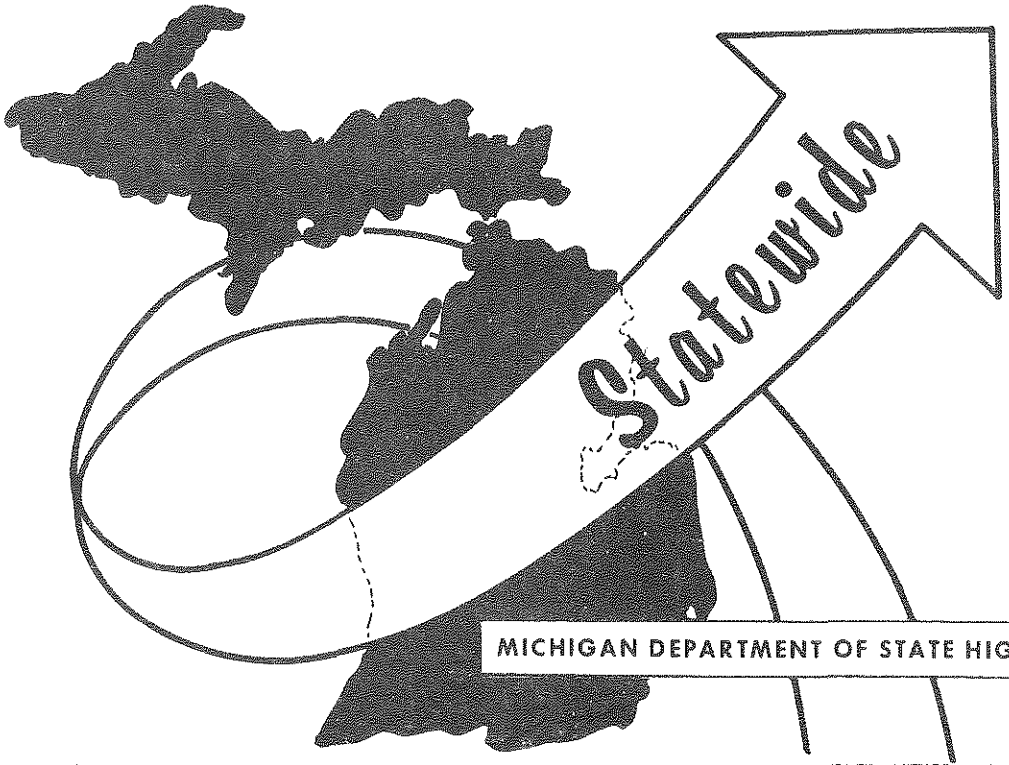
Statewide Transportation Analysis & Research

MICHIGAN'S STATEWIDE
TRANSPORTATION MODELING SYSTEM

CONVERSION OF
DEPARTMENT OF COMMERCE
INDUSTRIAL EXPANSION FILE

Vol. VIII-A

STATEWIDE TRANSPORTATION
PLANNING PROCEDURES



MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

MICHIGAN DEPARTMENT

OF

STATE HIGHWAYS AND TRANSPORTATION

BUREAU OF TRANSPORTATION PLANNING

MICHIGAN'S STATEWIDE
TRANSPORTATION MODELING SYSTEM

CONVERSION OF
DEPARTMENT OF COMMERCE
INDUSTRIAL EXPANSION FILE

Vol. VIII-A

STATEWIDE TRANSPORTATION
PLANNING PROCEDURES

STATE OF MICHIGAN

WILLIAM G. MILLIKEN, GOVERNOR

DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

STATE HIGHWAYS BUILDING, 425 WEST OTTAWA PHONE 517-373-2090
POST OFFICE DRAWER K, LANSING, MICHIGAN 48904

JOHN P. WOODFORD, DIRECTOR

February 10, 1976

Mr. Sam F. Cryderman, Deputy Director
Bureau of Transportation Planning
Michigan Department of State Highways
and Transportation
P.O. Drawer K
Lansing, Michigan 48904

Dear Mr. Cryderman:

In continuing with the development of the Statewide Traffic Forecasting Model in the areas of social and economic impacts, the Statewide Transportation Planning Procedures Section presents the report entitled, Conversion of Department of Commerce Industrial Expansion File. This report was made possible with the cooperation of the Department of Commerce, who supplied data tapes containing information on industrial expansion for the years 1968 through 1973.

Using the Statewide Model as a base to which outside agencies may add their own data, benefits all agencies involved by allowing a "common ground" where the expertise of each party can be utilized to produce a combined effect not attainable by any Department individually.

The two primary uses of the Department of Commerce data will be identifying the proximity of industrial expansions to future highway alternates, and also industrial expansions and alternate modes of transportation.

Sincerely,

R. J. Lilly, Administrator
Highway Planning Division

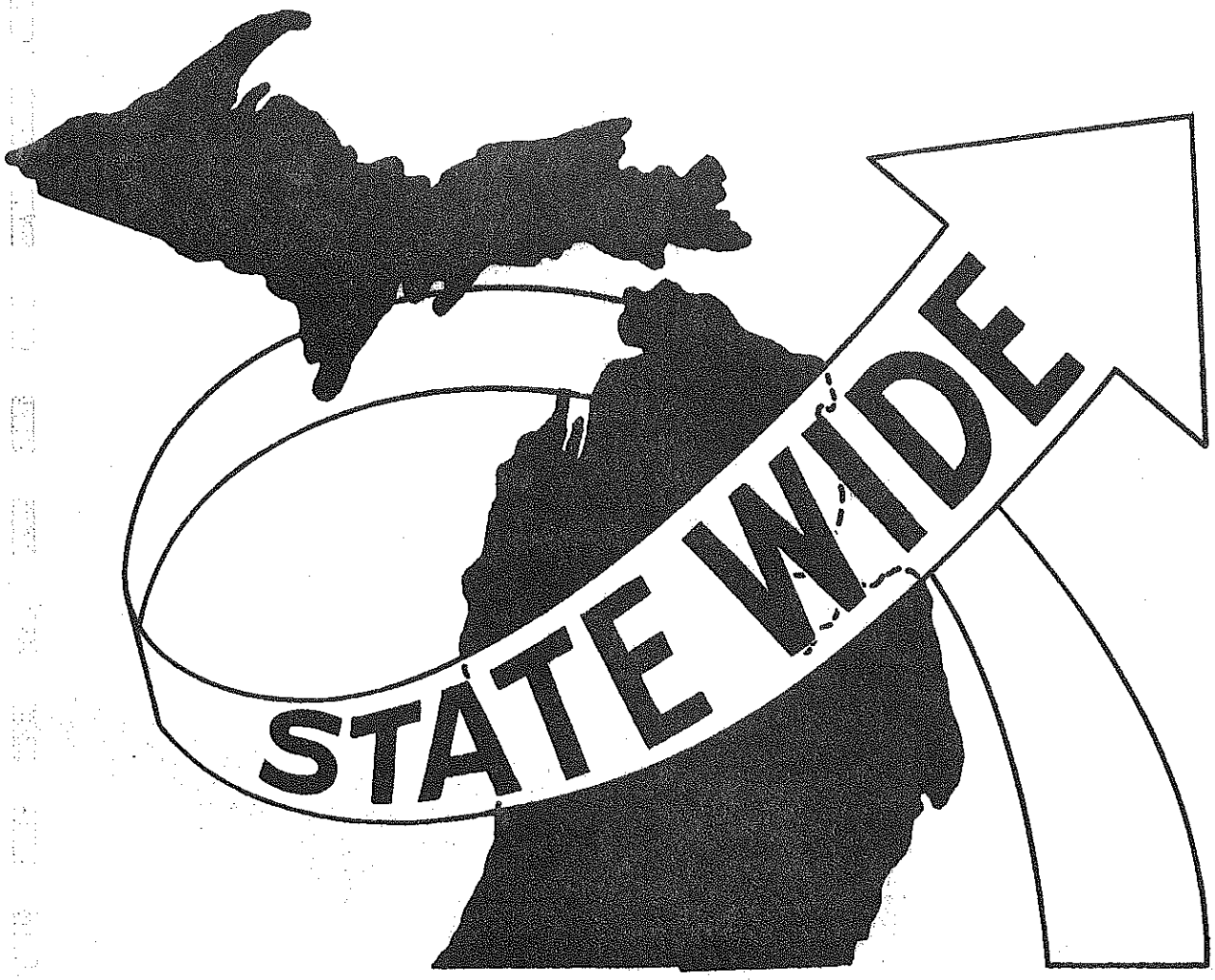
TABLE OF CONTENTS

CONVERSION OF DEPARTMENT OF COMMERCE INDUSTRIAL EXPANSION FILE

by

W. Thomas Franklin

PREFACE

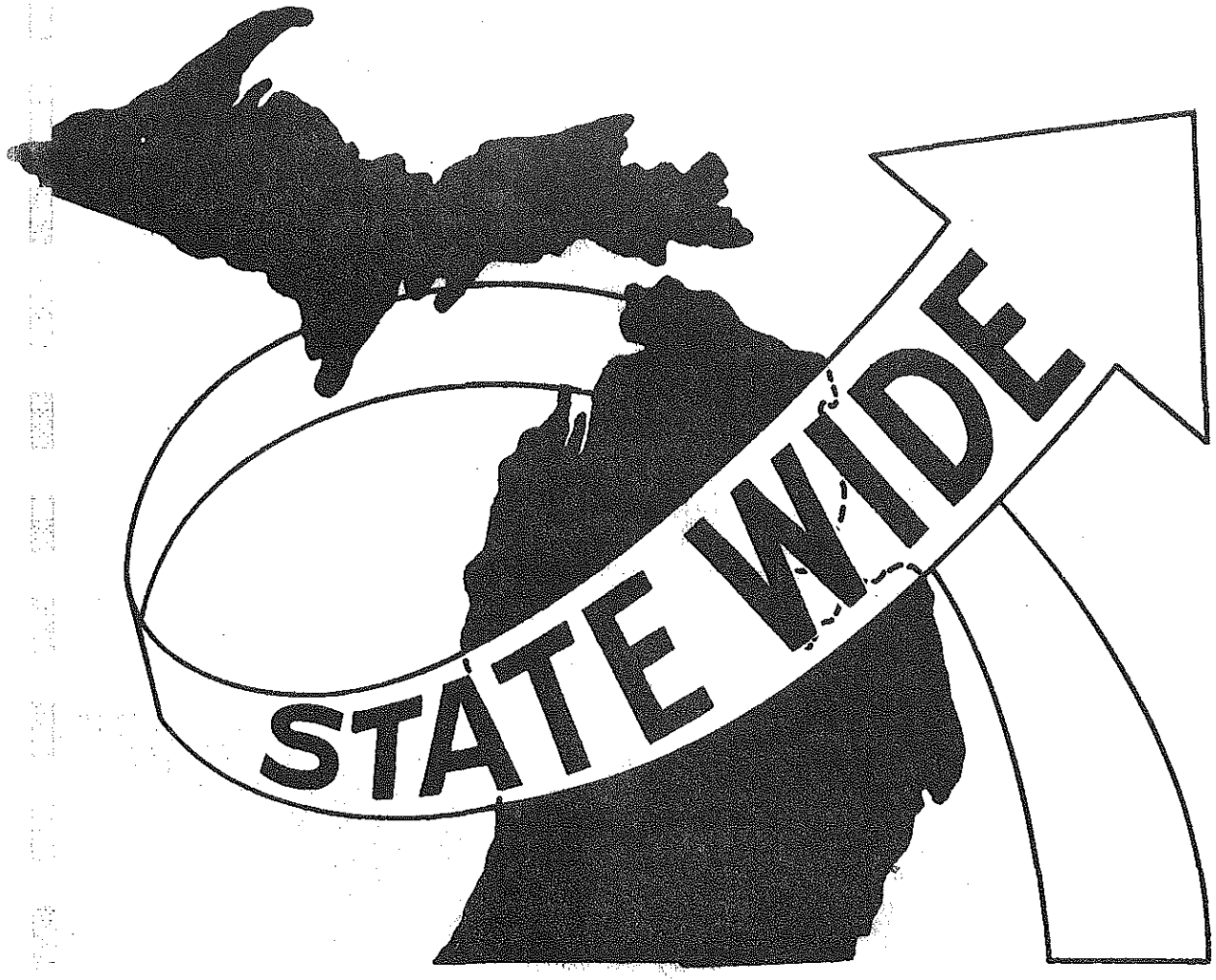


PREFACE

The mutual participation of state agencies, working together in the public interest, allows a sharing of knowledge and skills that greatly benefits state government as a whole. The degree to which these joint operations are successful in the future is dependent upon the groundwork laid down today. It is for this reason that the Statewide Transportation Planning Procedures Section encourages the linking of its traffic forecasting model with input supplied by other agencies.

The following report provides an example of one such effort on the part of the Department of State Highways and Transportation and the Department of Commerce dealing with industrial expansion. Hopefully, the results of these efforts will stimulate a greater interest in interdepartmental projects.

INTRODUCTION



INTRODUCTION

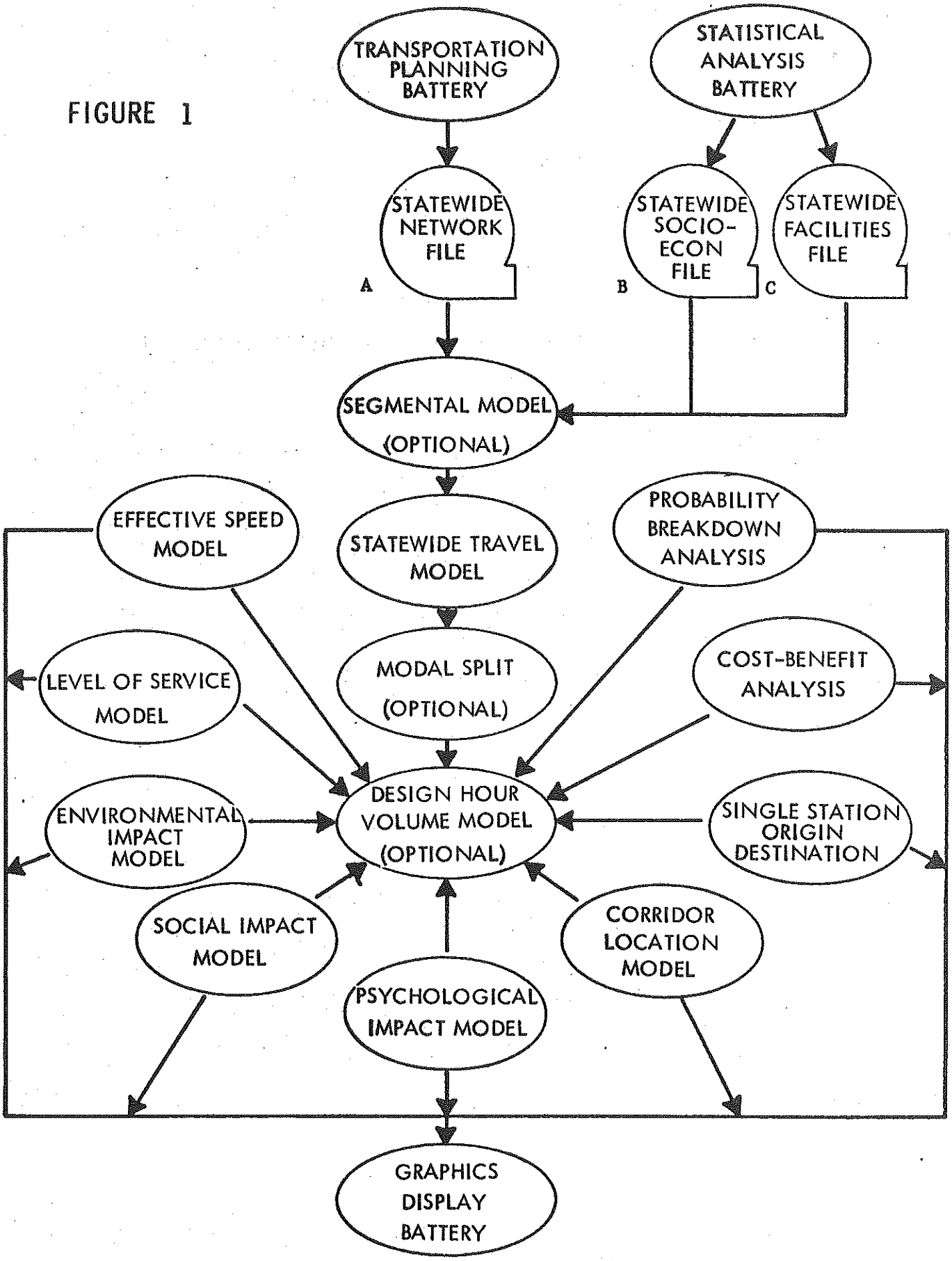
The Statewide Transportation Planning Procedures Section of the Michigan Department of State Highways and Transportation has been collecting data over the past four years for use in developing a statewide transportation modeling system. This system incorporates the components appearing in Figure 1, and details of the system are available in the report "A Statewide Transportation Modeling System Effectively Meets the Transportation Challenge of the 70's", June 1973.

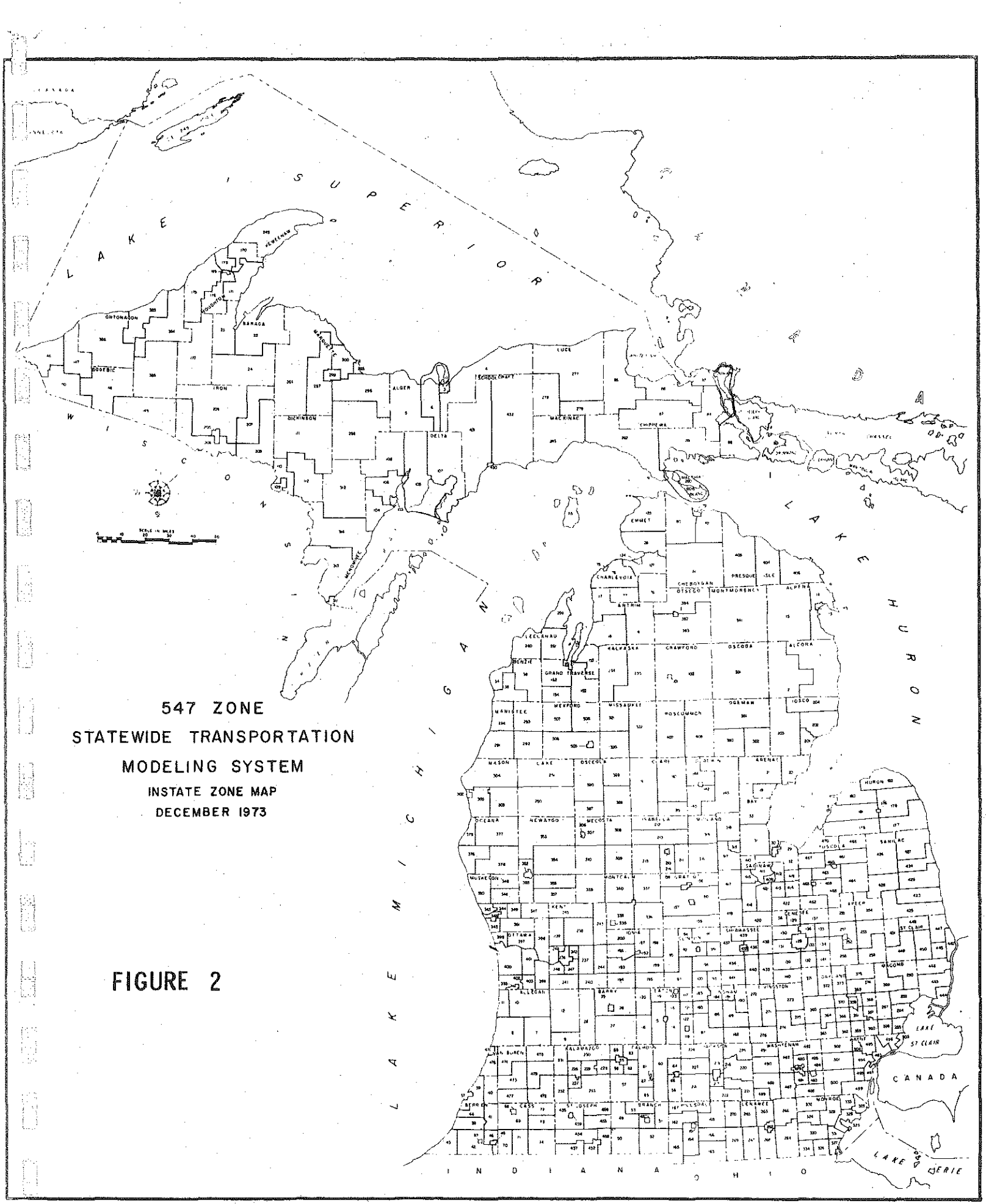
Figure 2 depicts the analysis zones on which all the input and output data is based. The three basic information files which make up this system are labeled in Figure 1 as A, B, and C. The data obtained from the Department of Commerce, upon conversion to the 547 zone system, will become a part of file B, the socio-economic file.

It is important to remember when reading this report that, once the specific data has been converted into the correct format for input to the system, all users of the system are able to access it in conjunction with any other existing data. Therefore, the information supplied by the Commerce Department can now be "linked" to the existing data within the socio-economic file and analysis performed by passing it through the statistical analysis and graphic-display batteries. This allows each participating state agency a better opportunity to systematically use information collected throughout various departments. As an example, the Department of Commerce's industrial expansion file can be used

STATEWIDE MODELING SYSTEM COMPONENTS

FIGURE 1





547 ZONE

STATEWIDE TRANSPORTATION

MODELING SYSTEM

INSTATE ZONE MAP

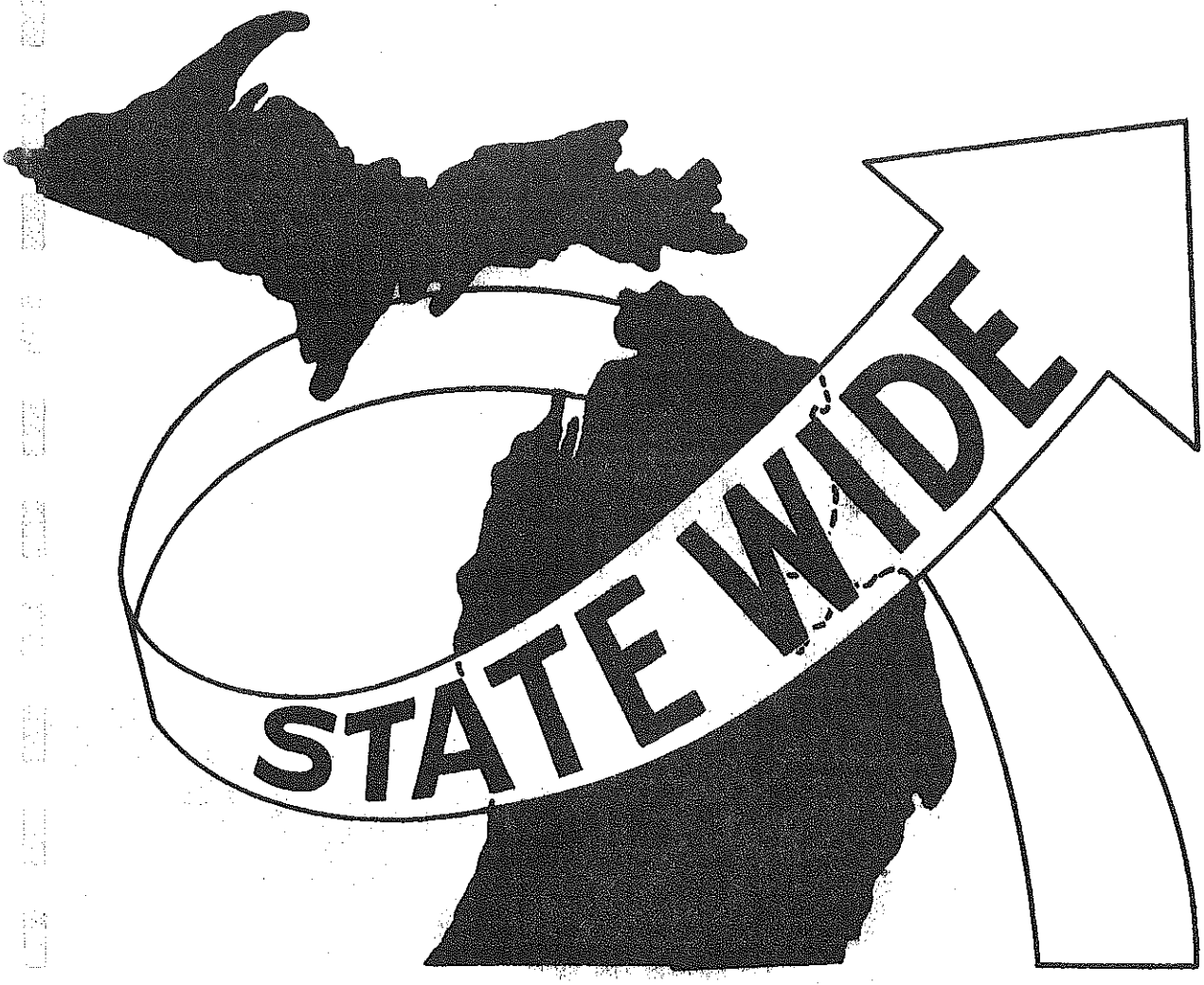
DECEMBER 1973

FIGURE 2

as an aid in travel forecasting, and the Department of State Highways and Transportation's social-economic file can be utilized by the Department of Commerce. This same industrial expansion data might also be used to determine the proximity of selected rail lines to industrial expansions in the state for rail planning purposes.

The following report describes the actual conversion of data and illustrates a few examples of the uses of the graphic-display battery as a help to traffic forecasting.

DATA CONVERSION



DATA CONVERSION

The master industrial expansion data tapes were obtained from the Department of Commerce. These tapes were files containing information on industrial expansion for the years 1968 through 1973 in Michigan. The actual data as it appeared on the master copies is shown in Figure 3.

(Q17208) This program is a standard tape copy program which was run on each of the six commerce tapes, giving them Burroughs labels, blocking factors, record length, etc.

(QDATPL) This program was written for the purpose of pulling off selected fields of data from each tape. These selected fields of data included identification number, company name, location of activity (township or city where the expansion took place), building cost, machine cost, total cost and employment change. The output from this program resided on six disk files.

(QMTCH) The matching of city and township names for the purpose of determining what zone each expansion was a part of was accomplished through the use of this program. Run against the master place code file, which contains all city and township names in Michigan, approximately 80% of the records on each disk file were correctly matched and zone numbers (from Figure 2)

FILE NAME	INDUSTRY ACTIVITY MASTER FILE			
DIVISION	ECONOMIC EXPANSION	SECTION	RESEARCH	
FILE TYPE	HEADER I.D.		SEQUENCE	
TAPE	CT37501			
RECORD SIZE	BLOCKING FACTOR	BLOCK SIZE	FORMAT	LABEL TYPE
208	30		FIXED	

FROM	TO	DESCRIPTION	FORMAT	LENGTH
1	3	TRANSACTION CODE	N	3
4	12	IDENTIFICATION NUMBER	N	9
13	14	REGION CODE	N	2
15	17	SIC CODE	N	3
18	19	TYPE OF ACTIVITY	N	2
20	21	COUNTY CODE	N	2
22	56	COMPANY NAME	AN	35
57	79	COMPANY LOCATION	AN	23
80	102	TYPE OF FACILITY	AN	23
103	137	LOCATION OF ACTIVITY	AN	35
138	139	SOURCE CODE	N	2
140	143	SOURCE DATE/MONTH-YEAR	N	4
144	147	ANNOUNCED DATE/MONTH-YEAR	N	4
148	151	START DATE/MONTH-YEAR	N	4
152	155	COMPLETION DATE/MONTH-YEAR	N	4
156	161	BUILDING COST	N (+ IN UNITS)	6
162	167	MACHINE COST	N (+ IN UNITS)	6
168	173	TOTAL COST	N (+ IN UNITS)	6
174	177	EMPLOYMENT CHANGE	N (+ IN UNITS)	4
178	181	BUILDING SIZE	N	4
182	183	CONSTRUCTION CODE	N	2
184	186	SITE SIZE	N	3
187	187	INDUSTRIAL PARK	N	1
188	208	FILLER	AN	21

FIGURE 3

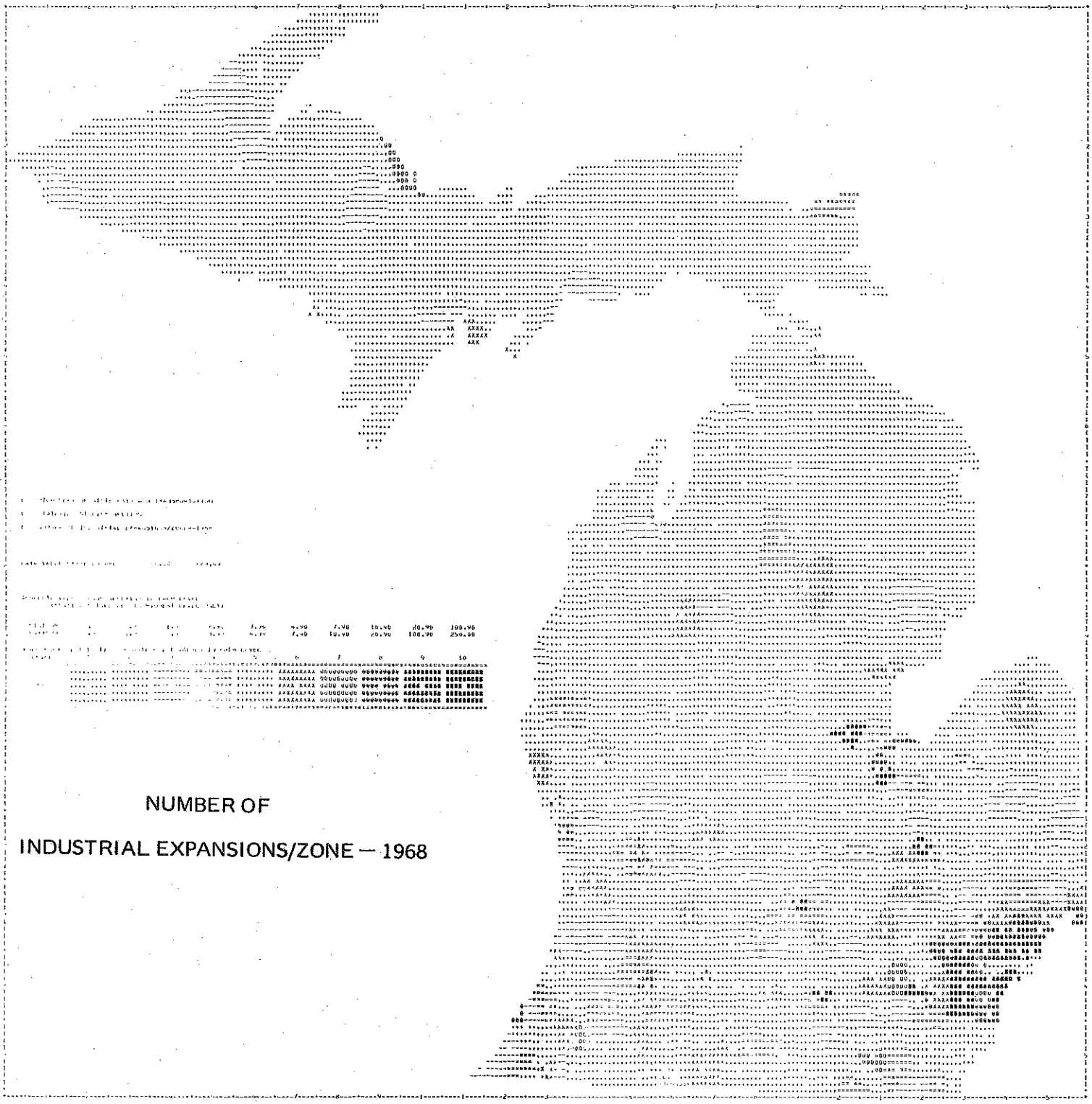
added. Standardized abbreviations on the place code file caused the mismatches and all expansion records that fell into this category were taken care of individually on a remote computer terminal.

(QZSUM) To obtain zonal totals, QZSUM was run on the disk file output from QMTCH. All records with like zone numbers were totalled for each of the data fields pulled from the master tapes, as described above, and reformatted to correspond to the input information required for a computer program residing within the graphic-display battery called SYMAP.

(Q17154) This is another standard program which copied the output from the above program (disk file) to computer cards for input to SYMAP.

With the data conversion process completed, the Commerce data can be graphically displayed using components of the system appearing in Figure 1. The following pages illustrate the use of a program called SYMAP, an acronym for symbol mapping. Using only the data contained in the Commerce file, a general picture of the industrial expansions in Michigan may be obtained for the years 1968 through 1973. Figures 4a-4f are SYMAPs of the number of expansions per zone for each year. Figures 5a-5f depict the total cost of the same expansions, per zone.

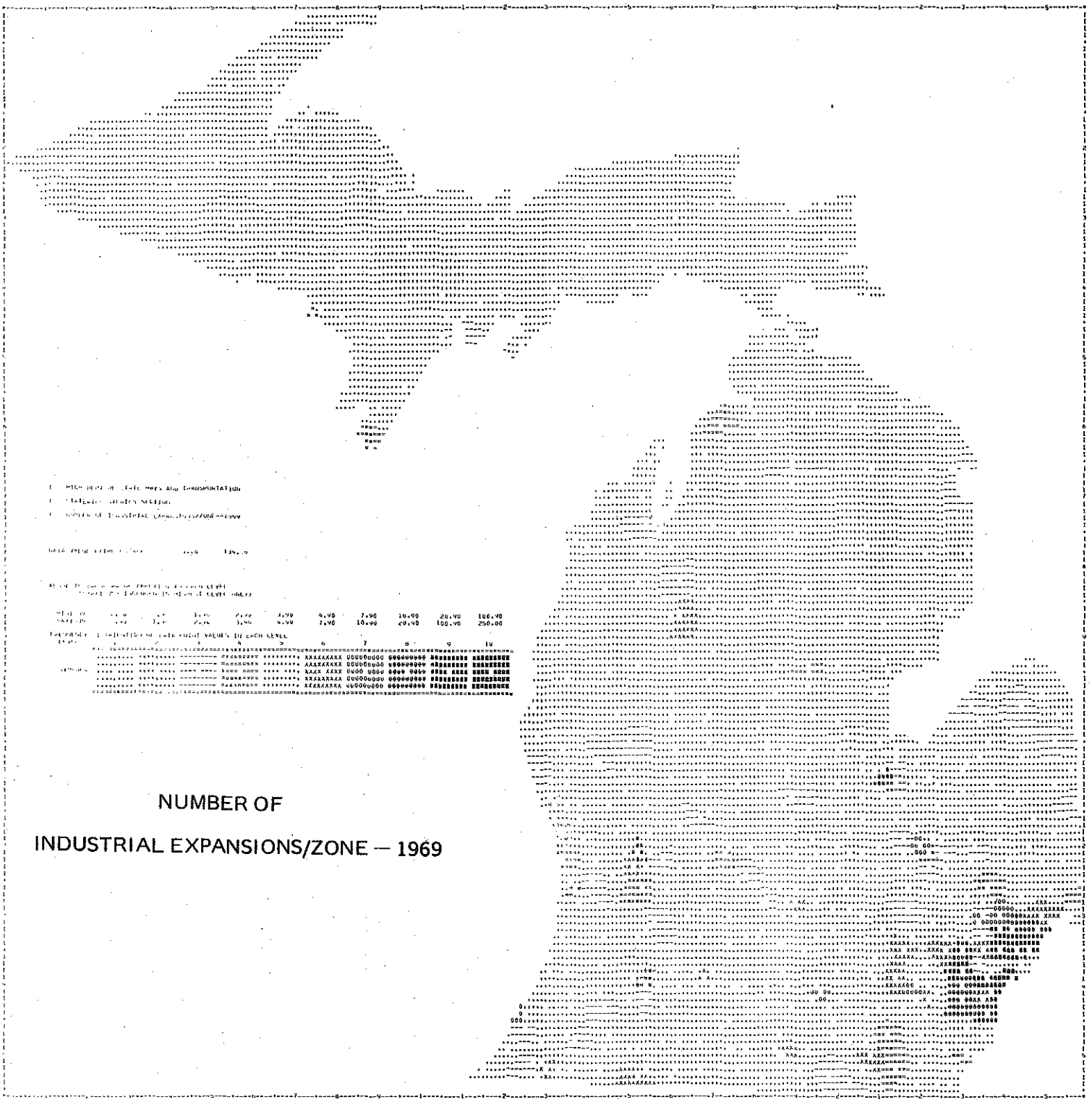
FIGURE 4a



NUMBER OF

INDUSTRIAL EXPANSIONS/ZONE — 1968

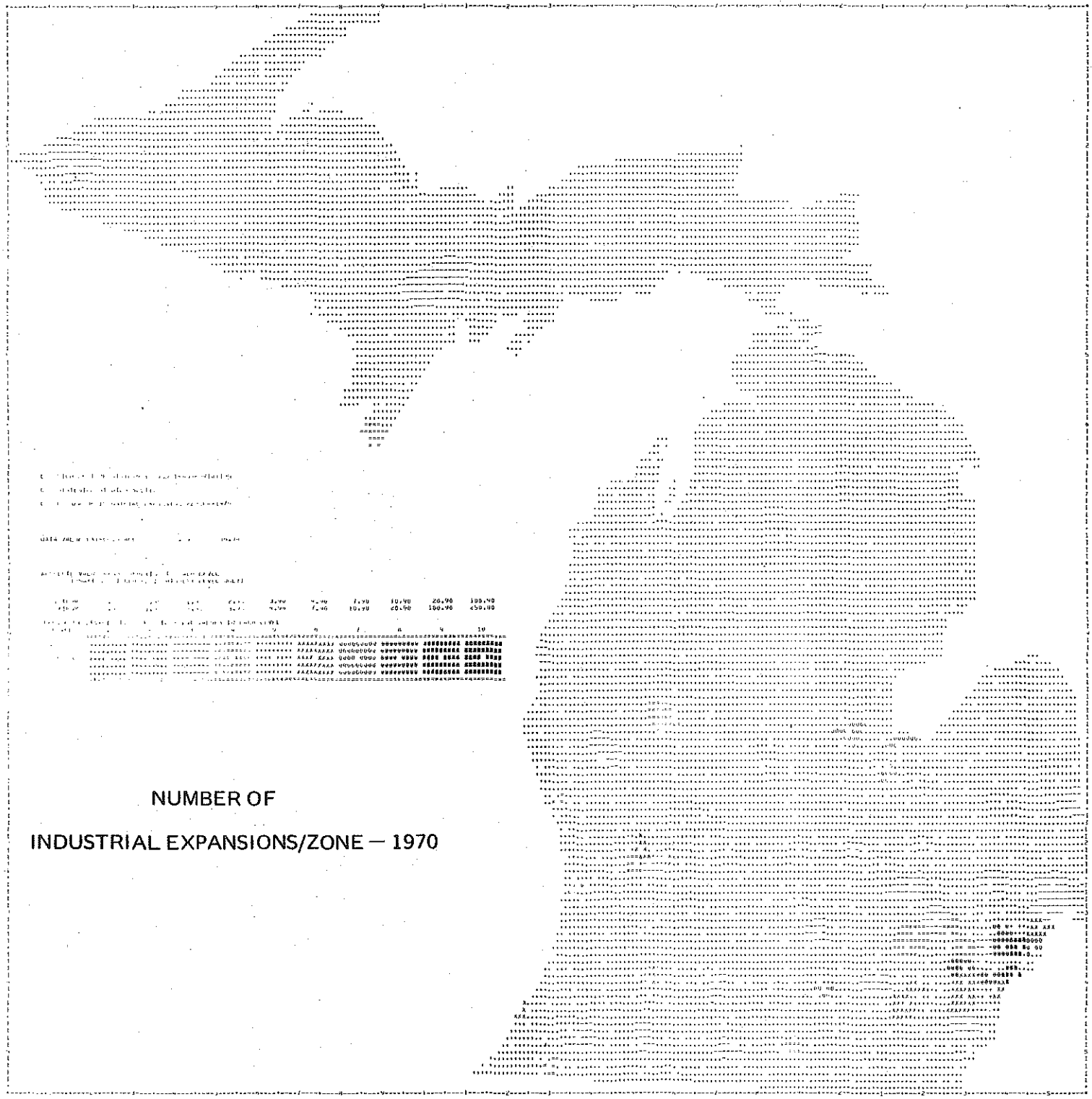
FIGURE 4b



NUMBER OF

INDUSTRIAL EXPANSIONS/ZONE — 1969

FIGURE 4c



NUMBER OF

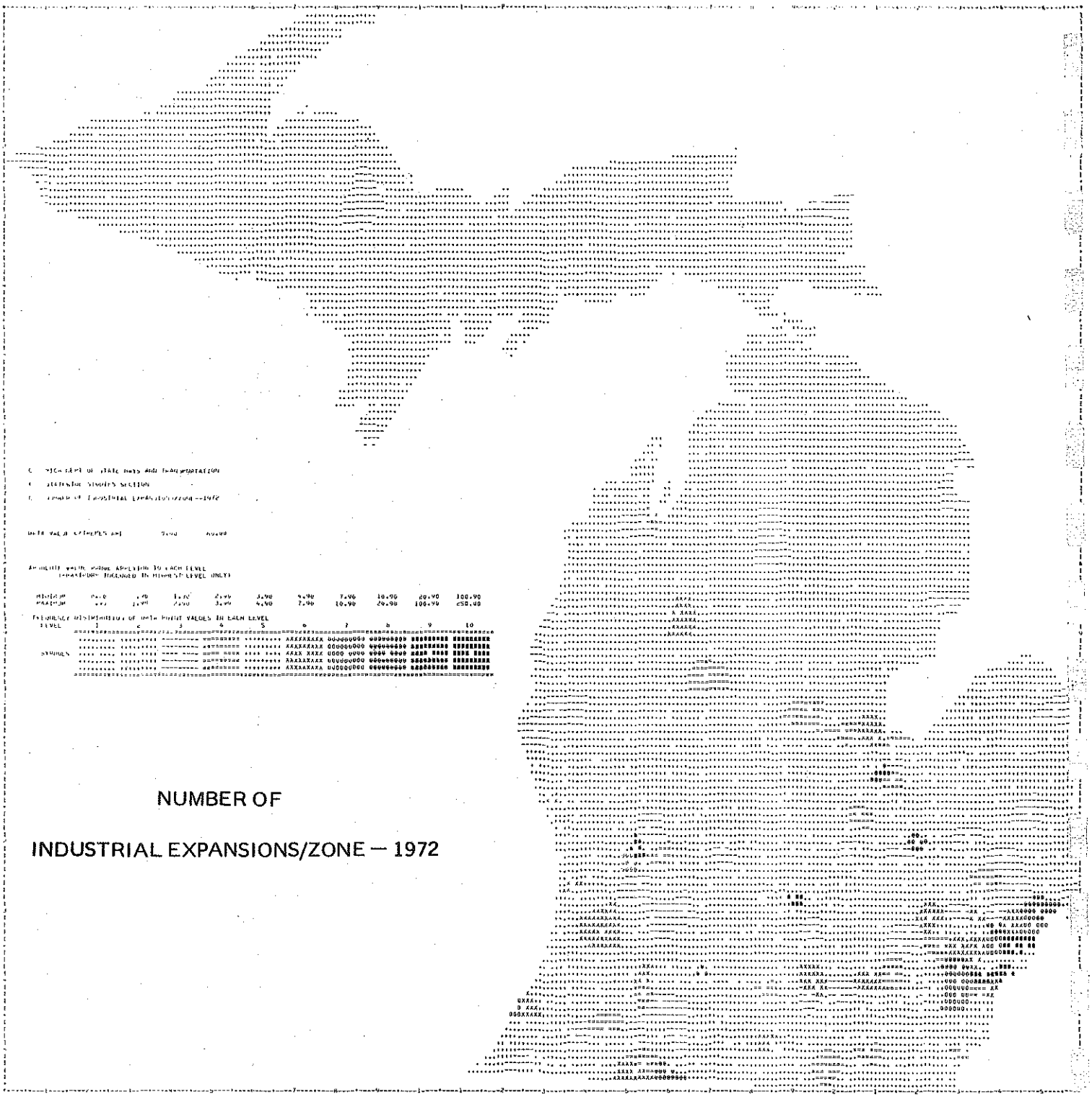
INDUSTRIAL EXPANSIONS/ZONE — 1970

FIGURE 4d

NUMBER OF

INDUSTRIAL EXPANSIONS/ZONE — 1971

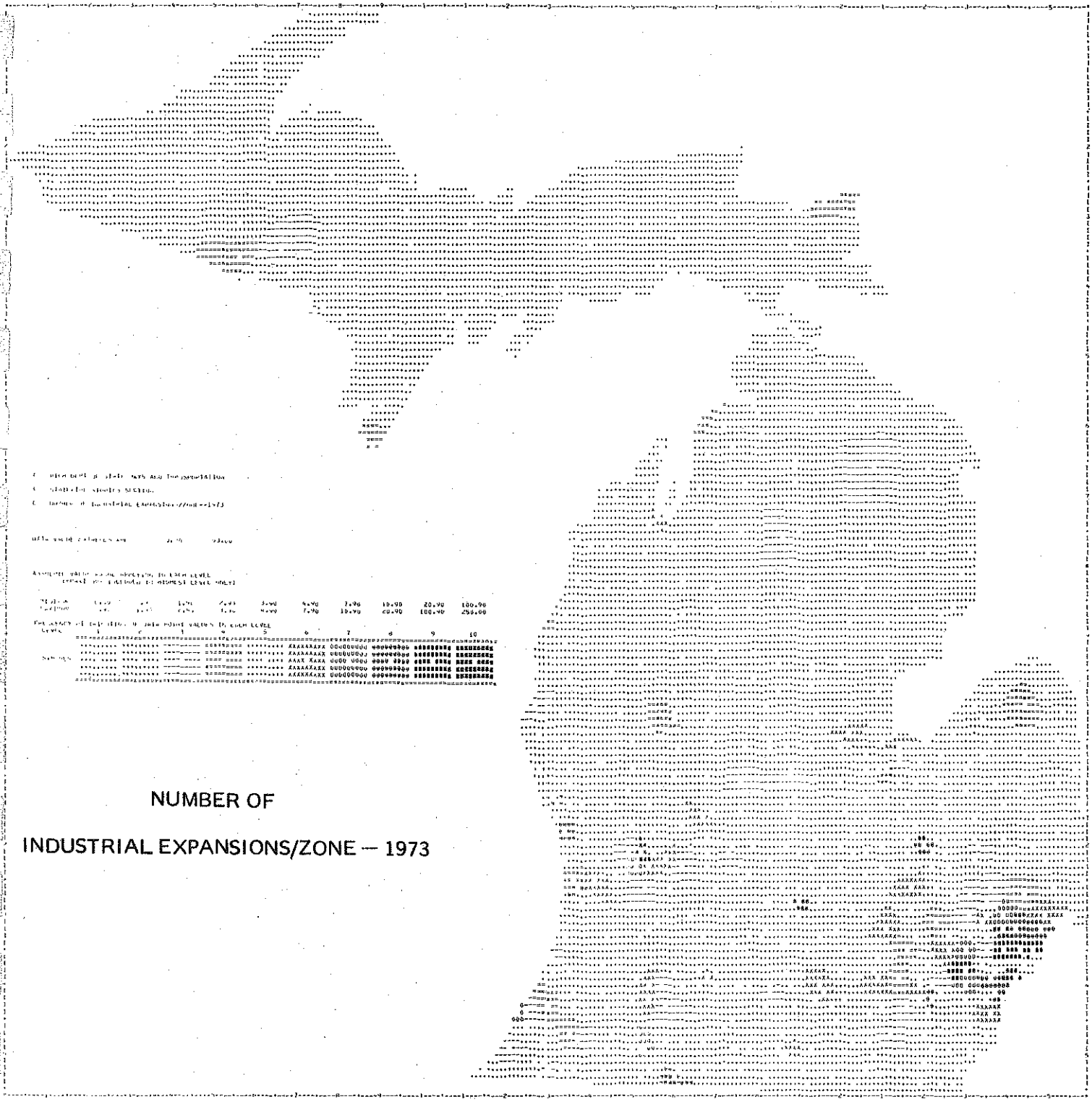
FIGURE 4e



NUMBER OF

INDUSTRIAL EXPANSIONS/ZONE — 1972

FIGURE 4f



NUMBER OF

INDUSTRIAL EXPANSIONS/ZONE — 1973

FIGURE 5a

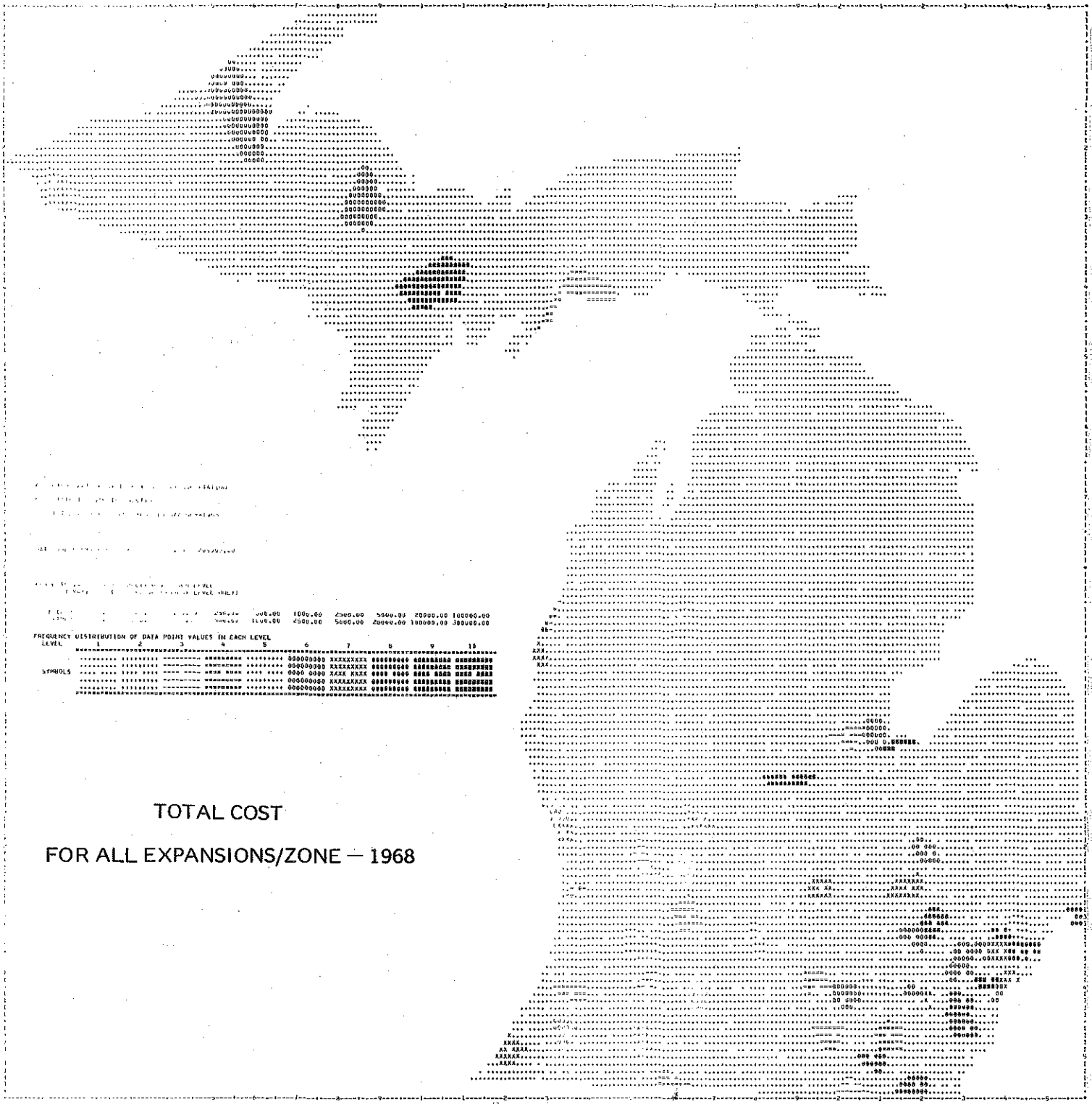

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL
LEVEL 1 2 3 4 5 6 7 8 9 10
SYMBOLS
TOTAL COST
FOR ALL EXPANSIONS/ZONE — 1968

FIGURE 5b

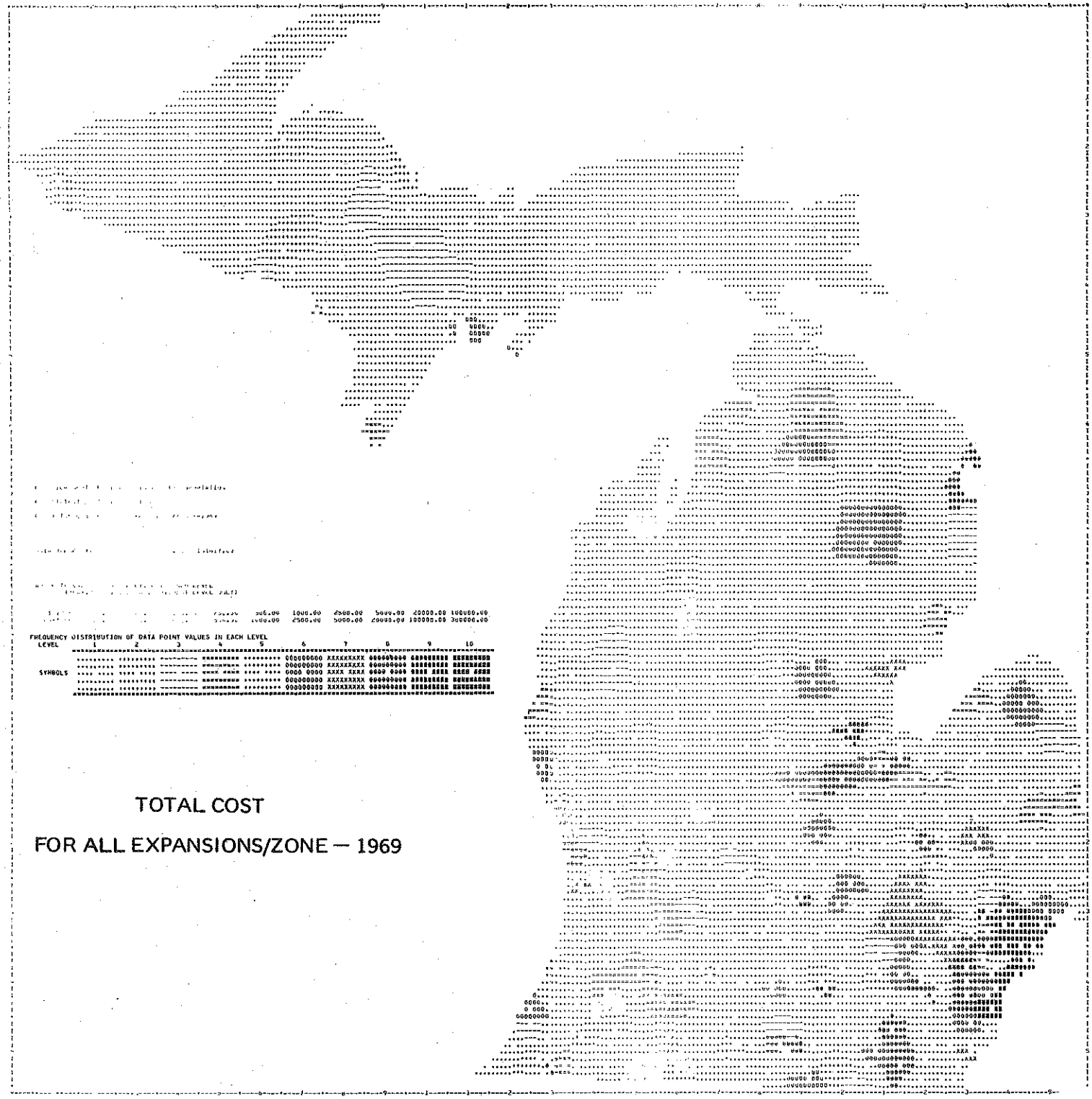

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL
LEVEL
SYMBOLS
TOTAL COST
FOR ALL EXPANSIONS/ZONE — 1969

FIGURE 5c

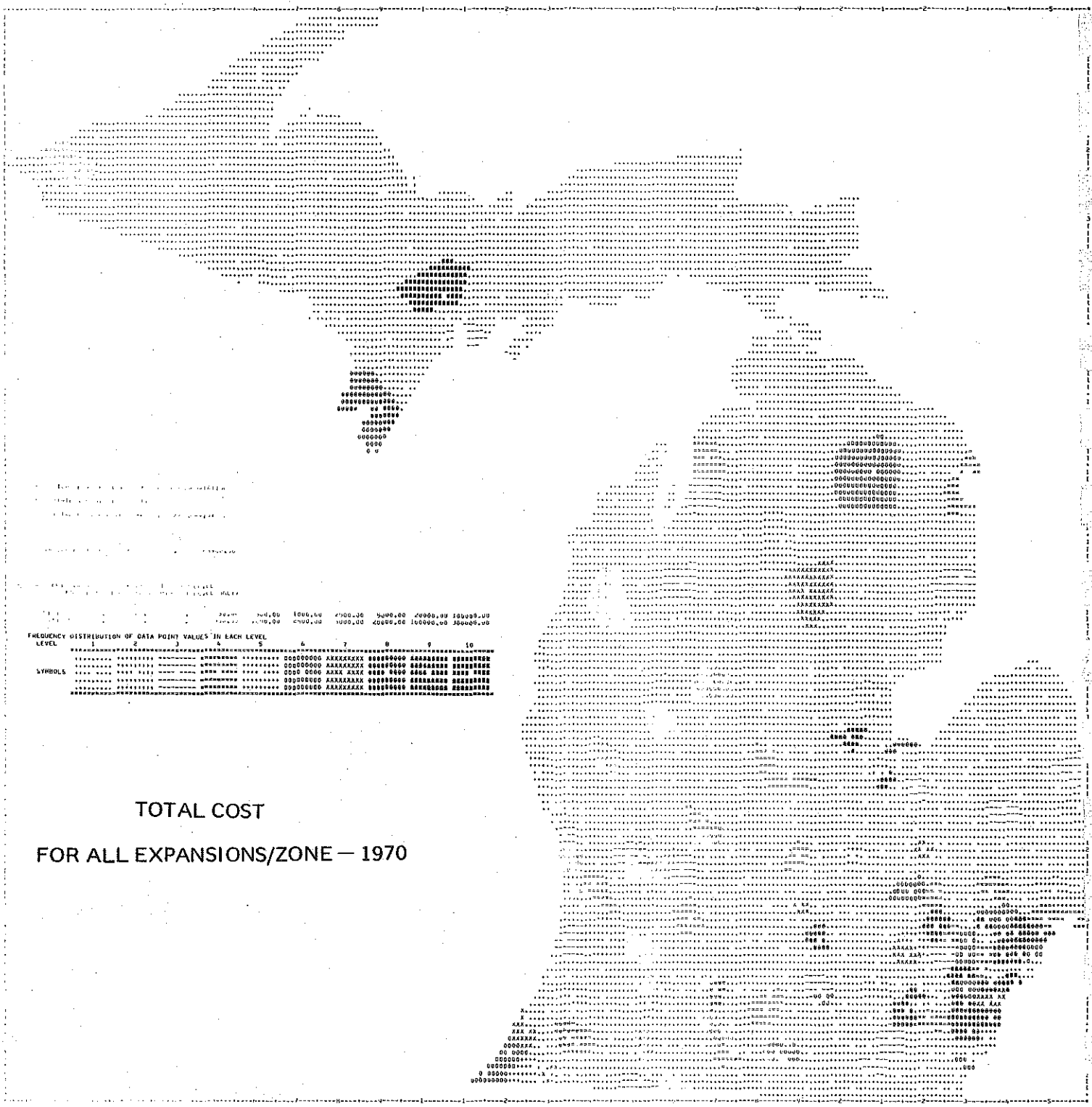

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL
LEVEL
SYMBOLS
TOTAL COST
FOR ALL EXPANSIONS/ZONE — 1970

FIGURE 5d

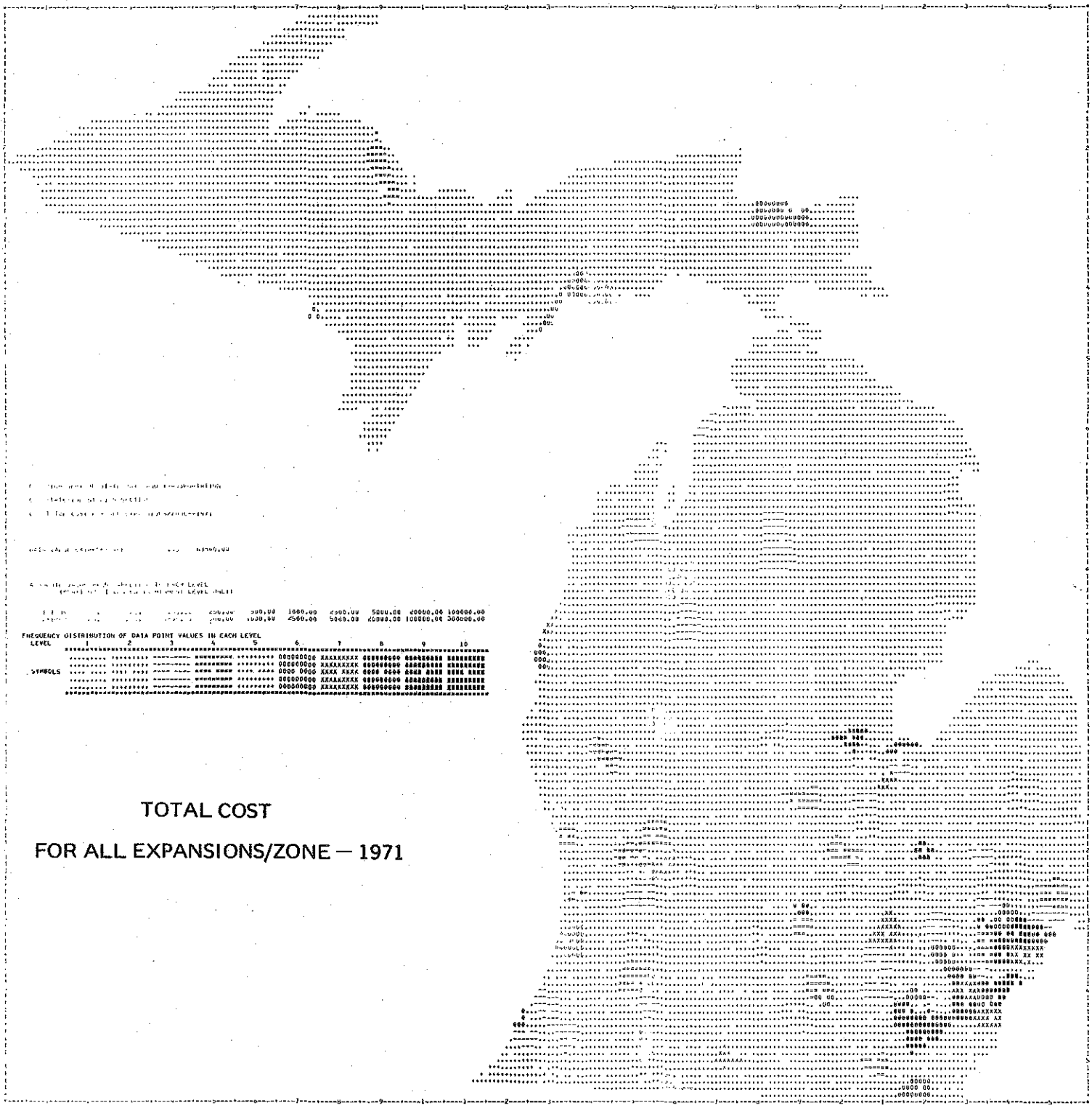

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL
LEVEL 1 2 3 4 5 6 7 8 9 10
SYMBOLS
TOTAL COST
FOR ALL EXPANSIONS/ZONE — 1971

FIGURE 5e

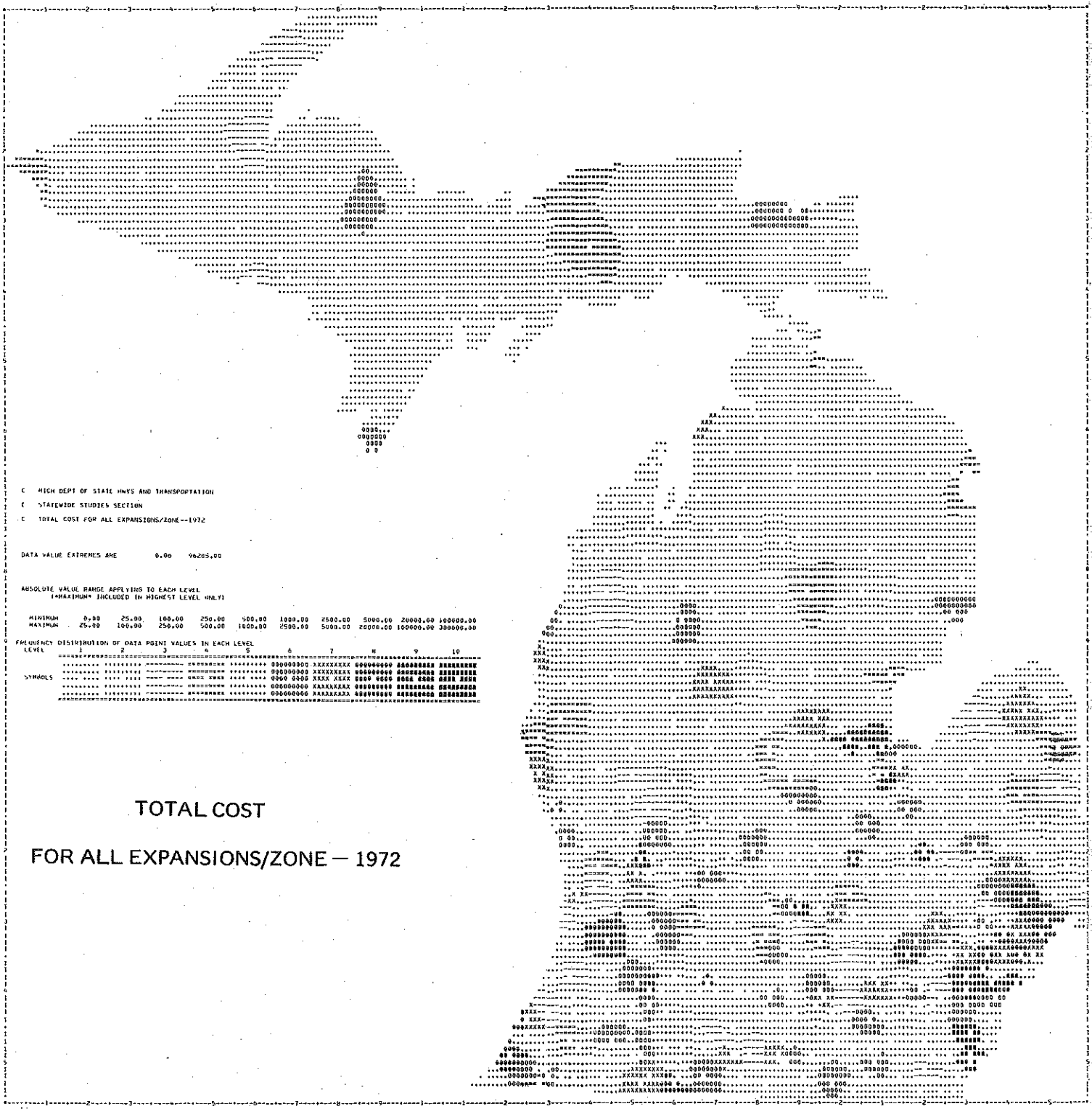
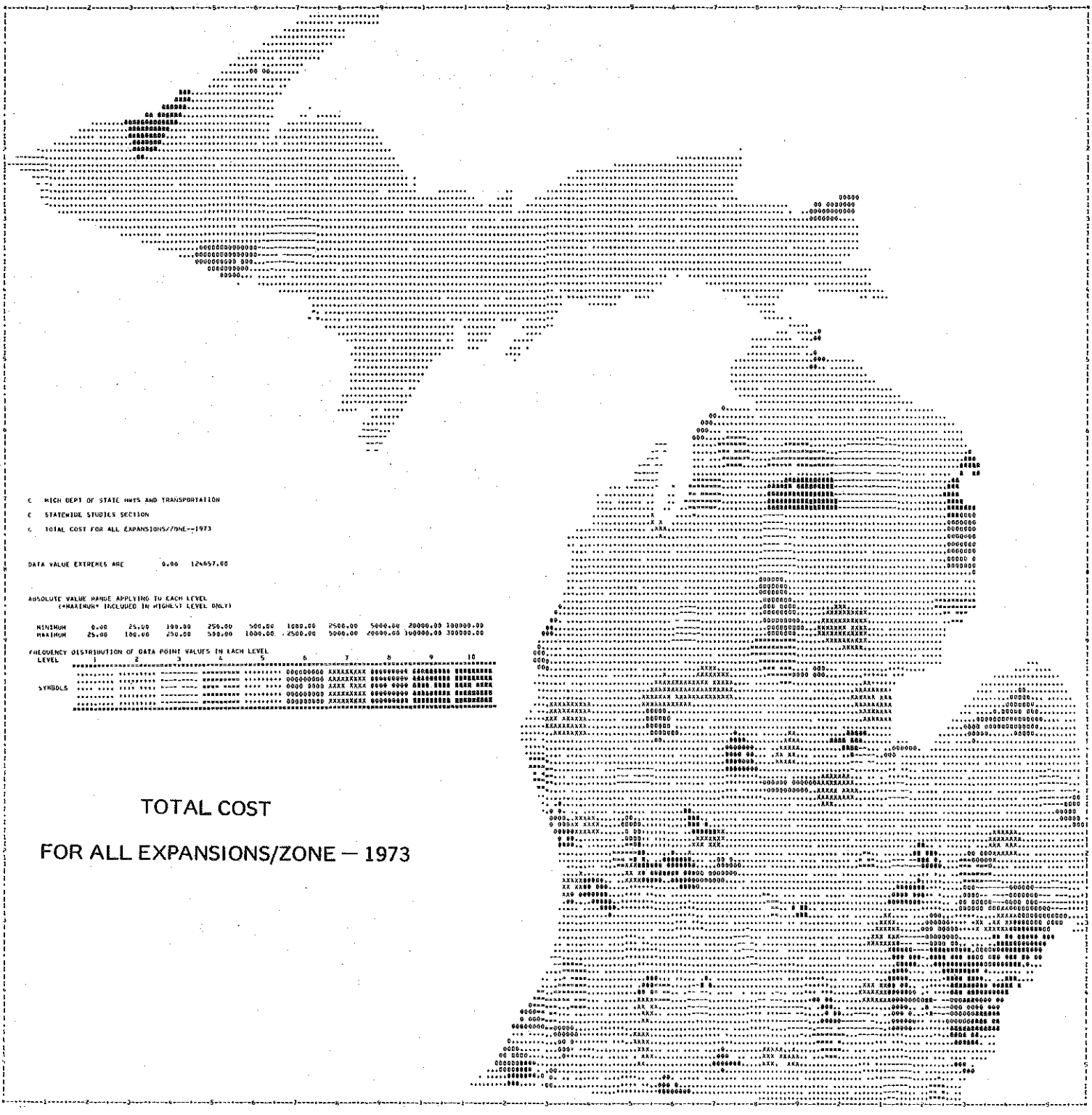

C MICH DEPT OF STATE HWYS AND TRANSPORTATION
C STATEWIDE STUDIES SECTION
C TOTAL COST FOR ALL EXPANSIONS/ZONE--1972
DATA VALUE EXTREMES ARE 0.00 96283.00
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
(*MAXIMUM* INCLUDED IN HIGHEST LEVEL ONLY)
MINIMUM 0.00 25.00 100.00 250.00 500.00 1000.00 2500.00 5000.00 20000.00 100000.00
MAXIMUM 25.00 100.00 250.00 500.00 1000.00 2500.00 5000.00 20000.00 100000.00 300000.00
FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL
LEVEL 1 2 3 4 5 6 7 8 9 10
SYMBOLS
TOTAL COST
FOR ALL EXPANSIONS/ZONE — 1972

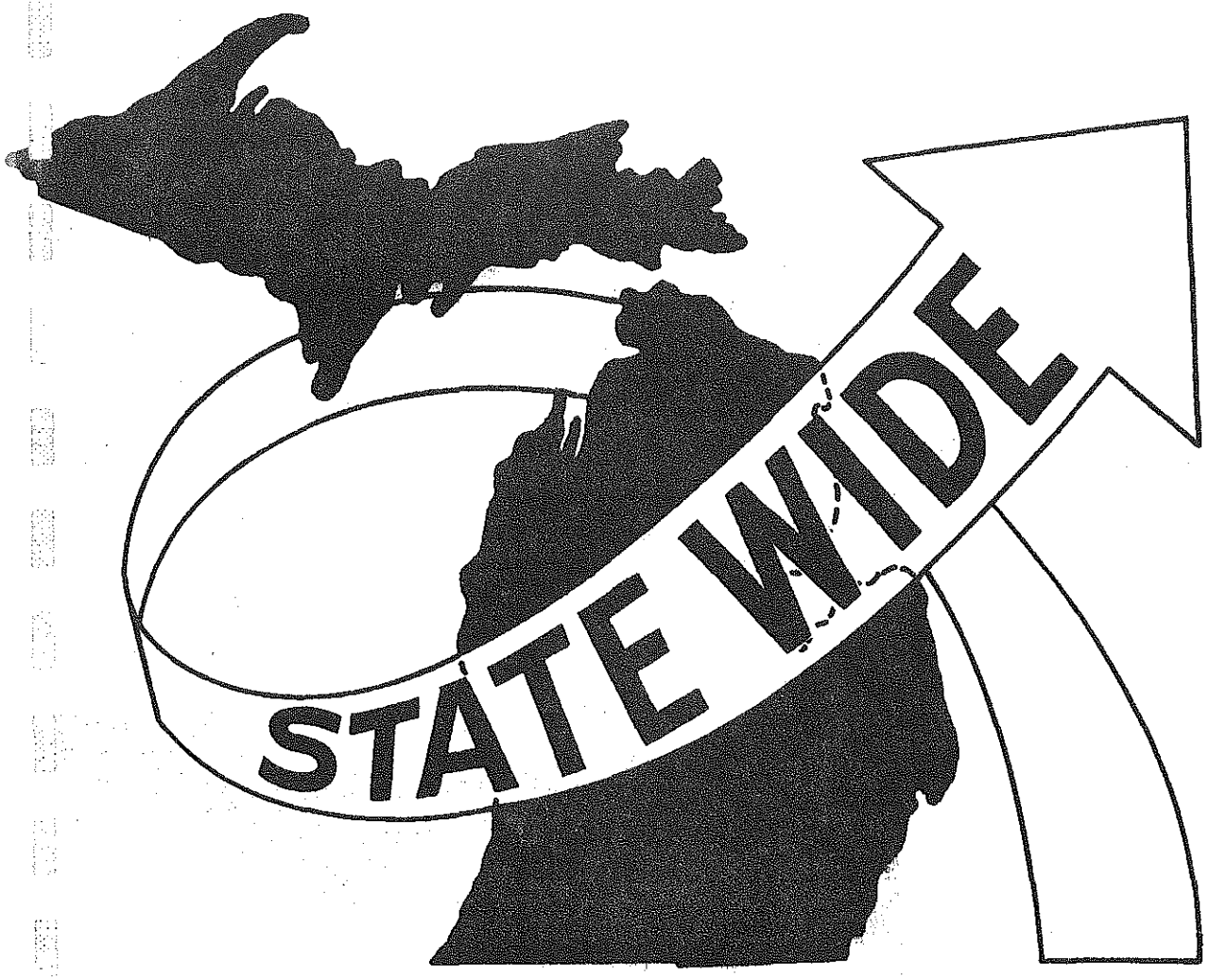
FIGURE 5f



TOTAL COST

FOR ALL EXPANSIONS/ZONE — 1973

CONCLUSION



CONCLUSION

The purpose of the preceding report was simply to take the reader through the required steps in transferring an outside data file, in this case data from the Department of Commerce, into the Statewide Socio-Economic data file.

Even though less emphasis was placed on the reasons for such a data transfer, this fact remains. By using the Statewide Traffic Forecasting Model as a base through which all agencies may interact, a vast amount of information may be accessed by any or all users to gain a wealth of knowledge regarding social or economic conditions within the State of Michigan.