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TOLEDO METROPOLITAN AREA COUNCIL OF GOVERNMENTS

A 911 EMERGENCY TELEPHONE NUMBER SYSTEM FOR THE TOLEDO AREA

September, 1969

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ACQUISITIONS

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TOLEDO METROPOLITAN AREA COUNCIL OF GOVERNMENTS
519 National Bank Building / Madison at Huron / Toledo, Ohio 43604 / Phone (419) 241-9155

September 30, 1969

Executive Committee
Toledo Metropolitan Area Council of Governments

Chairman Devine and Members of the Executive Committee:

Transmitted herewith is a staff report proposing the implementation of a single emergency telephone number system in the Toledo Area. The report has been prepared by David K. Bennett, under my general supervision.

This report supersedes an earlier report dated September 10, 1969, which was not distributed to the Committee. Last minute exchange modifications by the major telephone system involved in the study required that certain revisions be made to the report.

Because of the broad spectrum of issues which might be dealt with in any communications systems analysis, it is important to point out briefly what this report <u>is</u> and what it <u>is not</u>.

It is not

- a comprehensive emergency communications system study, or
- a study of emergency services delivery, or
- a detailed system design for implementation of an emergency number system.

It is

- a statement of present emergency telephone communications problems in the Toledo area, and
- a delineation of a general system to overcome some of these problems through use of a single emergency number.

The report is the culmination of a relatively brief study which coincided nicely with the Council's first attempt to develop a comprehensive regional law enforcement plan. Thus, a portion of the staff work was supported by funds received from the State of Ohio under the Omnibus Crime Control and Safe Streets Act of 1968.

Our staff has benefitted from the fine cooperation of Bell System and General System personnel. We also received assistance from numerous local government officials. We hope that our work will assist these officials in improving the quality of their emergency service programs.

Sincerely,

C. Thomas Rice

C. Thomas Rice
Executive Director

INTRODUCTION

During the past two years, we have witnessed the development of major public and private sector efforts to improve the law enforcement capabilities of our communities. A substantial portion of this effort has been directed specifically at police program improvement. This report deals with one of the major challenges confronting our police agencies--that is, how to speed communications from the point of need to the police. This need for a rapid response capability is not peculiar to the job of the police, of course. The same need exists when lives and property are threatened by fire, when accidental injuries occur, and in many other emergency situations.

The report, which is the result of several months of work with the two telephone companies serving the Toledo area, outlines a proposal to develop an emergency telephone system for police, fire, and ambulance services. The proposed system uses a single emergency number, 911. Such a system would replace or supplement substantially all of the emergency service numbers now in use in the proposed system area.

Leadership for development of the so-called "911 system" throughout the United States has come largely from the Federal Government. In 1967, the President's Commission on Law Enforcement and Administration of Justice, in its comprehensive report on the criminal justice needs of this country recommended:

> "Wherever practical, a single police telephone number should be established, at least within a metropolitan

area and eventually over the entire United States, comparable to the telephone company's long-distance information number."

Pursuant to this recommendation, and at the request of the Federal Communications Commission, acting upon Presidential suggestion, the Bell System quickly offered a single emergency number system to the communities it serves. Other companies have followed the lead of Bell, and the system is now being developed in fourteen metropolitan areas across the country. Ten individual cities have already implemented the system.

Late in 1968, the TMACOG Executive Committee established development of the 911 system in the Toledo area as one of its top five priority programs. In the Spring of 1968, the staff, working with Bell and General Telephone, developed the work program which has led to the preparation of this report.

The geographical area proposed for implementation of the 911 system embraces thirteen cities and villages and the whole or portions of thirteen adjoining townships. The report sets forth alternatives for design of a integrated 911 system, but does not include a detailed system cost analysis. A preliminary cost report, to be made available to all communities, has been prepared by the telephone companies. A subsequent staff report will also deal with cost factors.

THE PRESENT SYSTEM

The geographical area included in this study, as identified in Appendix B, contains 43 different police and fire emergency numbers as well as 28 other emergency numbers. Refer to Appendix A for a summary of police and fire emergency services by jurisdiction. Today, if a person did not know the appropriate emergency number in one of these jurisdictions, he would dial "O". The operator would either relay the call to the proper service agency or obtain the details from the caller and inform the service agency herself. This procedure relies heavily on personnel not necessarily trained to handle emergency communications and a telephone number which must handle many types of calls.

The multiplicity of emergency numbers in the Toledo area places a citizen needing emergency services at a disadvantage. He must be able to either remember the appropriate number or have it readily available. Panic could cause him to forget the number, and he may not be able to obtain it quickly. A person passing through the metropolitan area would ordinarily not know the correct emergency number. He would encounter the further problem of gaining access to it.

Any proposed system must of course address itself to a resolution of these problems. The next section of this report discusses the criteria which such a system should fulfill - criteria upon which the proposed 911 system is based.

CRITERIA FOR DESIGNING AN EMERGENCY NUMBER SYSTEM

The prime objective of an emergency telephone number system is to provide a rapid, efficient, and effective link between the citizen and the source of assistance. This must of course be accomplished within the constraints of technology and economic feasibility. Any system should meet the following criteria:

1. The number used should be one which is easily remembered. In addition, it should be short and easy to dial (in terms of placement of numbers on the dial) so that it can be readily dialed by the physically handicapped, a person in a state of panic, or under poor lighting conditions.
2. The system should be dedicated to the communication and proper routing of emergency calls. It would use a number separate from "O" and other telephone company numbers designed for various customer service purposes and separate from seven-digit service agency numbers used to handle routine and administrative calls.[1]

   When considering this criteria, it must be weighed in the total context of using a primary system as opposed to a secondary system. A primary system would be one in which there is only one emergency number. The seven-digit numbers would not be listed or identified as

1. Seven-digit numbers for emergency services, such as poison control and civil defense, would probably be retained.

emergency numbers. A <u>secondary</u> system would be one which supplements existing seven-digit numbers. In order to accurately determine the relative effectiveness of these two alternatives, it would be necessary to develop comparative data showing the number and types of calls and response time under the two systems. It would also be necessary to determine to what extent each system had reduced problems encountered under the former system.

These are the criteria which the 911 system attempts to satisfy. They are basic to an objective evaluation of its possible effectiveness. The 911 number <u>is</u> easy to remember, it <u>is</u> easy to dial, and it <u>is</u> designed to be strictly for emergency calls.

PROPOSED SYSTEM ALTERNATIVES

Given the effectiveness of the 911 system per se in meeting the criteria established for an emergency number system, it remains for local government decision-makers to determine precisely how to use the system in an interjurisdictional setting. This section describes those alternative system designs which might be adopted by communities in the Toledo area.

It is important to recognize that a certain degree of flexibility exists in adoption of a 911 system in this area. It is not necessary that one alternative be adopted for the entire area. A combination of alternatives would be feasible. On the other hand, it is not possible for every community to select a system of its own apart from other jurisdictions. There are certain restrictions imposed by telephone exchange configurations. However, it should be pointed out that no system alternative will in any way affect the emergency service agency of any jurisdiction without the prior authorization of that jurisdiction.

Alternative #1. Operator Intercept

This alternative requires "X" amount of telephone trunk lines to be designated as 911 lines instead of "O" lines. Emergency calls would come into the "O" line and would then be relayed to the appropriate emergency service agency. This system is similar to the present system for emergency calls coming over "O" lines. However, it is an improvement over the present system, since calls coming in on the separate 911 lines could be readily identified in advance as

emergency communications. The intercept system would offer the lowest cost to local governments and the telephone companies. This alternative is considered the least desirable, and is not recommended because of two serious drawbacks:

1. A serious time delay is effected when interjecting the telephone company operator as a reception point between the caller and the local government reception point.
2. Telephone operators cannot be expected to be fully trained and competent in handling emergency calls. Proper processing necessitates a higher level of training than is practical.
3. Reception point personnel do have a responsibility for determining that-in fact, an emergency situation exists. This places the reception point in a position of having a degree of tactical control over emergency service agencies. Such control cannot be delegated to any telephone company. It must be retained by the service agency.

Alternative #2. Decentralized Reception and Dispatching Points

Telephone hardware configuration would dictate that this alternative system be organized on a telephone exchange basis. From here the considerations get a little complicated and must be considered exchange by exchange. Common in most exchanges would be a central exchange reception point for all emergency calls. From this reception point, after obtaining all necessary information, the information would be relayed to the proper jurisdiction via one of several fast response communication links. These links could be in the form of

radiophones, automatic hot lines, electrowriters, teletype, etc.. Appendix C contains a series of detailed communication flow diagrams and should be consulted as the discussion proceeds through the description of this system and Alternatives #3 and #4.

Prior to discussing the detailed elements of this Alternative, it is important to point out certain last minute system modifications which must be taken into consideration in using Appendices B and C. These changes involve realignment of the five Bell System exchanges identified in Appendix B. The <u>five</u> Bell exchanges will be combined into <u>one</u> exchange during the next two years. Although this modification does not conceptually change Alternative #2, the reader must join the Holland, Whitehouse, Maumee, Perrysburg, and Toledo exchanges together into one exchange when analyzing Appendices B and C.

1. <u>Ohio Bell Exchange</u>. This exchange encompasses the largest geographical area in the proposed system. It covers all or a portion of eleven cities and villages: Toledo, Ottawa Hills, Oregon, Rossford, Harbor View, Northwood, Walbridge, Holland, Whitehouse, Maumee, and Perrysburg; and portions of eleven townships: Lake, Perrysburg, Sylvania, Spencer, Springfield, Harding, Monclova, Swanton, Providence, Middleton, and Washington (Lucas County) (refer to Appendices A and B). Theoretically, a call reception point to serve the

encompassed area could be located anywhere within the exchange.[2] However, for the sake of discussion it shall be assumed that the reception point is located in the City of Toledo police and fire communications complex. The reception point would answer the emergency call, obtain all necessary information, then relay it via one of the previously discussed communication links to the appropriate jurisdiction. Each jurisdiction would perform its own dispatching function. Dispatching of private ambulance services throughout the entire area might be accomplished centrally from the Toledo reception point. Communication links to serve townships and municipalities within the exchange are discussed in the following paragraphs.

In considering the township areas, it is found that most rely primarily on the Lucas or Wood County Sheriff in

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2. The reception point in any exchange area could be one of two alternatives: (1) a general government facility, or (2) a police and/or fire emergency point.

   A general government reception point could be a municipal or township telephone switchboard facility, in which case it would relay emergency calls; or one in which there are public safety communications personnel which would be specifically designated to handle emergency calls. In the latter case it would be envisioned as a joint police and fire reception point. Personnel would be trained in communications but would not necessarily be police officers or firemen.

   The police and/or fire emergency reception point would be one in which there would be trained police officers and/or firemen processing emergency calls.

responding to police emergency calls. The only exception is Sylvania Township, which relies primarily on its own township police department. (See Appendix A.) For fire emergency service, these same townships either maintain their own voluntary fire department or contract with an adjoining township or municipal fire department. From the reception point within this exchange the appropriate communication link would be established to relay emergency information to the appropriate police or fire agency.

In consideration of the Lost Peninsula area, the Monroe County, Michigan Sheriff responds to emergency police calls and the Erie Township Volunteer Fire Department responds to fire emergencies. Here again, appropriate communication links would have to be established.

In examining the municipalities within this exchange, it is found that nine are serviced by their own police departments. The other two, Holland and Harbor View, are serviced by the Lucas County Sheriff (see Appendix A). Ten maintain their own fire departments. The Village of Harbor View contracts with the City of Oregon for fire service. Communication links would have to be established accordingly.

2. Sylvania Exchange. This exchange includes the City of Sylvania, a portion of Toledo, a portion of Sylvania and Springfield Townships, and a portion of Whiteford Township in Michigan. The City of Sylvania and Sylvania Township police respond to emergency calls in both jurisdictions. Appropriate communication links would be made between these two agencies and the reception point as well as the Sylvania Township Fire Department and other emergency services. Because of the inclusion of Springfield Township, a communication link would be necessary to the Lucas County Sheriff and the Springfield Township Fire Department. In addition, communication links would be necessary to the Monroe County, Michigan Sheriff, who services Whiteford Township, and the Whiteford Township Fire Department.

3. Curtice Exchange. This includes the Village of Millbury and the eastern edge of Oregon. It also includes Jerusalem Township, a portion of Ottawa County, and Lake Township. The reception point could be located within the exchange boundaries or located outside in Toledo, Oregon, or even Port Clinton. Again, appropriate links would have to be established.

Alternative #3. Central Reception Point and Decentralized Dispatching Point

Rather than have a reception point located in each telephone exchange area, this alternative would provide a central telephone reception point with appropriate communication links to the respective jurisdictions. Calls would be channeled into one central answering point with communication links to each jurisdiction, which would perform the dispatching function.

The preceding section discussed the communication links or tie-ins predicated on a decentralized telephone reception point by telephone exchange area, which in turn represents a geographical area. Regardless of where the reception point is physically located, be it in the exchange area or in a centralized location as discussed below, the communication relationships and alternatives will remain the same. The same type of decisions will have to be made as to the appropriate tie-in. For example, in Alternative #3, some type of communication link should be maintained with the Monroe County Sheriff and the Whiteford Township Fire Department, etc., so as to facilitate the processing of emergency calls that may be received from that part of Michigan included in the Sylvania exchange. A similar link to the Ottawa County Sheriff would be required for that part of Ottawa County included in the Curtice exchange.

Alternative #4. Central Reception Point and Dispatching Center

This alternative consists of a centralized metropolitan dispatching center. This would be a telephone reception point with an integrated dispatching function. All telephone exchanges would be tied together at one central answering point with the dispatching function being physically located adjacent thereto.

PUBLIC EDUCATION AND PERSONNEL TRAINING

If a 911 system is to be effective and efficient, it is vital that a continuing comprehensive program of public education be instituted. Such a program should convey the objectives of the system and ground rules for its use in a simple and concise manner. Areas generating a high volume of emergency calls should receive special treatment. The strictly emergency nature of the system should be stressed. Resources of local governments, including the schools; the telephone companies; and the news media must all be part of such an effort.

Training of personnel manning emergency call reception points would be substantially unchanged. However, the interjurisdictional nature of all alternative systems would mean that special attention would have to be given to methods of determining response locations. Personnel would need to be familiar with locations in several jurisdictions. The problem of duplication of street names would have to be recognized and dealt with accordingly.

SUMMARY AND RECOMMENDATIONS

To summarize the three recommended alternative approaches to an areawide 911 emergency number system, they are, in the order in which they have been discussed in the report:

1. Decentralized reception and local dispatching, based on exchange configuration, with communication links to cover those areas which are within the telephone exchange limits but outside the boundaries of the political jurisdiction serving as the reception point (#2).
2. Central reception and local dispatching (#3).
3. Central reception and dispatching (#4).

The following action is recommended:

1. Approval of one or more of the recommended system alternatives by the Executive Committee of TMACOG in October. This would include the further recommendation that each jurisdiction within the proposed system indicate its intention to proceed with implementation of the system. Such intention would be communicated to the Executive Director of TMACOG.
2. Submission of a formal request to the two affected telephone companies for the performance of a complete cost and hardware design analysis. This analysis, which would be undertaken in cooperation with each

jurisdiction and TMACOG, should be completed by January 1, 1970. Implementation would then require 11 to 17 months.

3. Approval of the public education program principles outlined in this report. Funds to support TMACOG's role in the program would be included in the 1970 annual budget.

APPENDIX A

EMERGENCY SERVICE INVENTORY BY JURISDICTION

"X" Indicates Jurisdiction Provides Own Service

CITY OR VILLAGE SERVED	POLICE SERVICE	FIRE SERVICE
Lucas County		
Sylvania	X	Sylvania Township
Toledo	X	X
Ottawa Hills	X	X
Oregon	X	X
Harbor View	County	Oregon
Holland	County	X
Whitehouse	X	X
Maumee	X	X
Ottawa County		
Curtice	X	X
Williston	X	X
Wood County		
Rossford	X	X
Northwood	X	X
Walbridge	X	X
Perrysburg	X	X
Millbury	County	X
TOWNSHIP SERVED		
Lucas County		
Sylvania	X	X
Spencer	County	X
Harding	County	X
Springfield	County	X
Monclova	County	X
Swanton	County	Whitehouse
Waterville	County	Whitehouse & Waterville
Providence	County	Neopolis
Jerusalem	County	X
Washington	County	X
Ottawa County		
Allen Township	County	X
Wood County		
Perrysburg	County	Walbridge & Millbury
Lake	County	X
Middleton	County	X

POLICE & FIRE NUMBERS	
Fire	26
Police	17
Total	43

OTHER EMERGENCY NUMBERS	
Ambulance (Private)	23
State Highway Patrol	2
Coast Guard-Search & Rescue	1
Poison Control Center	1
Suicide Prevention Service	1
Total	28

APPENDIX B

TELEPHONE EXCHANGES WITHIN PROPOSED SYSTEM

OHIO BELL TELEPHONE COMPANY

1. Toledo Exchange

   Toledo
   Ottawa Hills
   Oregon
   Rossford
   Harbor View
   Northwood
   Walbridge
   Lake Township (northern section)
   Perrysburg Township (northeastern section)
   Sylvania Township (southeastern corner)

2. Holland Exchange

   Holland
   Toledo (small western section)
   Spencer Township (eastern half section)
   Springfield Township (most of township except for small northwestern section)
   Harding Township (small southeast corner)
   Monclova Township (northern section)

3. Whitehouse Exchange

   Whitehouse
   Waterville Township (eastern half section)
   Monclova Township (southwestern corner)
   Swanton Township (small southeastern part)
   Providence Township (small northeastern section)

4. Maumee Exchange

   Maumee
   Toledo (small southern part)
   Monclova Township (central section)

5. Perrysburg Exchange

   Perrysburg Township (includes 2/3 of area)
   Perrysburg
   Middleton Township (northeastern corner)

GENERAL TELEPHONE COMPANY OF OHIO

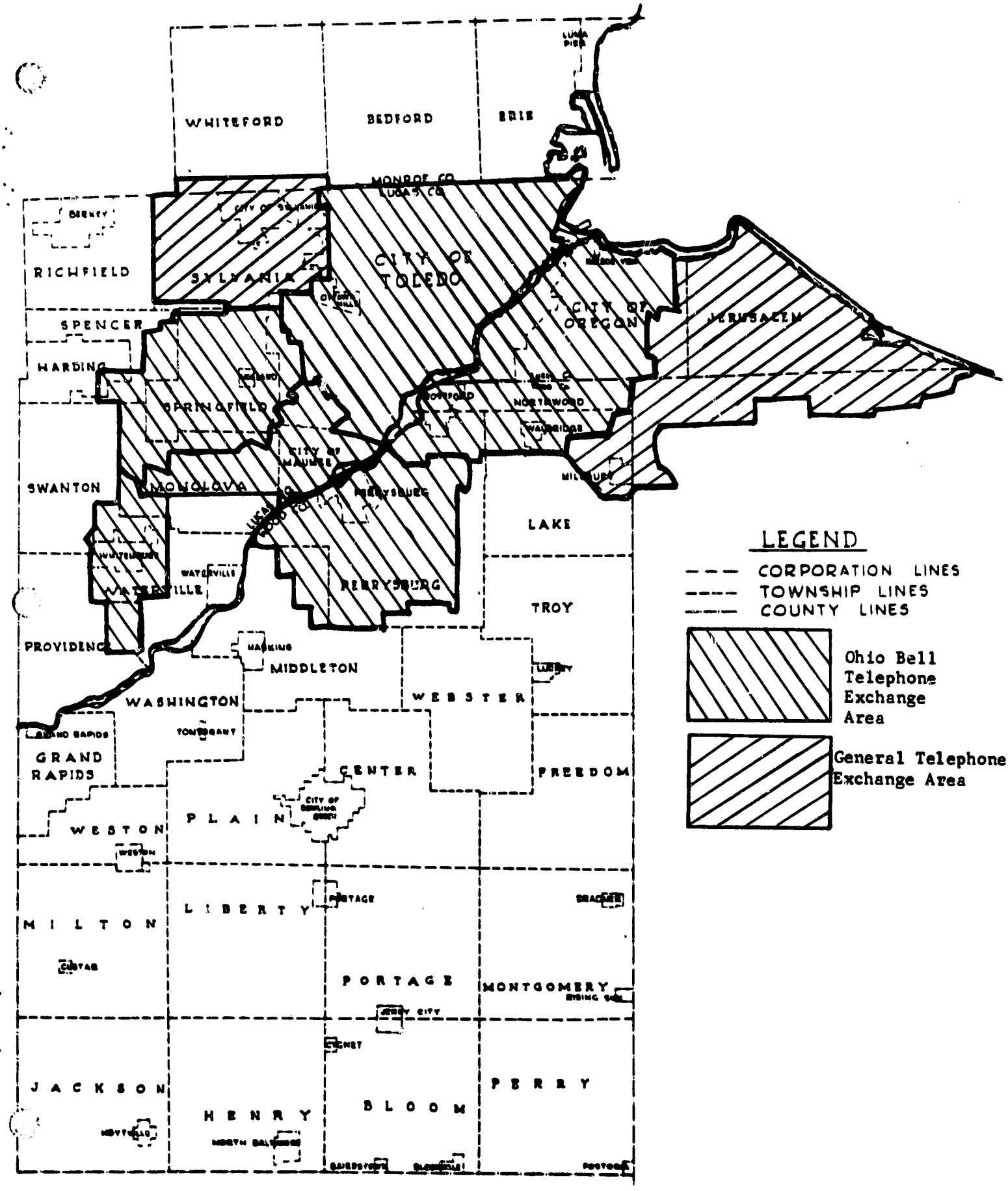
1. Sylvania Exchange

   Sylvania
   Toledo (small northwestern part)
   Sylvania Township (includes most of township except for small southwestern corner)

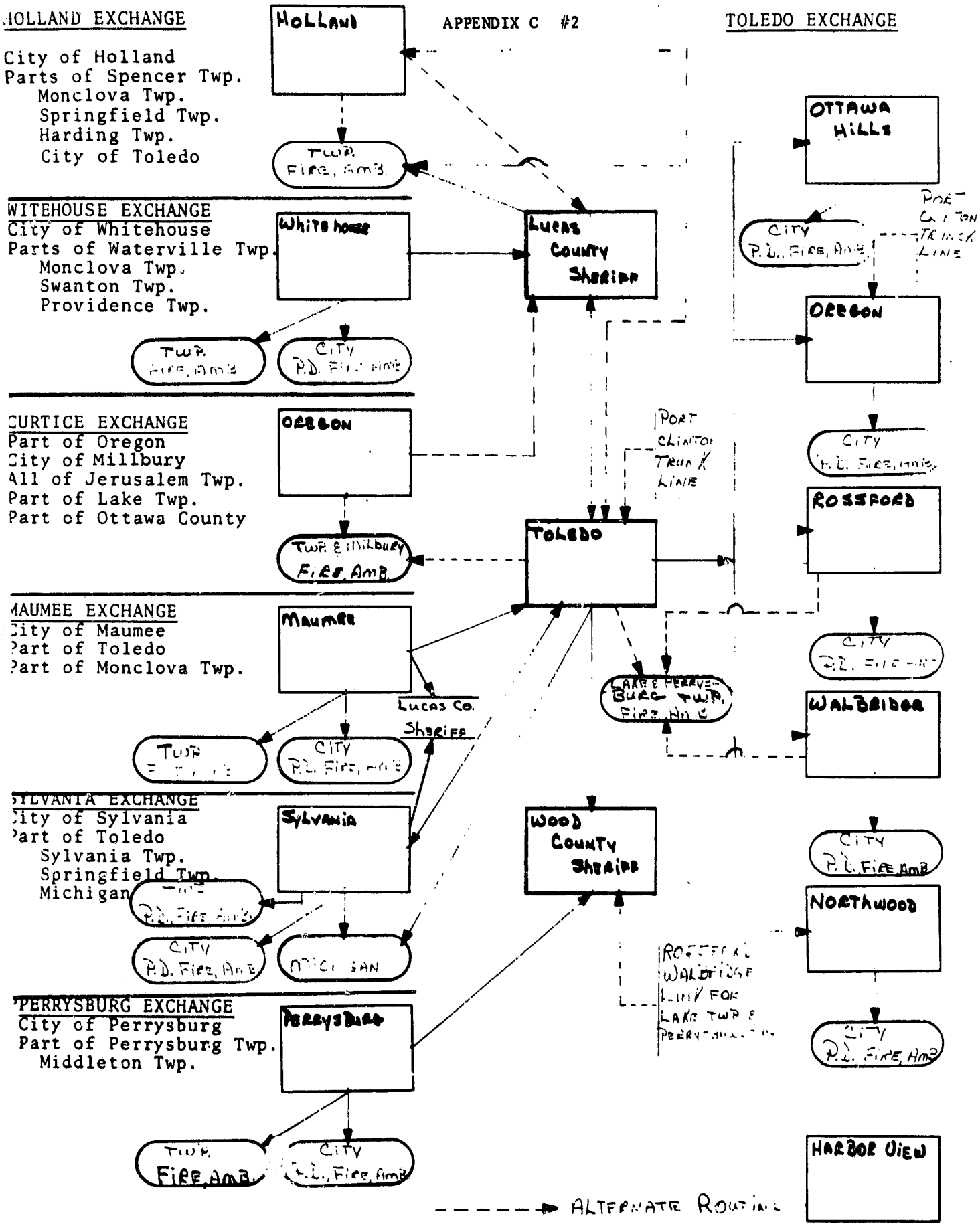
2. Curtice Exchange

   Oregon (small eastern section)
   Millbury
   Jerusalem Township
   Lake Township (northeastern corner)
   Ottawa County (northwestern corner)

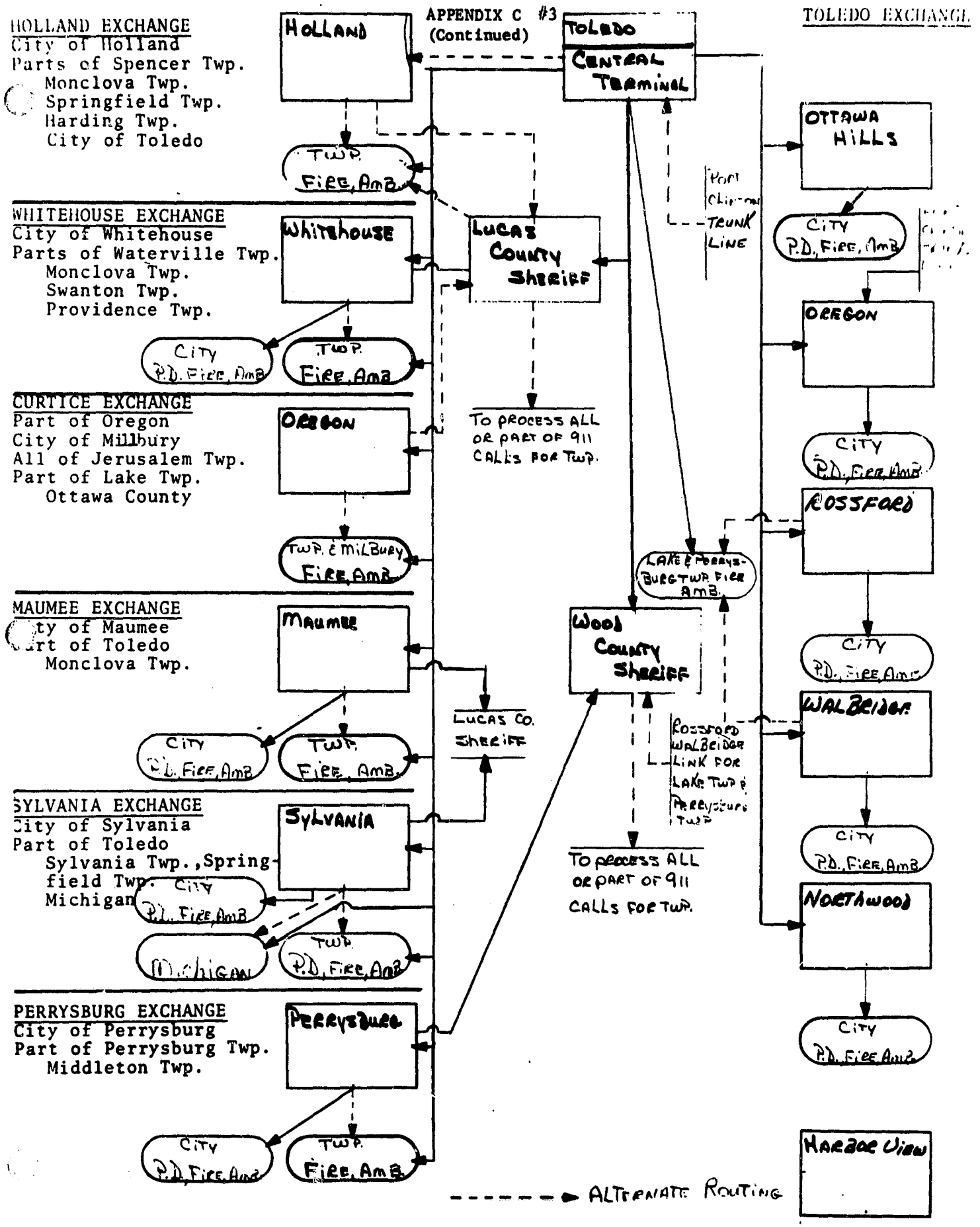
APPENDIX B (continued)



APPENDIX C #2


HOLLAND EXCHANGE
City of Holland
Parts of Spencer Twp.
Monclova Twp.
Springfield Twp.
Harding Twp.
City of Toledo
HOLLAND
TWP. FIRE, AMB.
WHITEHOUSE EXCHANGE
City of Whitehouse
Parts of Waterville Twp.
Monclova Twp.
Swanton Twp.
Providence Twp.
WHITEHOUSE
TWP. FIRE, AMB.
CITY P.D. FIRE, AMB.
CURTICE EXCHANGE
Part of Oregon
City of Millbury
All of Jerusalem Twp.
Part of Lake Twp.
Part of Ottawa County
OREGON
TWP. & MILLBURY FIRE, AMB.
MAUMEE EXCHANGE
City of Maumee
Part of Toledo
Part of Monclova Twp.
MAUMEE
TWP.
CITY P.D. FIRE, AMB.
SYLVANIA EXCHANGE
City of Sylvania
Part of Toledo
Sylvania Twp.
Springfield Twp.
Michigan
SYLVANIA
CITY P.D. FIRE, AMB.
MICHIGAN
PERRYSBURG EXCHANGE
City of Perrysburg
Part of Perrysburg Twp.
Middleton Twp.
PERRYSBURG
TWP. FIRE, AMB.
CITY P.D. FIRE, AMB.
LUCAS COUNTY SHERIFF
LUCAS CO. SHERIFF
TOLEDO
PORT CLINTON TRUNK LINE
LAKE & PERRYSBURG TWP. FIRE, AMB.
WOOD COUNTY SHERIFF
TOLEDO EXCHANGE
OTTAWA HILLS
CITY P.D., FIRE, AMB.
PORT CLINTON TRUNK LINE
OREGON
CITY P.D. FIRE, AMB.
ROSSFORD
CITY P.D. FIRE, AMB.
WALBRIDGE
CITY P.D. FIRE, AMB.
NORTHWOOD
CITY P.D. FIRE, AMB.
HARBOR VIEW
ALTERNATE ROUTING

APPENDIX C #3
(Continued)



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APPENDIX C #4
(Continued)

HOLLAND EXCHANGE
City of Holland
Parts of Spencer Twp.
Monclova Twp.
Springfield Twp.
Harding Twp.

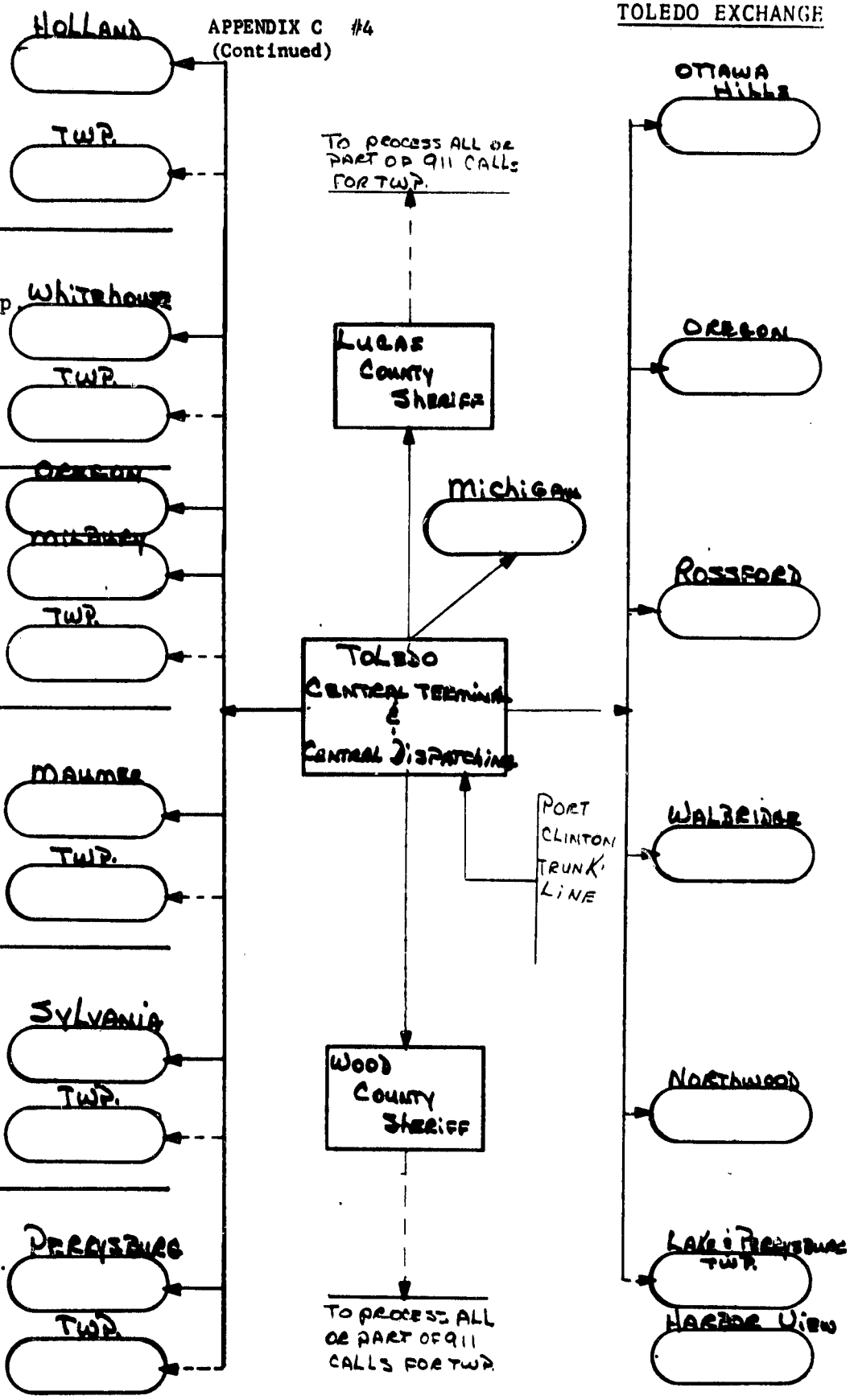
WHITEHOUSE EXCHANGE
City of Whitehouse
Parts of Waterville Twp.
Monclova Twp.
Swanton Twp.
Providence Twp.

CURTICE EXCHANGE
Part of Oregon
City of Millbury
All of Jerusalem Twp.
Part of Lake Twp.
Ottawa County

MAUMEE EXCHANGE
City of Maumee
Part of Toledo
Monclova Twp.

SYLVANIA EXCHANGE
City of Sylvania
Part of Toledo
Sylvania Twp.
Springfield Twp.
Michigan

PERRYSBURG EXCHANGE
City of Perrysburg
Part of Perrysburg Twp.
Middleton Twp.



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