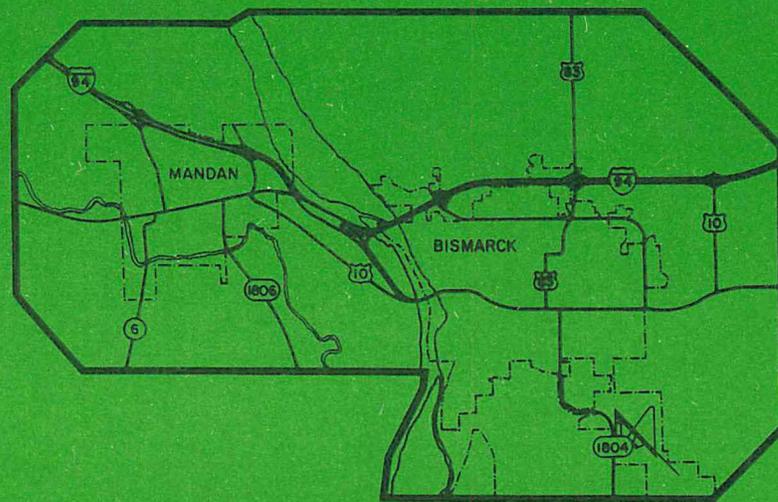


BISMARCK - MANDAN



1968 LAND USE

URBAN AREA
TRANSPORTATION STUDY

BISMARCK-MANDAN

1968 LAND USE

A MEMORANDUM REPORT
OF THE BISMARCK-MANDAN
URBAN AREA TRANSPORTATION STUDY

Prepared by

North Dakota State Highway Department
Planning and Research Division

in cooperation with

U. S. Department of Transportation
Federal Highway Administration

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INTRODUCTION

This report, the second in a series of memorandum reports on the Bismarck-Mandan Transportation Study, presents a summary of data obtained in the Bismarck-Mandan land use survey. Its primary purpose is to delineate the present pattern of land use which dictates present transportation needs and constitutes the starting point for all future community development. The land use data obtained can be used directly for the planning programs of the communities in the study area and provide support for the formulation of a comprehensive transportation plan.

The land use survey was conducted by the North Dakota State Highway Department in January and February of 1968 as a part of the Bismarck-Mandan Urban Area Transportation Study and includes all land within the Study Area - approximately 64 square miles. The data obtained in the survey are important factors in the formulation of a comprehensive transportation plan. The factors will be used in regression analysis to determine trip production and attraction equations, and will be the foundation of a future land use plan for Bismarck-Mandan.

The majority of the information is presented in map and tabular form. A central feature of the report is a Generalized Land Use Map of the Bismarck-Mandan Study Area.^{1/} A brief narrative presents background information and supplementary descriptions of land use in each of the generalized categories.

GENERAL DESCRIPTION OF THE STUDY AREA

The 64 square mile study area includes the cities of Bismarck and Mandan and a rural area large enough to encompass the future growth of the two cities. Of the total acreage in the study area, approximately 21 percent is developed. The remaining undeveloped land is primarily used for agricultural purposes. Approximately 3.7 square miles consists of water areas.

Bismarck

Bismarck is a primary retail, wholesale, and services center for the south-central portion of North Dakota and for part of the north-central section of South Dakota. Today Bismarck is a city of approximately 35,000 population which is experiencing a healthy and continued growth rate. The city occupies somewhat of an enviable position in orderly

^{1/} See Exhibit III - Land Use Map: Bismarck-Mandan Study Area

development and possesses a recognizable potential for future expansion.

With the exception of the Missouri River flood plain, topographic features of the immediate Bismarck area have generally not determined the land use of the city. The gentle rolling hills which abound in the area have provided the setting for some of the city's most attractive residential areas and parks.

The Burlington Northern and Soo Line Railroads, and the Missouri River have had a crucial influence on urban development of the city. The Burlington Northern Railroad, which traverses the city from east to west has divided the city into two sections. The north section contains the central business core and most of the city's residential and commercial development. The south portion has traditionally been the location for warehouses, wholesale establishments, and light industrial plants, with scattered residential developments. Prior to construction of the Garrison Dam, much of the south portion of the city was a part of the Missouri River flood plain which discouraged development of the area. However in recent years, the trend has been altered. Since the completion of the 1968 land use survey, this area has become more attractive for future residential and commercial expansion with the development of a new civic center, a new regional shopping center, and new recreational facilities.

Mandan

Mandan is a city of 10,500 population situated west of the Missouri River opposite the city of Bismarck. Although smaller in influence than Bismarck, the city of Mandan is an industrial and trade center in its own right. Railroad Transportation and the processing, refining and distribution phases of the oil industry have contributed greatly to Mandan's economy.

The land use pattern of Mandan has been influenced by the unfavorable terrain, the dissecting effect of the Burlington Northern Railroad tracks, and the location of the Heart River. To the north of the central business district the steep hills have added to the expense of development and have prevented full utilization of land in that part of the city, although this area is the location of some of the city's finest residential areas. The south part of the city has become somewhat isolated from the central business core and the more populous northern residential area by the Burlington Northern Railroad tracks. Only two streets provide access to the entire south side. A significant factor which hampered past development in the area was its location as a part of the Heart River flood plain. Prior to construction of a permanent dike along the Heart River, annual flooding discouraged development in this area. The completion of Interstate 94 north of the city has hastened development in that region and has provided an attractive area for future expansion.

LAND USE CATEGORIES

To determine existing land uses, an inventory of all land use in the study area was conducted in the first two months of 1968. The initial stage of the land use study involved the collection of data concerning the size and use of each parcel in the area of approximately 64 square miles. This data was summarized into land use summary codes according to the land use coding system presented in a publication entitled Standard Land Use Coding Manual, prepared as a cooperative effort by the Urban Renewal Administration, Housing and Home Finance Agency, and the Federal Highway Administration, Department of Transportation. The joint effort was undertaken by these agencies because of the growing need for the collection of land use information in a form that would allow comparability between localities and between regions, and that would also permit the study of trends over time in individual urban areas.

The nine general land use summary codes which were used are as follows:

<u>CODE</u>	<u>CATEGORY</u>
1	Residential
2 & 3	Manufacturing
4	Transportation, Communication and Utilities
5	Trade
6	Services
7	Cultural, Entertainment, and Recreational
8	Resource Production and Extraction
9	Undeveloped Land and Water Areas

Ninety-four subcategories of land use were used in the Bismarck-Mandan survey. Each subcategory was given a three digit code: the first digit is the general land use summary code; the second digit is a subdivision of each general code; and the third digit is an auxiliary code representing one of ten auxiliary categories. A listing of the auxiliary codes and categories are presented in Exhibit I. Exhibit II lists the ninety-four subcategories with the number of acres of land use in the study area included in each subcategory.

ANALYSIS OF LAND USE PATTERNS

Residential

Approximately 4.6 percent of all land use in the study area (or 21.3 percent of the developed area) is coded residential. Analysis of residential land use indicates that 92.8 percent of the residential acreage

surveyed consists of "household units" which includes single family dwellings and apartment houses. Mobile home parks or courts comprise 4.6 percent of the residential land use. The remaining residential acreage consists of group quarters,^{2/} transient lodgings,^{3/} and residential hotels. ^{4/}

The residential districts of Bismarck and Mandan are predominantly areas of single-family dwellings and conveniently spaced elementary schools and parks. Multi-family dwellings are found scattered among the single-family dwellings of the old residential districts. A few of these are new apartment buildings or older buildings that were designed for multi-family use; however, a sizeable number of them are simply large older houses which have ample space for one or more apartments in addition to the owner's quarters. In newer residential districts, single and multi-family dwellings have been better segregated by zoning ordinances, and multi-family dwellings are also more likely to be buildings designed for that purpose.

In Bismarck, large mobile home parks are located in the south part of the city near or adjoining the Airport Expressway. Smaller trailer courts are located near city parks and playgrounds at scattered locations throughout the city. The larger mobile home parks in Mandan are located in the south part of the city near or adjacent to ND 1806 (Old Fort McKeen Road).

Manufacturing

Approximately 1.9 percent of all land use in the study area (or 8.7 percent of the developed area) is devoted to manufacturing. There is a considerable variety of manufacturing industry in the study area, but most of the establishments are relatively small. "Petroleum refining and related industries" comprises 91.4 percent of the total acreage in the manufacturing category.^{5/} "Stone, clay, and glass products manufacture" accounts for 3.6 percent of manufacturing acreage;^{6/} "fabricated metal products - manufacturing" includes 2.8 percent; and "food and kindred products - manufacturing" comprises 1.5 percent. The remaining manufacturing subcategories with the acreage devoted to each is shown in Exhibit II.

-
- ^{2/} The group quarters category includes rooming and boarding houses, dormitories, retirement homes, and religious quarters such as convents and rectories.
 - ^{3/} The transient lodgings category consists of hotels, tourist courts, motels, etc. and includes auxiliary parking areas.
 - ^{4/} "Residential hotels" are those that have 75 percent or more of the available accommodations occupied by permanent guests.
 - ^{5/} This acreage is primarily a part of the Standard Oil Refinery north of Mandan.
 - ^{6/} The acreage in this subcategory is primarily attributed to the manufacture of concrete (ready mixed) and concrete products.

Transportation, Communication, and Utilities

This category encompasses about 11 percent of the acreage in the study area (or 51.1 percent of the developed area). It should be noted that a significant percentage (67 percent) of the acreage in the category consists of "highway and street right-of-way".^{7/} The Bismarck Municipal Airport is included under "aircraft transportation" and accounts for 17.3 percent of the land use in the category. Railroad transportation, which is included in the subcategory "railroad, rapid rail transit, and street railway transportation," accounts for 11 percent of the category acreage.^{8/} Another significant item to be noted is "utilities" which comprises 4.3 percent of the category's land use.^{9/} The remaining smaller amounts of acreage in the category (as noted in Exhibit II) are devoted to such items as automobile parking and communications.

Trade

Trade in this survey was designated retail and wholesale and includes approximately 0.6 percent of the total study area acreage (or 2.9 percent of the developed area). Retail trade claims 79 percent of the acreage in the "trade" category and wholesale trade 21 percent. The term "retail" trade includes stores, restaurants, gasoline service stations and in general any business which derives most of its income from sales of tangible items to the public. Included is not only the sales area itself, but warehousing, storage, and automobile parking associated with the retail establishment. The principal retail trade areas in the cities of Bismarck and Mandan are the central business districts. Neighborhood shopping centers do exist providing business needs and personal services closer to homes. As with retail trade, wholesale trade acreage includes the sales office and warehousing and storage facilities. Wholesale trade establishments in the study area are generally located adjacent to the central business districts or near arterial highways entering the urban areas.

Services

Approximately 2 percent of the total study area acreage (or 9.3 percent of the developed area) is classified "Services". This category includes finance, insurance, real estate, business, personal, repair, professional, contract construction, governmental, and educational services. It is not surprising that 41.9 percent of the acreage in this category is governmental. Bismarck's designation as the State Capital has resulted in its being the site for numerous State and Federal offices. Educational services are significant with 14.2 percent of the services acreage devoted to such use. Personal services which includes laundering, dry cleaning, photographic services, beauty and barber services, etc.

^{7/} This subcategory includes freeways, expressways, arterial, collector and local streets, and alleys.

^{8/} Considering the study area, significant items in this subcategory would be railroad right-of-way and freight and passenger terminals.

^{9/} "Utilities" includes electric, gas, and water utilities; and sewage disposal.

uses 18.8 percent of the acreage. About 7.9 percent of the acreage is devoted to construction services;^{10/} 6.9 percent miscellaneous services;^{11/} 5.1 percent business services;^{12/} 2.2 percent repair services; and 2.3 percent professional services.^{13/} The "Services" category in general includes land used by establishments that derive their income primarily from services rendered rather than from sales.

Cultural, Entertainment and Recreational

Comprising an area of 405 acres, this category accounts for 1 percent of the acreage in the study area (or 4.6 percent of the developed area). "Recreational activities" are most prominent in the category with 74.8 percent of the acreage devoted to such uses. Included in this subcategory are golf courses, tennis courts, bowling establishments, playgrounds, athletic fields, recreation centers, etc. In addition, 22.9 percent of the acreage is classified as parks. The large acreage devoted to recreational and park use is commendable. The study area abounds in excellent park and recreational facilities, many with great historical significance and great natural beauty. The remaining acreage in this category is devoted to cultural activities such as libraries, museums, and zoos, and to public assembly uses including theaters, auditoriums, and stadiums.

Resource Production and Extraction

Approximately 62.2 percent of the study area acreage falls into this category, with 99.3 percent of the category acreage devoted to agricultural purposes. It is not surprising that in a predominantly rural area such as ours that this would be the case. The acreage included in this category surrounds the urban centers in the study area and is used primarily for grain and livestock farming. Sufficient rural area was included in the survey to encompass the future growth of the urban centers.

Undeveloped Land and Water Areas

Undeveloped land and water areas compose 16.7 percent of the total land acreage in the study area. Approximately 63.2 percent of the category

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- ^{10/} Construction services includes plumbing, heating, painting, decorating, electrical services, masonry, carpentering, roofing, sheet metal services, and concrete services.
- ^{11/} Miscellaneous services includes churches, synagogues, temples, welfare and charitable services, labor unions, and civic, social, and fraternal associations.
- ^{12/} Business services includes a large collection of varying land use such as advertising, credit reporting, building services (e.g. window cleaning, disinfecting, exterminating, etc.), employment services, warehousing and storage services (e.g. stockyards, food lockers, household goods warehousing, etc.), equipment rental and leasing services, photo finishing, automobile and truck rental services, etc.
- ^{13/} Professional services includes dental, hospital, and medical services, rest homes, legal, engineering, architectural, and accounting services.

is undeveloped and unused land and 34.6 percent is water areas. This category includes such areas as vacant lands that once were farms, as well as vacant parcels where structures have been demolished. The remaining acreage in this category is either devoted to vacant floor area or structures under construction.

CONCLUSION

In retrospect, it is felt that the system of land use qualification as prepared by the Urban Renewal Administration and Federal Highway Administration and as used in the Bismarck-Mandan land use survey provides greater flexibility, greater standardization, and more detailed analysis than land use coding systems used in previous land use surveys in major North Dakota cities. It is hoped that this improved system will prove worthy of the additional time and effort required in its use and will provide necessary support for future planning programs of the communities in the study area.

EXHIBITS

DESCRIPTION OF EXHIBITS

I. LIST OF AUXILIARY CODES.

This exhibit presents the acceptable codes for auxiliary categories. The auxiliary code forms the third digit of the subcategory number for land use qualification.

II. SUBCATEGORIES OF LAND USE EMPLOYED IN THE BISMARCK-MANDAN SURVEY.

The ninety-four subcategories of land use employed in the Bismarck-Mandan Survey are presented in this exhibit together with the acreage included in each subcategory.

III. LAND USE MAP: BISMARCK-MANDAN STUDY AREA.

A land use map depicting the nine general land use categories for the Bismarck-Mandan study area is shown. It should be noted that both category 8 (Resource Production and Extraction) and category 9 (Undeveloped Land and Water Areas) are shown unshaded on the land use map. This was done primarily because these categories include large acreages of land use which is either agricultural or undeveloped. Land uses in category 8 other than agriculture and agricultural related activities are labeled as to their specific use.

IV. TRAFFIC ASSIGNMENT ZONE MAP: BISMARCK-MANDAN STUDY AREA.

Presented in the exhibit is a map delineating the boundaries of each traffic assignment zone within the Bismarck-Mandan study area. The assignment zones were chosen to divide the study area into small parcels for analysis purposes in the Bismarck-Mandan Transportation Study. The area included within each assignment zone has similar characteristics in trip generation.

V. ANALYSIS OF DWELLING UNITS BY TRAFFIC ASSIGNMENT ZONE.

This table subdivides dwelling units into four general categories: single family, duplex, apartment, and mobile home. It should be noted that although the major portion of mobile homes may be considered single family units they are reported separately and are not included in the single family totals in the exhibit.

VI. BISMARCK ZONING MAP.

This exhibit displays the present zoning specifications for various

areas within the city of Bismarck. Results obtained in the Bismarck-Mandan Transportation Study will be of significance in determining zoning requirements in areas slated for future development within the study area.

VII. MANDAN ZONING MAP.

The present zoning requirements for the city of Mandan are shown in this exhibit. (NOTE DESCRIPTION UNDER EXHIBIT VI.)

EXHIBIT I

LIST OF AUXILIARY CODES

<u>CODE</u>	<u>AUXILIARY CATEGORIES</u>
0	Not an auxiliary.
1	Central or administrative office.
2	Sales office.
3	Research and development.
4	Warehousing and storage.
5	Automobile parking. *
6	Motor vehicle garage (Maintenance and/or storage of vehicles).
7	Steam and power plant.
8-9	Open codes. **

* A minimum of 5,000 square feet or approximately 17 parking spaces is necessary before the area can be identified as auxiliary parking area.

** Planning agencies desiring to distinguish additional types of auxiliary categories other than those defined would use open codes 8 and 9.

EXHIBIT II

SUBCATEGORIES OF LAND USE EMPLOYED IN THE BISMARCK-MANDAN SURVEY

<u>CODE</u>	<u>CATEGORY</u>	<u>ACRES</u>
110	Household units.	1721.2
120	Group quarters.	28.6
130	Residential hotels.	.1
140	Mobile home parks or courts.	85.4
150	Transient lodgings.	19.4
155	Transient lodgings - automobile parking.	.9
210	Food and kindred products - manufacturing.	11.3
220	Textile mill products - manufacturing.	.3
250	Furniture and fixtures - manufacturing.	.8
270	Printing, publishing, and allied industries.	3.1
272	Printing, publishing, and allied industries - sales office.	.1
290	Petroleum refining and related industries.	694.9
320	Stone, clay, and glass products - manufacturing.	27.0
330	Primary metal industries.	1.0
340	Fabricated metal products - manufacturing.	21.0
390	Miscellaneous manufacturing - not elsewhere coded.	.5
410	Railroad, rapid rail transit, and street railway transportation.	490.4
414	Railroad, rapid rail transit, and street railway transportation warehousing and storage.	.6
420	Motor vehicle transportation.	5.6
430	Aircraft transportation.	768.6
450	Highway and street right-of-way.	2,983.6
460	Automobile parking.	9.2
470	Communication.	3.8

EXHIBIT II (Continued)

<u>CODE</u>	<u>CATEGORY</u>	<u>ACRES</u>
471	Communication - central or administrative office.	.5
476	Communication - motor vehicle garage.	3.5
480	Utilities.	176.8
481	Utilities - central or administrative office.	8.5
482	Utilities - sales office.	.1
484	Utilities - warehousing and storage.	.2
487	Utilities - steam and power plant.	3.8
510	Wholesale trade.	45.9
512	Wholesale trade - sales office.	.6
514	Wholesale trade - warehousing and storage.	7.7
520	Retail trade - building materials, hardware, and farm equipment.	49.1
524	Retail trade - warehousing and storage.	.3
530	Retail trade - general merchandise.	8.1
535	Retail trade - general merchandise - automobile parking.	9.3
540	Retail trade - food.	6.9
545	Retail trade - food - automobile parking.	1.3
550	Retail trade - automotive, marine craft, aircraft, and accessories.	84.3
552	Retail trade - automotive, marine craft, aircraft, and accessories - sales office.	.2
554	Retail trade - automotive, marine craft, aircraft, and accessories - warehousing and storage.	4.1
555	Retail trade - automotive, marine craft, aircraft, and accessories - automobile parking.	2.0
556	Retail trade - automotive, marine craft, aircraft, and accessories - motor vehicle garage.	1.0
560	Retail trade - apparel and accessories.	2.9

EXHIBIT II (Continued)

<u>CODE</u>	<u>CATEGORY</u>	<u>ACRES</u>
570	Retail trade - furniture, homefurnishings, and equipment.	4.9
580	Retail trade - eating and drinking.	18.0
585	Retail trade - eating and drinking - automobile parking.	.6
590	Other retail trade.	9.8
595	Other retail trade - automobile parking.	.1
610	Finance, insurance, and real estate services.	5.1
611	Finance, insurance, and real estate services - central or administrative office.	.2
615	Finance, insurance, and real estate services - automobile parking.	.9
620	Personal services.	152.2
630	Business services.	11.6
632	Business services - sales office.	.5
634	Business services - warehousing and storage.	28.9
640	Repair services.	17.7
650	Professional services.	15.3
651	Professional services - central or administrative office.	.3
653	Professional services - research and development.	.1
655	Professional services - automobile parking.	1.6
656	Professional services - motor vehicle garage.	1.2
660	Contract construction services.	62.3
661	Contract construction services - central or administrative office.	.4
662	Contract construction services - sales office.	1.6
670	Governmental services.	210.6
671	Governmental services - central or administrative office.	108.9

EXHIBIT II (Continued)

<u>CODE</u>	<u>CATEGORY</u>	<u>ACRES</u>
673	Governmental services - research and development.	.4
674	Governmental services - warehousing and storage.	3.6
675	Governmental services - automobile parking.	16.0
676	Governmental services - motor vehicle garage.	.9
680	Educational services.	105.5
681	Educational services - central or administrative office.	.8
685	Educational services - automobile parking.	9.2
690	Miscellaneous services.	47.6
691	Miscellaneous services - central or administrative office.	1.2
695	Miscellaneous services - automobile parking.	7.0
710	Cultural activities and nature exhibitions.	2.4
720	Public assembly.	7.0
740	Recreational activities.	302.1
745	Recreational activities - automobile parking.	.5
760	Parks.	91.8
761	Parks - central or administrative office.	.8
810	Agriculture.	25,124.7
820	Agricultural related activities.	3.3
824	Agricultural related activities - warehousing and storage.	.4
830	Forestry activities and related services.	142.3
850	Mining activities and related services.	23.1
851	Mining activities and related services - central or administrative office.	.2
910	Undeveloped and unused land area.	4,304.5
930	Water areas.	2,358.6

EXHIBIT II (Continued)

<u>CODE</u>	<u>CATEGORY</u>	<u>ACRES</u>
940	Vacant floor area.*	135.9
950	Under construction.	10.2
TOTAL ACRES IN STUDY AREA		40,647.3

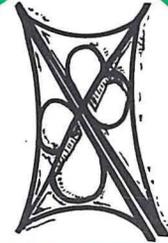
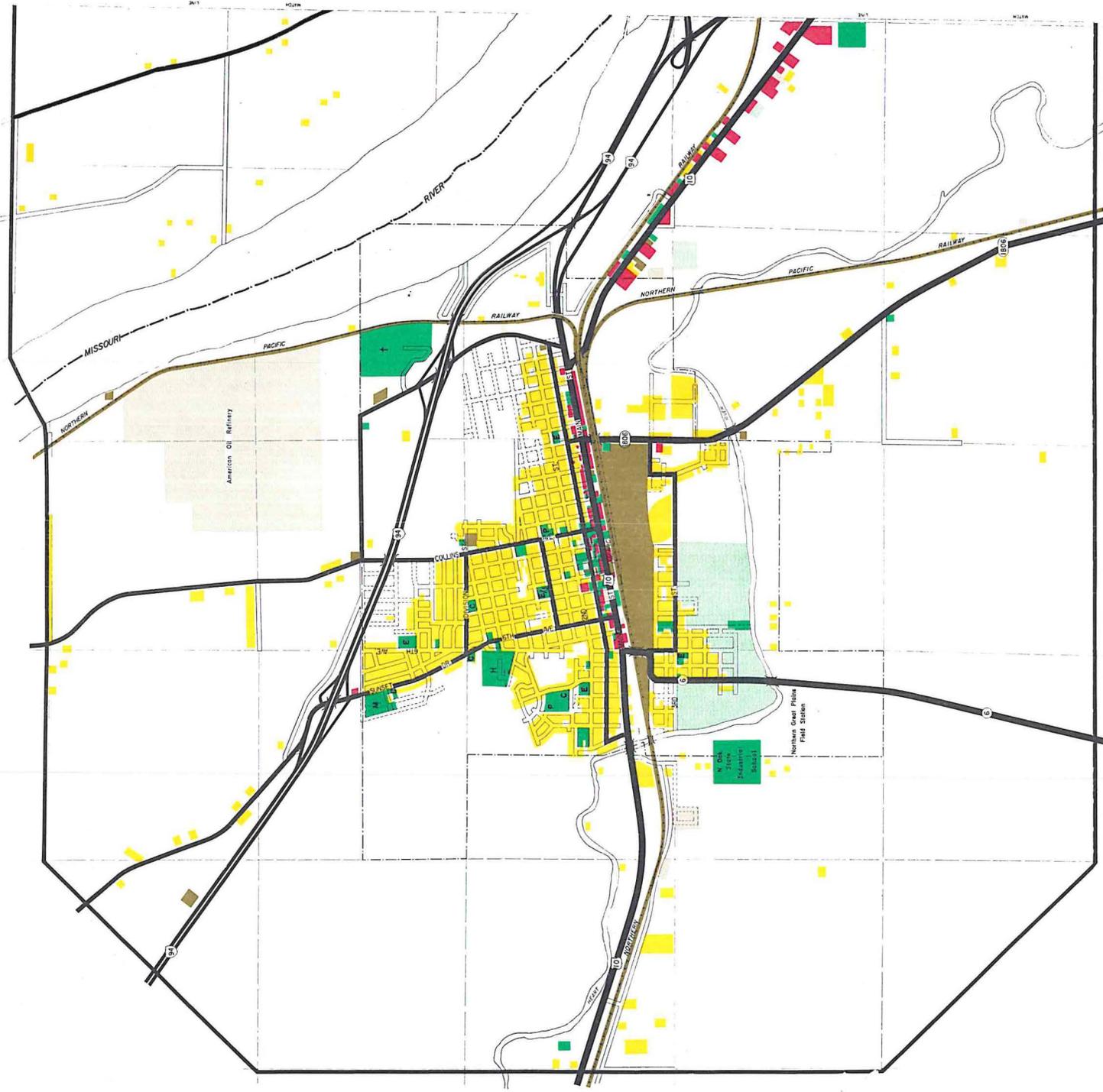
* The acreage in this subcategory includes land associated with and surrounding vacant structures. It should be noted that the majority of the acres included was a part of the Fort Lincoln complex, vacant at the time of the survey.

EXHIBIT III

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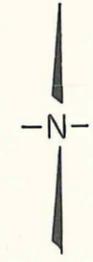
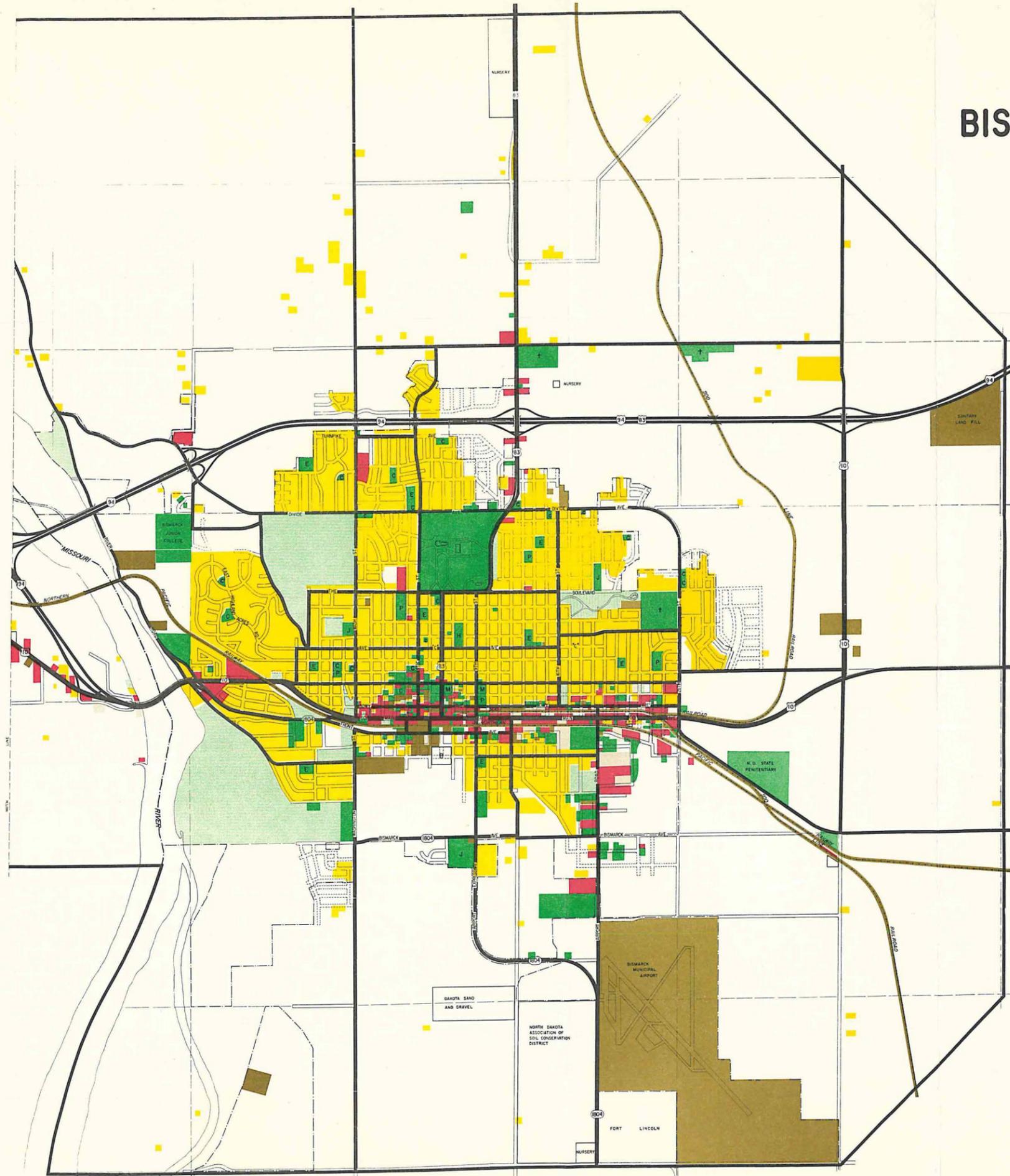
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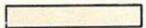
BISMARCK - MANDAN URBAN AREA TRANSPORTATION STUDY



EXHIBIT III
LAND USE MAP
BISMARCK - MANDAN STUDY AREA



LEGEND

- | | |
|-------------------------------------------------|---------------------------------------------------------------------------------------|
| 1 RESIDENTIAL |  |
| 2,3 MANUFACTURING |  |
| 4 TRANSPORTATION, COMMUNICATIONS, AND UTILITIES |  |
| 5 TRADE |  |
| 6 SERVICES |  |
| 7 CULTURAL, ENTERTAINMENT, AND RECREATIONAL |  |
| 8,9 RESOURCES AND UNDEVELOPED AREAS |  |
| HOSPITAL | M |
| ELEMENTARY SCHOOL | E |
| JUNIOR HIGH SCHOOL | J |
| SENIOR HIGH SCHOOL | H |
| PAROCHIAL SCHOOL | P |
| CEMETERY | † |
| CHURCH | C |
| BISMARCK CIVIC CENTER (Under Construction) | B |

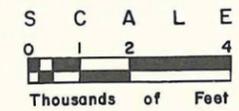


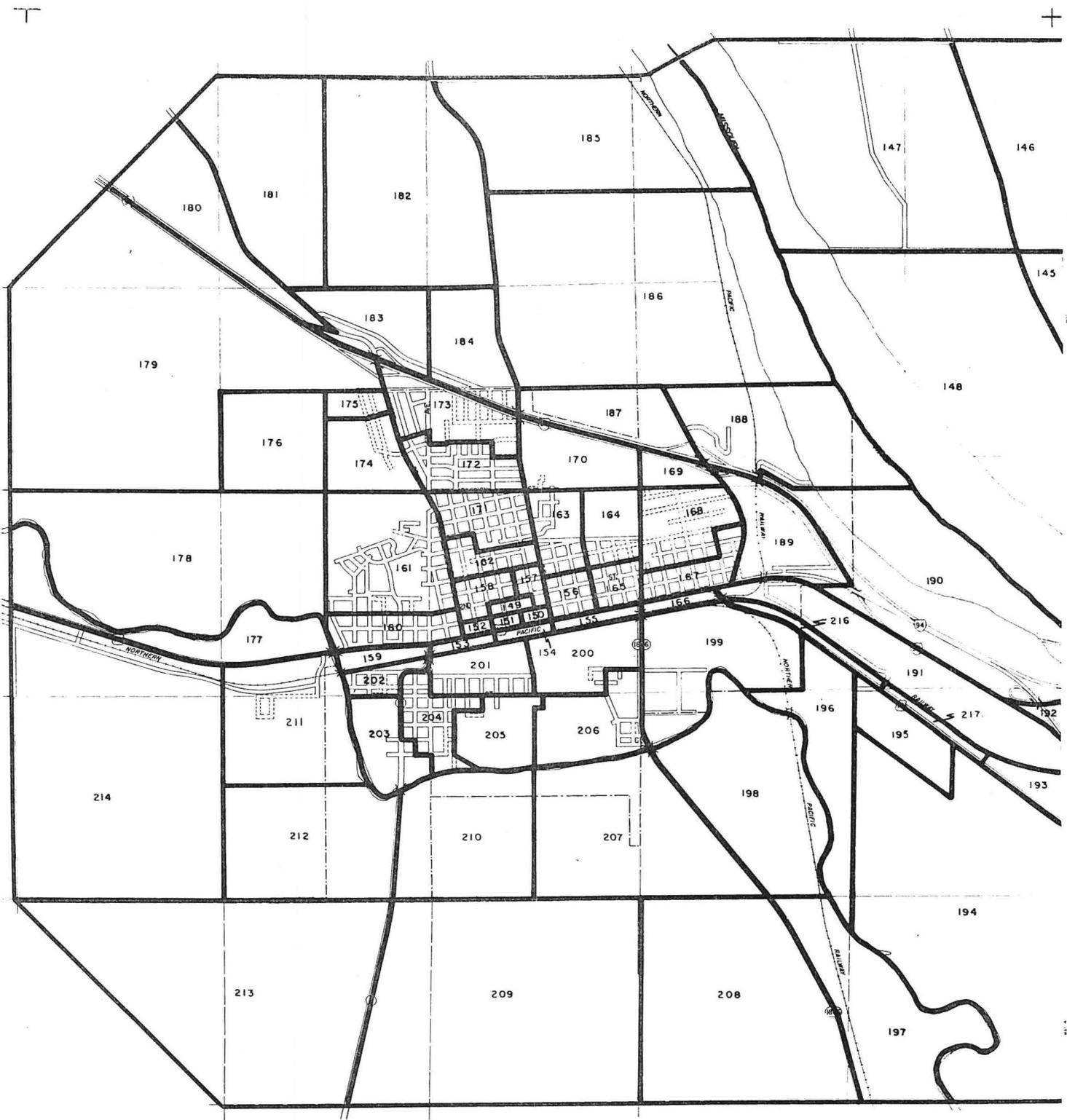
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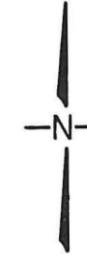
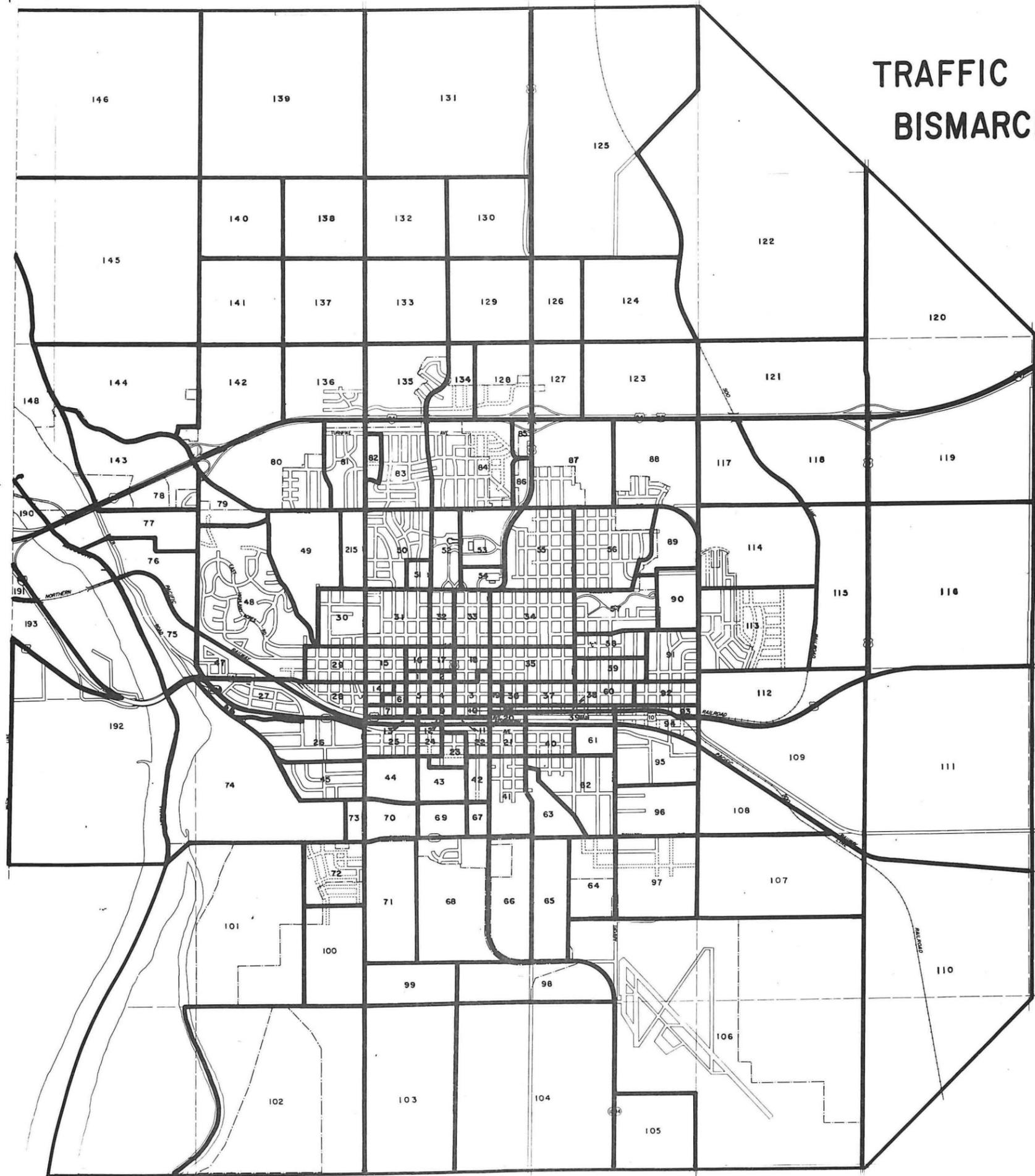
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	<p>BISMARCK - MANDAN URBAN AREA TRANSPORTATION STUDY</p>	
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EXHIBIT IV
**TRAFFIC ASSIGNMENT ZONE MAP
 BISMARCK-MANDAN STUDY AREA**



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ZONE NUMBER 000
 ZONE BOUNDARY —————

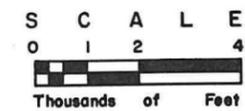


EXHIBIT V
ANALYSIS OF DWELLING UNITS BY TRAFFIC ASSIGNMENT ZONE

ASSIGNMENT ZONE	DWELLING UNITS				Total
	Single Family	Duplex	Apartment	Mobile Home	
1	3	0	0	0	3
2	1	14	7	0	22
3	39	24	95	0	158
4	0	0	0	0	0
5	1	0	70	0	71
6	14	2	20	0	36
7	6	0	15	0	21
8	0	0	37	0	37
9	0	0	32	0	32
10	0	0	36	0	36
11	0	0	0	0	0
12	0	0	0	0	0
13	0	0	0	0	0
14	33	18	78	0	129
15	91	42	78	0	211
16	24	24	49	0	97
17	17	16	73	0	106
18	54	60	147	0	261
19	0	0	0	0	0
20	0	0	0	0	0
21	33	18	4	0	55
22	24	18	3	0	45
23	0	0	0	0	0
24	0	4	0	0	4
25	38	14	10	0	62
26	92	14	7	65	178
27	86	50	62	0	198
28	68	46	6	0	120
29	131	58	4	0	193
30	150	20	3	0	173
31	207	70	96	0	373
32	57	54	52	0	163
33	128	98	66	0	292
34	219	370	55	0	644
35	143	248	104	0	495
36	17	54	62	0	133
37	53	76	30	0	159
38	0	0	0	0	0
39	0	0	0	0	0
40	36	38	4	0	78
41	61	16	7	113	197
42	1	0	0	94	95
43	0	0	0	0	0
44	0	0	0	0	0
SUBTOTAL	1,827	1,466	1,312	272	4,877

EXHIBIT V
CONTINUED

ASSIGNMENT ZONE	DWELLING UNITS				Total
	Single Family	Duplex	Apartment	Mobile Home	
45	135	12	0	0	147
46	0	0	0	0	0
47	53	4	24	0	81
48	460	2	0	0	462
49	0	0	0	0	0
50	311	72	32	0	415
51	17	24	43	0	84
52	1	0	0	0	1
53	0	0	0	0	0
54	0	0	0	0	0
55	294	130	74	0	498
56	275	86	141	0	502
57	121	60	8	0	189
58	99	128	13	0	240
59	79	142	11	0	232
60	25	12	6	36	79
61	11	10	3	0	24
62	195	56	7	0	258
63	16	8	0	112	136
64	4	0	0	0	4
65	7	0	0	0	7
66	6	0	0	145	151
67	0	0	0	0	0
68	0	0	0	0	0
69	0	0	0	0	0
70	0	0	0	0	0
71	0	0	0	0	0
72	22	0	0	0	22
73	0	0	0	0	0
74	3	0	0	37	40
75	14	2	0	0	16
76	0	0	0	0	0
77	0	0	0	0	0
78	6	0	0	0	6
79	0	0	0	0	0
80	134	0	0	0	134
81	212	0	52	0	264
82	0	0	0	0	0
83	309	20	16	0	345
84	311	8	28	0	347
85	0	0	0	0	0
86	0	0	0	26	26
87	27	42	0	0	69
88	18	0	0	0	18
SUBTOTAL	3,165	818	458	356	4,797

EXHIBIT V
CONTINUED

ASSIGNMENT ZONE	DWELLING UNITS				Total
	Single Family	Duplex	Apartment	Mobile Home	
89	4	0	0	0	4
90	4	0	0	0	4
91	181	62	0	0	243
92	9	0	11	87	107
93	0	0	0	0	0
94	3	2	0	5	10
95	0	0	0	0	0
96	0	0	0	0	0
97	0	0	0	0	0
98	0	0	0	0	0
99	0	0	0	0	0
100	3	0	0	0	3
101	2	0	0	0	2
102	0	0	0	0	0
103	1	0	0	0	1
104	2	0	0	0	2
105	18	0	0	0	18
106	0	0	0	0	0
107	0	0	0	0	0
108	0	0	0	0	0
109	1	0	0	0	1
110	3	0	0	0	3
111	2	0	0	0	2
112	0	0	0	0	0
113	130	12	27	0	169
114	41	0	0	0	41
115	0	0	0	0	0
116	0	0	0	0	0
117	1	0	0	0	1
118	0	0	0	0	0
119	0	0	0	0	0
120	1	0	0	0	1
121	3	0	0	10	13
122	1	0	0	0	1
123	1	0	0	0	1
124	0	0	0	0	0
125	7	0	0	0	7
126	8	0	0	0	8
127	0	0	0	0	0
128	0	0	0	0	0
129	4	0	0	0	4
130	1	0	0	0	1
131	20	0	0	0	20
132	0	0	0	0	0
SUBTOTAL	451	76	38	102	667

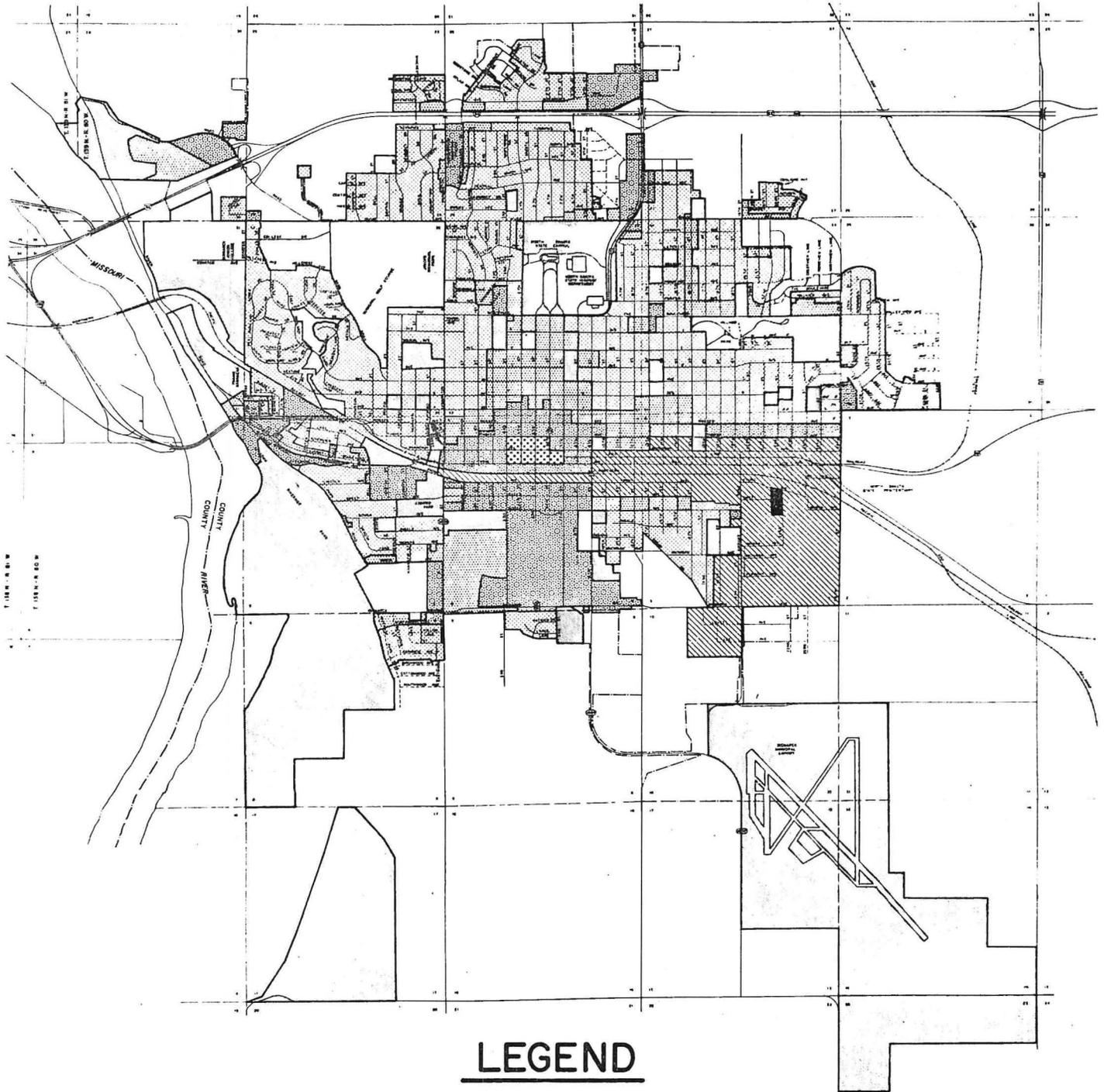
EXHIBIT V
CONTINUED

ASSIGNMENT ZONE	DWELLING UNITS				Total
	Single Family	Duplex	Apartment	Mobile Home	
133	7	0	0	0	7
134	21	4	0	0	25
135	38	0	0	0	38
136	9	0	0	0	9
137	9	0	0	0	9
138	8	0	0	0	8
139	0	0	0	0	0
140	0	0	0	0	0
141	0	0	0	0	0
142	2	0	0	0	2
143	0	0	0	0	0
144	6	0	0	0	6
145	2	0	0	0	2
146	1	0	0	0	1
147	11	0	0	0	11
148	10	0	0	0	10
149	9	16	27	0	52
150	0	0	32	0	32
151	0	0	23	0	23
152	2	0	7	0	9
153	0	0	0	0	0
154	0	0	0	0	0
155	0	0	0	0	0
156	55	74	30	0	159
157	46	42	14	0	102
158	92	62	15	0	169
159	11	0	0	0	11
160	149	90	24	0	263
161	258	34	17	0	309
162	85	42	0	0	127
163	103	48	13	0	164
164	22	6	0	0	28
165	91	56	4	0	151
166	0	0	0	0	0
167	106	22	0	0	128
168	54	12	0	0	66
169	0	0	0	0	0
170	5	0	0	0	5
171	182	98	15	0	295
172	216	34	12	0	262
173	121	0	0	0	121
174	18	0	0	0	18
175	0	0	0	0	0
176	0	0	0	0	0
SUBTOTAL	1,749	640	233	0	2,622

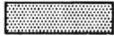
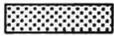
EXHIBIT V
CONTINUED

ASSIGNMENT ZONE	DWELLING UNITS				Total
	Single Family	Duplex	Apartment	Mobile Home	
177	3	0	0	0	3
178	0	0	0	0	0
179	0	0	0	0	0
180	3	0	0	0	3
181	6	0	0	0	6
182	12	0	0	0	12
183	1	0	0	0	1
184	4	0	0	0	4
185	13	0	0	0	13
186	1	0	0	2	3
187	2	0	0	0	2
188	1	0	0	0	1
189	11	0	0	0	11
190	0	0	0	0	0
191	0	0	0	0	0
192	9	0	0	0	9
193	6	0	0	0	6
194	3	0	0	0	3
195	0	0	0	0	0
196	2	0	0	0	2
197	2	0	0	0	2
198	2	0	0	0	2
199	21	0	0	60	81
200	1	0	0	64	65
201	68	4	0	0	72
202	26	6	0	0	32
203	7	2	0	0	9
204	130	12	0	0	142
205	0	0	0	0	0
206	56	0	0	61	117
207	12	0	0	6	18
208	6	0	0	0	6
209	2	0	0	0	2
210	5	0	0	0	5
211	12	0	0	0	12
212	0	0	0	0	0
213	0	0	0	0	0
214	15	0	0	3	18
215	0	0	0	0	0
216	0	0	0	0	0
217	3	0	0	7	10
SUBTOTAL	445	24	0	203	672
TOTAL	7,637	3,024	2,041	933	13,635

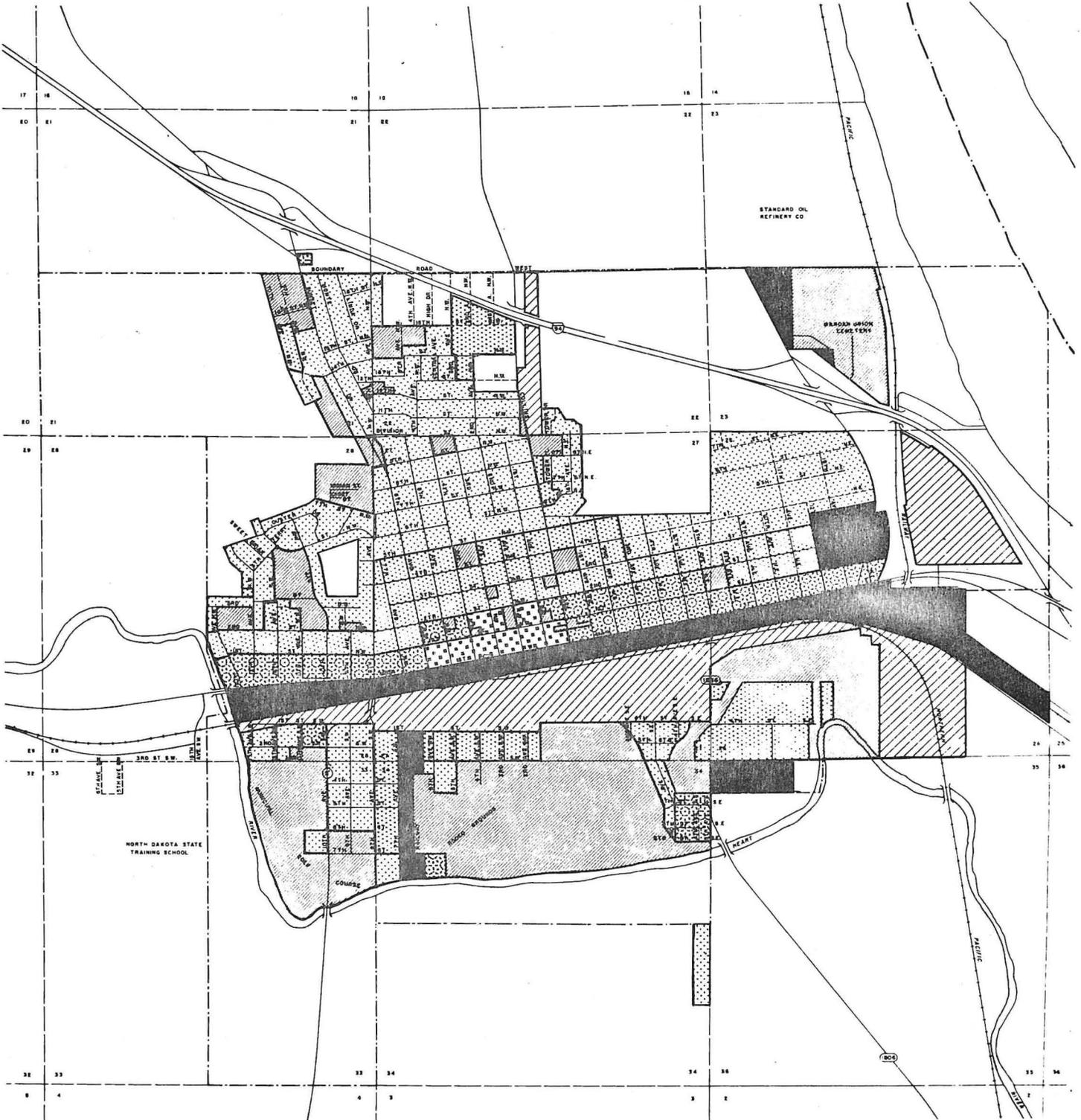
BISMARCK ZONING MAP



LEGEND

Single and Two Family Residential		Other Commercial	
High Density Residential		Industrial - Light	
Central Business Core		Industrial - Heavy	
Public Use			

MANDAN ZONING MAP



LEGEND

- | | | | |
|---------------------------------|--|--------------------|--|
| Single and Two Family Residence | | Other Commercial | |
| High Density Residential | | Industrial - Light | |
| Central Business Core | | Industrial - Heavy | |
| Public Use | | | |

APPENDIX

DESCRIPTION OF APPENDIX EXHIBITS

A. ACREAGE BY ASSIGNMENT ZONE WITHIN THE NINE GENERAL CATEGORIES OF LAND USE.

Presented in this exhibit is the acreage devoted to each of the nine general categories of land use for each of the 217 traffic assignment zones in the study area.

B. ACREAGE BY ASSIGNMENT ZONE WITHIN THE NINETY-FOUR SUBCATEGORIES OF LAND USE.

This exhibit presents a detailed analysis of land use acreage for the 217 traffic assignment zones. The acreage for each of the ninety-four subcategories of land use is given for each assignment zone.

APPENDIX EXHIBIT A

ACREAGE BY ASSIGNMENT ZONE WITHIN THE NINE GENERAL CATEGORIES OF LAND USE

Zone	No. Dwelling Units	Total Acres	GENERAL LAND USE CATEGORIES								
			1 Residential	2 Manufacturing	3	4 Transportation, Communication, & Utilities	5 Trade	6 Services	7 Cultural, Entertainment, & Recreational	8 Resource, Production, & Extraction	9 Undeveloped Land & Water Areas
1	3	6.5				2.9	.1	2.3			1.3
2	22	6.8	1.0			3.7	.5	.8		.1	.5
3	158	23.1	6.2	.2	.1	10.3	.7	4.5	.8		.2
4	0	13.2	.3			7.0	1.6	3.3			.4
5	71	13.2	.8		.1	8.2	1.3	2.7		.1	
6	36	9.9	2.7			4.1	1.7	1.2			.2
7	21	11.1	.6			5.1	4.0	.9			
8	37	5.6	.3		.3	3.1	1.8	1.4		.2	
9	32	6.6	.3			3.9	1.9	.4		.1	
10	36	10.0	.3			5.3	3.6	.6			
11	0	8.4				2.7	3.9	.2			1.6
12	0	3.6				2.5	.7	.4			
13	0	7.9			.2	2.8	3.4	.4	1.1		
14	129	12.7	7.6			4.7	.3	.1			
15	211	34.4	20.3			13.6		.5			
16	97	13.4	6.5			5.5		.7			.7
17	106	13.3	7.0			4.8		.8	.4		
18	261	26.6	14.4			11.4	.2	.4			
19	0	6.6				2.8		3.8			
20	0	12.5			.5	4.4	7.3				.3
21	55	25.2	5.4		.6	12.7	1.0	3.2			1.7
22	45	21.4	4.3			10.9	.6	3.6			2.0
23	0	21.8				5.7					16.1
24	4	17.1	.3		.1	14.0	.3	1.3			1.1
25	62	37.9	7.7			16.2	1.1	3.6			10.3
26	178	100.2	47.7		1.6	17.5	1.2	2.1	17.7		18.4
27	198	108.9	27.3			70.9	.5	.5	7.9		4.4
28	120	46.5	13.6			27.9			3.7		1.3
29	193	50.0	23.8			15.5		5.9			4.8
30	173	67.8	34.7			16.9		2.6	10.4		3.2
31	373	84.5	47.4			30.8	.6	5.7			
32	163	31.2	13.6			12.6		5.0			
33	292	47.5	23.0			19.1		5.4			
34	644	108.3	63.1			40.7		4.5			
35	495	74.1	41.5			32.1		.5			
36	133	13.3	7.8			5.4		.1			
37	159	26.5	13.4			11.3	.8	.5			.3
38	0	15.8			.2	8.3	1.2	2.4			1.5
39	0	29.9			1.7	10.5	11.1	2.5			4.1
40	78	34.8	9.9		.7	15.4	2.4	4.2			2.2
41	197	69.6	21.9			15.2		3.9			26.6
42	95	34.7	7.4			5.0					22.3
43	0	64.9				.4					64.5
44	0	70.5				19.0					51.5
45	147	70.3	32.2			18.4		4.0	.8		14.9
46	0	12.1				6.1	.4				5.6
47	81	43.0	12.1			17.8	5.0	.8			7.3
48	462	247.4	112.6			62.3		3.4			69.1
49	0	145.7				8.6			137.1		
50	415	105.1	65.7			30.2		1.2			8.0
51	84	15.5	6.6			4.1	4.6				.2
52	1	58.4	1.4			9.9		47.1			
53	0	63.9				8.8		54.5	.6		
54	0	18.0				3.3		14.7			
55	498	122.1	66.9			40.5	.4	6.0	3.9		2.4
56	582	134.9	63.4			37.3		6.9			27.3
57	189	87.6	27.6			20.4			31.9		7.8
58	240	41.9	27.5			14.4					
59	232	42.3	26.8			13.0		2.0			.5
60	79	32.5	8.2			12.3	3.3	1.0		4.7	3.0
61	24	29.3	2.9			6.9		13.9			
62	258	115.0	43.7		.4	33.2	3.2	11.8	16.4		6.3
63	136	50.5	14.3			7.5					28.7
64	4	91.0	1.2			4.9	2.8	22.8			
65	7	110.5	2.1			5.2				59.3	
66	151	117.7	19.2			14.6		.9		102.2	
67	0	12.2								83.0	
68	0	205.7				6.8				148.3	
69	0	23.0									23.0
70	0	34.9									34.9
71	0	149.3				5.1				144.2	
72	22	81.7	6.6			6.4				62.7	
73	0	13.5				1.5		12.0			
74	40	323.6	4.9			8.4		2.8	20.5		22.3
75	15	106.0	2.5			28.1		11.4			54.2
76	0	84.6				33.9					50.7
77	0	122.2	1.5			2.3		36.8			51.5
78	6	64.0	.6			29.4		.3			34.3
79	0	41.3	.4			6.4					34.5
80	134	199.9	27.0			40.0		7.2			125.7
81	264	81.5	48.3			21.8		.8			10.6
82	0	15.1				2.1	8.2				4.8
83	345	115.0	63.3			37.7		8.6		.1	5.3
84	347	171.5	58.7			43.3		5.1			54.4
85	0	15.9				8.0	1.1				5.8
86	26	20.0	3.1			6.6	.3	.9			9.1
87	69	166.5	11.2			38.7	1.4	1.0			114.2
88	18	166.3	3.4			19.5					143.4
89	4	63.4	.9			4.3					58.2
90	4	57.9	13.3			5.7		33.6			5.3
91	243	63.9	39.0			18.4		3.8			2.7
92	107	35.4	6.8			13.1	5.5	2.1	1.0		5.7
93	0	13.8			1.0	5.2	2.7				4.8
94	10	35.2	2.9			17.6	8.8	.8			4.3
95	0	102.4			.5	22.3	12.2	13.6		.3	44.9
96	0	97.1			.3	11.0	5.8	.6			79.7
97	0	160.1				11.3					
98	0	139.8			3.3	4.7		25.0			
99	0	93.7				1.2				120.5	
100	3	129.5	.9			1.7				135.1	
101	2	1,170.3	.6							92.5	
102	0	632.8				4.9				126.9	
103	1	362.9	.3			7.1				322.0	237.7
104	2	576.7	.6			12.5				384.0	203.2
105	18	136.2	9.0			2.4				355.5	
106	0	1,339.1				803.0				563.6	
107	0	319.0				10.1	1.2	.9		535.2	124.6
108	0	140.2				7.1	15.9			207.7	
109	1	344.1	.3			52.2		58.1		116.2	
110	3	626.3	.9			21.9				233.5	

APPENDIX EXHIBIT A (Continued)

Zone	No. Dwelling Units	Total Acres	1 Residential	2 Manufacturing	3	4 Transportation, Communication, & Utilities	5 Trade	6 Services	7 Cultural, Entertainment, & Recreational	8 Resource Production, & Extraction	9 Undeveloped Land & Water Areas
111	2	743.0	.6			28.2				714.2	
112	0	163.5				30.6		2.0		130.9	
113	159	225.7	36.6			24.3					164.8
114	41	212.6	7.5			7.8		1.8			195.5
115	0	210.1				22.1			2.4	185.6	
116	0	627.3				21.7				605.6	
117	1	132.7	.3			11.1				121.3	
118	0	213.1				32.1				181.0	
119	0	391.1				141.6				249.5	
120	1	571.0	.3			32.0				538.7	
121	13	302.6	1.9			37.3		27.6		235.8	
122	1	1,104.8	.3			23.3				1,081.2	
123	1	224.2	.3			21.0				202.9	
124	0	217.6				9.0				208.6	
125	7	837.1	2.1			70.9				764.1	
126	8	81.2	2.4			11.1				57.7	
127	0	69.3				14.6	4.4	17.7		32.6	
128	0	100.1				20.8					79.3
129	4	161.4	1.2			13.4		4.6		142.2	
130	1	155.2	.3			15.5		3.7		135.7	
131	20	637.5	6.0	.5		40.6				590.4	
132	0	160.0				3.0				157.0	
133	7	163.1	2.1			4.1				157.1	
134	25	61.1	5.2			12.3					43.6
135	38	129.9	9.9			15.9					104.1
136	9	143.7	2.7			14.7					
137	9	157.4	2.7			2.1				126.3	
138	8	154.0	2.4			2.0				152.6	
139	0	611.1				4.0				149.5	
140	0	157.6								507.1	
141	0	163.6				.7				157.6	
142	2	198.0	.6			20.5	5.7			162.9	
143	0	132.3				21.9				171.2	
144	6	302.5	1.8			7.5				110.4	
145	2	722.8	.6			4.2				293.2	
146	1	929.1	.3			4.2				718.0	
147	11	814.3	3.3			4.2				284.5	
148	10	1,182.2	3.0			9.1			29.0	576.6	130.2
149	52	9.8	2.6			4.4	.8	1.7		512.7	328.4
150	32	6.5		.1		2.9	2.0	1.2			.3
151	23	6.5	.7			3.0	1.6	1.0	.1		.2
152	9	6.6	.3			2.9	1.5	.6			.4
153	0	6.9	.9			4.9	.3				1.2
154	0	6.8	.5			4.6	.8	.2			1.0
155	0	9.7	.2			6.2	2.1	.9			.5
156	159	29.9	12.6			13.6	1.0	1.7			1.0
157	102	16.5	.90			6.8		.2	.3		1.2
158	169	33.2	17.8			13.8		.6			1.0
159	11	24.0	1.3			6.1					16.6
160	263	62.4	30.7			24.9	.9	.1			5.8
161	309	208.7	48.5			37.2		27.2			95.8
162	127	41.6	15.6			16.4		4.1			5.5
163	164	57.8	23.5			19.0		1.8			13.5
164	28	63.9	4.2			10.8					48.9
165	151	31.3	15.3			13.4	.6	.1		.1	1.8
166	0	8.8				4.0	2.9	1.1			.8
167	128	59.0	15.7			25.8	2.2	1.3	.6		12.4
168	66	109.3	8.6	.4		49.2			.3		50.8
169	0	35.3				3.2					32.1
170	5	104.1	1.1			11.0		2.0			91.8
171	295	74.7	37.1			32.2		2.0			3.4
172	262	78.2	45.8			21.1		.7			10.6
173	121	90.1	22.7			16.4		6.0			45.0
174	18	93.4	2.1			5.6		2.2			32.5
175	0	33.3				1.7		6.9			24.7
176	0	159.6									
177	3	210.4	.9			62.2	13.7			159.6	
178	0	561.4								111.1	22.5
179	0	993.5				39.8				540.5	20.9
180	3	184.5	.9			54.3				953.7	
181	6	331.7	1.8			7.3				129.3	
182	12	434.6	3.6			5.3				322.6	
183	1	111.4	.3			26.8				425.7	
184	4	125.1	1.2			30.9				24.3	
185	13	422.9	3.9			20.2				94.0	
186	1	893.8	.9			30.7		1.0		312.9	85.9
187	2	124.2	.6	694.9		30.0				15.4	150.9
188	1	258.6	.3			29.9		68.8		57.8	35.8
189	11	130.0	3.0			50.3				120.0	180.0
190	0	526.1				187.7				39.6	75.7
191	0	255.8				53.4				172.3	338.4
192	9	919.3	5.0	4.3		17.4	15.8			30.1	30.1
193	3	105.2	6.8			24.4	16.6		.5	876.2	54.4
194	3	844.4	.9			2.8	15.0	.2		3.0	74.8
195	0	76.6				3.6	9.5			750.4	36.3
196	2	164.5	.6	1.5		3.6	7.9		5.7		149.1
197	2	369.0	.6			28.4			3.3		24.3
198	2	338.1	.6	1.0		24.8				314.2	24.0
199	31	206.5	13.5			18.2				298.7	174.8
200	65	93.9	10.3			49.5		1.0			44.0
201	72	76.2	5.1	1.0		36.7		.2			27.7
202	32	32.5	78.9			18.9					3.5
203	9	78.9	1.3			2.9	.2				5.1
204	142	68.2	22.1	1.2		28.4		1.7	59.4		14.8
205	0	77.1				31.9		.5			44.7
206	117	135.2	12.7	1.3		13.1	1.3			376.3	106.8
207	18	398.9	5.4			11.6				364.2	5.6
208	2	583.7	1.8			17.2		.5			
209	2	821.8	.6			16.4				304.8	
210	5	262.7	1.5			9.2				246.0	6.0
211	12	237.2	3.6	6.9		24.0		118.1		33.3	.3
212	3	296.6				8.0				288.6	
213	0	784.6				12.4				772.2	
214	18	790.7	5.4	10.5		20.0				754.2	
215	0	34.2				2.8			31.4		
216	0	14.7		4.4		4.3	3.6	.5			1.3
217	10	20.6	2.6			6.8	8.8	.5			1.5

NOTE: Zones 218 to 224 are dummy nodes reserved for future assignment.

TOTAL:	13,635	40,647.3	1,855.6	710.5	49.5	4,455.2	257.1	811.6	404.6	25,294.0	5,309.2
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APPENDIX EXHIBIT B

ACREAGE BY ASSIGNMENT ZONE WITHIN THE NINETY-FOUR SUBCATEGORIES OF LAND USE

Assign. Zone	No. Dwelling Units	Total Acres	Subcategories of Land Use																	
			110	120	130	140	150	155	210	220	250	270	272	290	320	330	340	390	410	414
1	3	6.6																		
2	22	6.8	1.0																	
3	158	23.1	6.0	.2																
4	0	13.2																		
5	71	13.2	.8																	
6	36	9.9	2.2																	
7	21	11.1	.6																	
8	37	6.6																		
9	32	6.6																		
10	36	10.0																		.6
11	0	8.4																		1.0
12	0	3.6																		1.3
13	0	7.9																		.7
14	129	12.7	7.6																	
15	211	34.4	20.3																	
16	97	13.4	6.5																	
17	106	13.3	7.0																	
18	261	26.6	14.6																	
19	0	6.6																		
20	0	12.5																		
21	55	25.2	5.4																	2.0
22	45	21.4	4.3																	3.0
23	0	21.8																		1.5
24	4	17.1	.3																	.5
25	62	37.9	7.7																	1.1
26	178	100.2	36.1				5.6													
27	198	70.9	23.9					2.6												6.9
28	120	46.5	13.6																	10.5
29	193	50.0	23.5																	
30	173	67.8	34.7																	
31	373	84.5	47.4																	
32	163	31.2	13.6																	
33	292	47.5	23.0																	
34	644	108.3	63.1																	
35	495	74.1	41.5																	
36	133	13.3	7.8																	
37	159	26.5	13.4																	
38	0	15.8																		
39	0	29.9																		3.5
40	76	34.8	9.9																	5.6
41	197	69.6	12.1																	.5
42	95	34.7	.1																	
43	0	64.9																		
44	0	70.5																		

Assign. Zone	420	430	450	460	470	471	476	480	481	482	484	487	510	512	514	520	524	530	535	540	545	
1			2.9																			.1
2			3.0	.7																		
3	.2		9.7	.4																		.1
4			5.8	.7																		.1
5			5.9	2.3																		
6			3.9																			
7			5.0																			
8			3.1																			1.0
9			2.9	1.0																		
10	.3		4.4																			1.3
11			1.7																			
12			1.8	.4																		
13			2.1																			
14			4.7																			.3
15			13.6																			
16			5.5																			
17			4.8																			
18			11.4																			
19			2.2																			
20			2.4																			
21			3.7																			
22			8.4	1.0																		
23			1.8	1.9																		.1
24			3.2																			
25			14.5	.6																		.1
26			17.5																			
27			23.4																			
28			17.4																			
29			15.5																			
30			15.9																			
31			30.1																			.7
32			12.6																			
33			19.1																			
34			40.5																			.2
35			32.1																			
36			5.4																			
37	.2		11.1																			
38			4.8																			.7
39			4.9																			
40	1.4		13.1																			.3
41			15.2																			
42			5.0																			
43			4.4																			
44			2.8																			16.2

APPENDIX EXHIBIT B (Continued)

Asgn. Zone	550	552	554	555	556	560	570	580	585	590	595	610	611	615	620	630	632	634	640	650	651
1												.1									.2
2	.3											.5									
3	.1							.1		.1	.1		.2		.9	.1			.1	1.3	.1
4	.2					.5		.4		.5					.4					.5	
5	.4					.6	.1	.1				.2			.2	.1					.2
6	1.5				.1					.1		.1				.5			.5	.1	
7	2.1	.2	.1				.4	.2							.1				.7		
8	.1					.6	.3	.3		.2		.9				.4			.1		
9						.2		.3		.8		.1							.1		
10	1.1							.4				.3							.3	.1	
11	1.3							.3				.4			.2						
12						.7	.6			.1		.1									
13	.4				.4																
14																					
15															.3						.2
16																					
17	.3																				
18	.2																				
19																					1.9
20	4.3							.3													
21	.6						.2														
22															.1			2.3			
23																		3.3			
24										.3					.3			1.0			
25															.2			1.0			
26	.5									.2								.6			
27	.5																	1.8			
28																	.5				
29																					
30																					
31										.6											
32																.1					.2
33																.1					
34																					
35																					.3
36																					
37																				.1	
38															.1				.1		
39	1.0									.5		.1			.2			2.3			
40										.7						1.5			.8		
41																		2.7			
42																					
43																					
44																					

Asgn. Zone	653	655	656	660	661	662	670	671	673	674	675	676	680	681	685	690	691	695	710	720	740
1								1.5			.5										
2	.1						.2														.2
3		.5		.2				.1					.1			.5		.5			.8
4							2.1				.3										
5					.1			.5								.8		.6			.1
6																					
7																					
8																					.2
9																					.1
10													.2								
11																					
12																					
13												.4								1.1	
14																					
15					.2																
16																					
17													.3			.5					
18					.1											.5					
19													1.5		.4	.3					
20																					
21							.2						.9								
22																					
23																					
24																					
25				1.6									.2								
26							.3														17.7
27																					
28																					1.5
29													4.7				1.2				
30													2.6								10.4
31													4.9								
32													2.8								
33													4.9		.8	1.3		.5			
34													4.9		.3	.2					
35													3.5			1.0					
36																.2					
37				.2																	
38																.1					
39																					
40				1.2			.1									.2					
41							2.0						1.9								
42																					
43																					
44																					

APPENDIX EXHIBIT B (Continued)

Assign. Zone	745	760	761	810	820	824	830	850	851	910	930	940	950
1										.8			.5
2									.1	.3		.2	
3										.1		.1	
4								.4		.1		.3	
5													
6										.2			
7													
8													
9													
10													
11										1.1		.5	
12													
13													
14													
15										.7			
16													
17													
18													
19													
20										.3			
21										.8		.9	
22										1.5		.4	
23										6.4			9.7
24										1.1			
25										10.3			
26										18.4			
27		7.9								4.4			
28		2.2								1.3			
29										4.8			
30										3.2			
31													
32													
33													
34													
35													
36													
37										.1		.2	
38										1.5		.1	
39										4.1			
40										2.0		.2	
41										28.6			
42										22.3			
43										64.5			
44										51.5			

Assign. Zone	No. Dwelling Units	Total Acres	110	120	130	140	150	155	210	220	250	270	272	290	320	330	340	390	410	414
45	147	70.3	32.2																	
46	0	12.1																		
47	81	43.0	12.1																	5.0
48	462	247.4	112.5																	5.4
49	0	145.7																		
50	415	105.1	65.7																	
51	84	15.5	6.6																	
52	1	58.4	1.4																	
53	0	53.9																		
54	0	18.0																		
55	498	122.1	53.6	1.4			1.9													
56	502	134.9	53.4																	
57	129	87.5	27.5																	
58	240	41.9	27.5																	
59	232	42.3	25.8																	
60	79	32.5	5.4			1.9	.9													
61	24	29.3	2.9												5.5					2.9
62	258	115.0	43.7								.4									
63	136	50.5	3.5			10.8														
64	4	31.0	1.2																	
65	7	110.5	2.1																	
66	151	117.7																		
67	0	12.2																		
68	0	205.7																		
69	0	23.0																		
70	0	34.9																		
71	0	149.3																		
72	22	31.7	6.6																	
73	0	13.5																		
74	40	323.5	4.9																	
75	16	106.9	2.5																	
76	0	24.5																		
77	0	122.2																		
78	0	54.0		1.5																
79	0	41.3																		
80	134	199.9	27.0																	
81	254	31.5	48.3																	
82	0	15.1																		
83	345	115.0	53.3																	
84	347	171.5	38.7																	
85	0	15.9																		
86	0	29.0																		
87	50	156.5					1.9	1.2												
88	15	156.3	3.4																	

APPENDIX EXHIBIT B (Continued)

Assign. Zone	420	430	450	460	470	471	476	480	481	482	484	487	510	512	514	520	524	530	535	540	545	
45			18.4																			
46			6.1																			
47			11.8																			
48			55.9																			
49			8.6																			
50			30.2																			
51			4.1															1.5	2.9			
52			9.9																			
53			8.8																			
54			3.3																			
55			40.5																			
56			37.3																			
57			15.5					4.9														
58			14.4																			
59			13.0																			
60	.4		11.9																			
61			4.0																			
62			33.2																			
63			7.5																			
64			4.9																			
65			6.2																			
66			14.6																			
67																						
68			6.8																			
69																						
70																						
71			5.1																			
72			6.4																			
73			1.5																			
74			8.4																			
75			5.3																			
76								1.9														
77			2.3					15.1														
78			29.4																			
79			6.4																			
80			40.0																			
81			21.8																			
82			2.1																			
83			37.7																			
84			43.3																			
85			8.0																			
86			6.6																			
87			32.5																			
88			19.5				1.6															

Assign. Zone	550	552	554	555	556	560	570	580	585	590	595	610	611	615	620	630	632	634	640	650	651	
45																						
47								.4														
48	4.4						.6															
49																						
50																						
51	.2																					
52																						
53																						
54																						
55																						
56																						
57																						
58																						
59																						
60								.7														
61	.7																					
62																						
63																						
64																						
65																						
66																						
67																						
68																						
69																						
70																						
71																						
72																						
73																						
74																						
75																						
76																						
77																						
78																						
79																						
80																						
81																						
82																						
83																						
84	.5																					
85												1.5										
86	1.1																					
87	.3																					
88	.6																					

APPENDIX EXHIBIT B (Continued)

Assgn. Zone	No. Dwelling Units	Total Acres	110	120	130	140	150	155	210	220	250	270	272	290	320	330	340	390	410	414
89	4	63.4	.9																	
90	4	57.9	1.0	12.3																
91	243	63.9	39.0																	
92	107	35.4	1.6																	
93	0	13.8					5.2		.8						1.1	.1	.1			.6
94	10	35.2	.5				.2	2.2	.3		.2									8.9
95	0	102.4							.3											9.2
96	0	97.1																		.6
97	0	160.1													1.0		2.3			
98	0	139.8																		
99	0	93.7																		
100	3	129.5	.9																	
101	2	1,170.3	.6																	
102	0	632.8																		
103	1	362.9	.3																	
104	2	576.7	.6																	
105	18	136.2	9.0																	
106	0	1,339.1																		
107	0	319.0																		1.9
108	0	140.2																		4.5
109	1	344.1	.3																	20.1
110	3	826.3	.9																	14.4
111	2	743.0	.6																	3.6
112	0	153.5																		15.2
113	169	225.7	24.5	12.1																
114	41	212.6	7.5																	
115	0	210.1																		9.2
116	0	627.3																		
117	1	132.7	.3																	5.7
118	0	213.1																		5.7
119	0	391.1																		
120	1	571.0	.3																	
121	13	302.6	.9																	9.3
122	1	1,104.8	.3				1.0													11.2
123	1	224.2	.3																	
124	0	217.6																		4.9
125	7	837.1	2.1																	23.2
126	8	81.2	2.4																	
127	0	69.3																		
128	0	100.1																		
129	4	161.4	1.2																	
130	1	155.2	.3																	
131	20	637.5	6.0														.5			
132	0	160.0																		

Assgn. Zone	420	430	450	460	470	471	476	480	481	482	484	487	510	512	514	520	524	530	535	540	545	
89			4.3																			
90			5.7																			
91			18.4																			
92			13.1										.1									
93			4.2										2.3									
94	.3		8.4					.4					.9									
95	.4		12.7																			
96			10.4												5.8							
97			11.3																			
98			4.7																			
99			1.2																			
100			1.7																			
101																						
102			4.9																			
103			7.1																			
104			12.5																			
105			2.4																			
106		768.6	34.4																			
107			8.2										1.2									
108			2.6										16.9									
109			32.1																			
110			7.5																			
111			24.6																			
112			15.4																			
113			24.3																			
114			7.8																			
115			10.4																			
116			13.4							2.5												
117			5.4							8.3												
118			26.4																			
119			26.5							115.1												
120			32.0																			
121			28.0																			
122			12.1																			
123			21.0																			
124			4.1																			
125			47.7																			
126			11.1																			
127			14.6																			
128			20.8																			
129			13.4																			
130			15.5																			
131			40.6																			
132			3.0																			

APPENDIX EXHIBIT B (Continued)

Asagn. Zone	550	552	554	555	556	560	570	580	585	590	595	610	611	615	620	630	632	634	640	650	651
89																					
90															33.6						
91																					
92	4.9						.1			.4									.7	.2	
93										.4					.6						
94	2.4							1.8	.6	.2								.1	.6		
95								.1										9.7	1.9		
96																					
97																				3.3	
98																					
99																					
100																					
101																					
102																					
103																					
104																					
105																					
106																.9					
107																					
108																					
109																7.6					
110																					
111																					
112																					
113																					
114																					
115																					
116																					
117																					
118																					
119																					
120																					
121															27.6						
122																					
123																					
124																					
125																					
126																					
127	1.6						1.4			1.4					17.7						
128																					
129																					
130																					
131																					
132																					

Asagn. Zone	653	655	656	660	661	662	670	671	673	674	675	676	680	681	685	690	691	695	710	720	740	
89																						
90																						
91														3.8								.5
92				.6																		
93				.1																		
94				2.0																		
95				.6																		
96				21.7																		
97																						
98																						
99																						
100																						
101																						
102																						
103																						
104																						
105																						
106																						
107																						
108																						
109							50.5															
110																						
111										2.0												
112																						
113																						
114																1.0		.8				
115																						
116																					2.4	
117																						
118																						
119																						
120																						
121																						
122																						
123																						
124																						
125																						
126																						
127																						
128																						
129				3.7			.9															
130							3.7															
131																						
132																						

APPENDIX EXHIBIT B (Continued)

Asgn. Zone	745	760	761	810	820	824	830	850	851	910	930	940	950
89										58.2			
90										5.3			
91										2.7			
92	.5									5.7			
93										2.4			
94					.3					4.3		2.4	
95										44.9			
96										79.7			
97				120.5									
98				135.1									
99				92.5									
100				126.9									
101				932.0						237.7			
102				324.0						303.9			
103				344.3				11.2					
104				546.4			5.7	11.5					
105												124.8	
106				535.2									
107				307.7									
108				116.2									
109				233.5									
110				803.5									
111				714.2									
112				130.9									
113										164.8			
114										195.5			
115				185.6									
116				605.6									
117				121.3									
118				181.0									
119				249.5									
120				538.7									
121				235.8									
122				1,081.2									
123				202.9									
124				208.6									
125				764.1									
126				67.7									
127				32.6									
128										79.3			
129				142.2									
130				135.7									
131				564.7			25.7						
132				157.0									

Asgn. Zone	No. Dwelling Units	Total Acres	110	120	130	140	150	155	210	220	250	270	272	290	320	330	340	390	410	414
133	7	163.3	2.1																	
134	25	61.1	5.2																	
135	38	129.9	9.9																	
136	9	143.7	2.7																	
137	9	157.4	2.7																	
138	8	154.0	2.4																	
139	0	611.1																		
140	0	157.6																		
141	0	163.6																		
142	2	198.0	.6																	
143	0	132.3																		
144	6	302.5	1.8																	
145	2	722.8	.6																	
146	1	929.1	.3																	
147	11	614.3	3.3																	
148	10	1,182.2	3.0																	
149	52	9.8	2.6																	
150	32	6.5																		
151	23	6.5																		
152	9	6.6	.3					.7					.1							
153	0	6.9							.7					.2					2.9	.6
154	0	6.8							.5										2.8	
155	0	9.7							.2										4.0	
156	159	29.9	12.5																	
157	102	16.5	8.5						.1											
158	169	33.2	17.8	.5																
159	11	24.0	1.3																	
160	263	62.4	30.3					.4											3.1	
161	309	208.7	48.5																	
162	127	41.6	15.6																	
163	164	57.8	23.2	.3																
164	28	63.9	4.2																	
165	151	31.3	15.2			.1														
166	0	8.8																		4.0
167	128	59.0	15.2					.5												
168	66	109.3	8.6																	
169	0	35.3																		
170	5	104.1																		
171	295	74.7	37.1																	
172	262	78.2	45.8																	
173	121	90.1	22.7																	
174	18	93.4	2.1																	
175	0	33.3																		
176	0	159.6																		

APPENDIX EXHIBIT B (Continued)

Assign. Zone	420	430	450	460	470	471	476	480	481	482	484	487	510	512	514	520	524	530	535	540	545	
133			4.1																			
134			12.3																			
135			15.9																			
136			14.7																			
137			2.1																			
138			2.0																			
139			4.0																			
140																						
141								.7														
142			20.5																			
143			21.9																			
144			7.5																			
145			4.2																			
146			4.2																			
147			4.2																			
148			9.1																			
149			4.2																			
150			2.9			.2															.3	.5
151	.1		2.9													.3		.5			.1	.1
152			2.9															.4			.1	.3
153			1.4																			
154			1.4	.2							.2											
155	.2		2.0							.2												
156			13.6							.7						.7						
157			6.8							.1								.2			.1	
158			13.8																			
159			3.0																			
160			24.9																			.2
161			37.2																			
162			16.4																			
163			17.0					2.0														
164			10.8																			
165			13.4															.1			.1	
166																						
167			26.8										.6				2.1					
168			49.2																			
169			3.2																			
170			11.0																			
171			32.2																			
172			21.1																			
173			16.4																			
174			6.6																			
175			1.7																			
176																						

Assign. Zone	550	552	554	555	556	560	570	580	585	590	595	610	611'	615	620	630	632	634	640	650	651	
133																						
134																						
135																						
136																						
137																						
138																						
139																						
140																						
141																						
142	3.7			2.0																		
143																						
144																						
145																						
146																						
147																						
148																						
149																						
150						.1	.2	.6		.2					.2						.4	
151	.5					.2		.3		.1					.1				.1			
152	1.0							.1		.1					.2							
153					.3																	
154	.2						.2	.2														
155	.5				.2																	
156	.1							.3		.2					.3	.4		.3				
157																						.2
158																						
159																						
160	.5						.1	.1														3.4
161																						
162																						
163																						
164																						
165	.2						.1	.1													.2	
166	.8																					
167	1.0							.6										1.1		.2		
168																				.6		
169																						
170																						
171																						
172																						
173																						
174																						.3
175																						5.7
176																						

APPENDIX EXHIBIT B (Continued)

Assign. Zone	653	655	656	660	661	662	670	671	673	674	675	676	680	681	685	690	691	695	710	720	740	
133																						
134																						
135																						
136																						
137																						
138																						
139																						
140																						
141																						
142																						
143																						
144																						
145																						
146																						
147																						
148																						
149							1.2									.5						29.0
150																.4						
151																.2						
152				.1			.2									.1					.1	
153																						
154				.2																		
155				.2																		
156				.3			1.1															
157																						
158																.6					.3	
159																						
160																.1						
161		1.1											16.1		2.1	3.7		.8				
162							1.5				.5		2.1									
163												.9				.9						
164																						
165																						
166																						
167							.1						.6									.6
168																						.3
169																						
170																						
171																.2						
172																1.1						
173																.7			.9			
174													6.0									
175																1.9						
176			1.2																			

Assign. Zone	745	760	761	810	820	824	830	850	851	910	930	940	950
133				157.1									
134										43.6			
135										104.1			
136				126.3									
137				152.6									
138				149.6									
139				607.1									
140				157.6									
141				162.9									
142				171.2									
143				110.4									
144				293.2									
145				718.0									
146				924.6									
147				676.6									
148				612.7						130.2			
149										528.4			
150										.3			
151										.2			
152										.2			
153										.4			
154										1.2			
155										1.0			
156										.5			
157										1.0			
158										.2			
159										1.0			
160										16.0		.6	
161										4.6		1.2	
162										95.8			
163										5.5			
164										13.5			
165										48.9			
166				.1						1.8			
167										.8			
168										12.4			
169										50.8			
170										32.1			
171										91.8			
172										3.4			
173										10.6			
174										45.0			
175										82.5			
176				159.6						24.7			

APPENDIX EXHIBIT B (Continued)

Assign. Zone	No. Dwelling Units	Total Acres	110	120	130	140	150	155	210	220	250	270	272	290	320	330	340	390	410	414
177	3	210.4	.9																21.5	
178	0	561.4																		
179	0	993.5																		
180	3	184.5	.9																	
181	6	331.7	1.8																	
182	12	434.6	3.6																	
183	1	111.4	.3																	
184	4	126.1	1.2																	
185	13	422.9	3.9																	
186	3	893.8	.9											694.9					10.3	
187	2	124.2	.6																17.9	
188	1	258.6	.3																8.8	
189	11	130.0	3.0																4.3	
190	0	526.1																	14.8	
191	0	255.8																	1.5	
192	9	919.3	2.7				2.3		2.0			2.3								
193	6	105.2	1.8				5.0													
194	3	844.4	.9							.3										
195	0	76.6															1.5			
196	2	164.5	.6																1.0	
197	2	369.0	.6						1.0										15.4	
198	2	338.1	.6																16.5	
199	81	206.5	5.5				8.0												3.2	
200	65	93.9	.3				10.0												46.7	
201	72	76.2	10.6						1.0										23.7	
202	32	32.5	5.1																10.2	
203	9	78.9	1.3																	
204	142	66.2	22.1						1.2											
205	0	77.1																		
206	117	135.2	9.3				3.4										1.3			
207	18	398.9	5.4																	
208	6	583.7	1.8																	
209	2	821.8	.6																	
210	5	262.7	1.5																	
211	12	237.2	3.6												6.9				10.6	
212	0	296.6																	1.7	
213	0	784.6																		
214	18	790.7	5.4												10.5				10.0	
215	0	34.2																		
216	0	14.7															4.4		2.0	
217	10	20.6	1.5				1.1												2.7	

NOTE: Zones 218 to 224 are dummy nodes reserved for future assignment.

TOTAL:	13,635	40,647.3	1,721.2	28.6	.1	85.4	19.4	.9	11.3	.3	.8	3.1	.1	694.9	27.0	1.0	21.0	.5	490.4	.6
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Assign. Zone	420	430	450	460	470	471	476	480	481	482	484	487	510	512	514	520	524	530	535	540	545	
177			40.7																			
178																						
179			39.8																			
180			46.0						8.3													
181			6.3		1.0																	
182			5.3																			
183			26.8																			
184			30.9																			
185			8.1					1.8														
186			12.8																			
187			30.0																			
188			21.1																			
189			46.0																			
190			187.7																			
191			38.6																			
192			14.9		1.0																	
193			24.4																			
194			2.8										8.0									
195		.8	3.6																			.4
196			1.8																			
197			10.0																			
198			8.3																			
199			9.1																			
200			2.8																			
201			13.0																			
202			6.7																			
203			2.9																			
204			28.4																			.2
205			31.9																			
206			13.1																			.3
207			9.6					2.0														
208			17.2																			
209			16.4																			
210			9.2																			
211			13.4																			
212			6.3																			
213			12.4																			
214			10.0																			
215			2.8																			
216			2.3																			
217	1.3		2.8													3.6						
																.7						1.2

NOTE: Zones 218 to 224 are dummy nodes reserved for future assignment.

TOTAL:	5.6	768.6	2,983.6	9.2	3.8	.5	3.5	176.8	8.5	.1	.2	3.8	45.9	.6	7.7	49.1	.3	8.1	9.3	6.5	1.3
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APPENDIX EXHIBIT B (Continued)

Assign. Zone	550	552	554	555	556	560	570	580	585	590	595	610	611	615	620	630	632	634	640	650	651	
177	13.7																					
178																						
179																						
180																						
181																						
182																						
183																						
184																						
185																						
186																						
187																						
188															68.8				1.0			
189																						
190																						
191																						
192	6.5		4.0				.3															
193	8.0							8.6														
194	2.2							2.0														
195	6.0																					
196	.4																					
197																						
198																						
199																						
200																						
201																						
202																						
203																						
204																						
205																						
206										1.0												
207																						
208																						
209																						
210																						
211																						
212																						
213																						
214																						
215																						
216																						
217	6.9																				.4	.1

NOTE: Zones 218 to 224 are dummy nodes reserved for future assignment.

TOTAL:	84.3	.2	4.1	2.0	1.0	2.9	4.9	18.0	.6	9.8	.1	5.1	.2	.9	152.2	11.6	.5	28.9	17.7	15.3	.3
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Assign. Zone	653	655	656	660	661	662	670	671	673	674	675	676	680	681	685	690	691	695	710	720	740	
177																						
178																						
179																						
180																						
181																						
182																						
183																						
184																						
185																						
186																						
187																						
188																						
189																						
190																						
191																						
192																						.5
193																						
194																						
195																						
196																						
197																						
198																						
199																						
200																						
201																						
202																						
203						.1																
204																						
205																						
206																						
207																						
208																						
209																						
210																						
211																						
212																						
213																						
214																						
215																						
216						.5																
217																						

NOTE: Zones 218 to 224 are dummy nodes reserved for future assignment.

TOTAL:	.1	1.6	1.2	62.3	.4	1.6	210.6	108.9	.4	3.6	16.0	.9	105.5	.8	9.2	47.6	1.2	7.0	2.4	7.0	302.1
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APPENDIX EXHIBIT B (Continued)

Assign. Zone	745	760	761	810	820	824	830	850	851	910	930	940	950
177				111.1							22.5		
178				540.5							20.9		
179				953.7									
180				129.3									
181				322.6									
182				425.7									
183				84.3									
184				94.0									
185				112.9							85.9		
186				15.4							150.9		
187				57.8							35.8		
188				39.6							4.5	115.5	
189											76.7		
190											100.7	237.7	
191				172.3							30.1		
192											670.4	205.8	
193					3.0						50.4		4.0
194				750.4							51.4	23.4	
195											55.8		.5
196											145.9	3.2	
197				114.2							24.8		
198				298.7							14.0		
199											170.5	4.3	
200											33.1		
201											27.7		
202											8.0	.5	
203												5.1	
204											14.0	.8	
205											42.7	2.0	
206											103.4	3.4	
207				376.3								5.6	
208				564.2									
209				804.8									
210				246.0								6.0	
211				83.8								.8	
212				177.7			110.9						
213				772.2									
214				754.8									
215		23.4											
216										1.6		.3	
217						.4				1.2		.3	

NOTE: Zones 218 to 224 are dummy nodes reserved for future assignment.

TOTAL: .5 91.8 .8 25,124.7 3.3 .4 142.3 23.1 .2 4,304.5 2,358.6 135.9 10.2