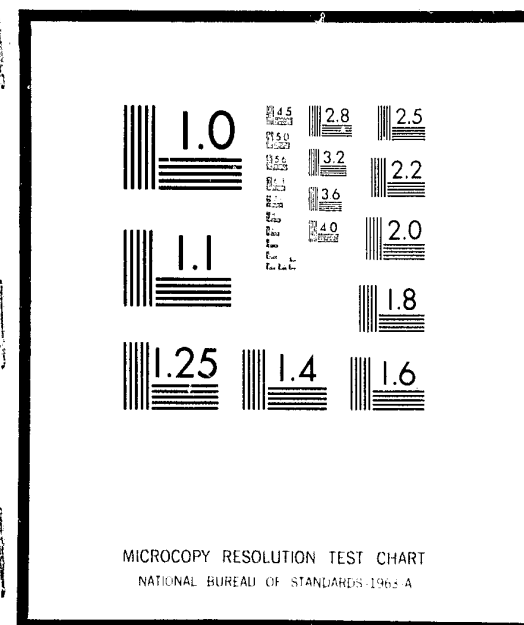


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U.S. DEPARTMENT OF JUSTICE
LAW ENFORCEMENT ASSISTANCE ADMINISTRATION
NATIONAL CRIMINAL JUSTICE REFERENCE SERVICE
WASHINGTON, D.C. 20531

12/14/76

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LAW ENFORCEMENT ASSISTANCE ADMINISTRATION (LEAA) POLICE TECHNICAL ASSISTANCE REPORT

SUBJECT: An Evaluation of Organizational Structure and Manpower Utilization.

PROJECT NUMBER: 76-099-064

FOR: Marysville, Michigan Police Department
Population: 5,610
Police Strength:
 Sworn 10
 Civilian 1
 Total 11
Square Mile Area: 6.75

CONTRACTOR: Public Administration Service
1776 Massachusetts Avenue, N.W.
Washington, D.C. 20036

CONSULTANT: David L. Norrgard

CONTRACT NUMBER: J-LEAA-002-76

DATE: June 29, 1976

35196

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SECTION I. INTRODUCTION

Situated along the St. Clair River, an international boundary line, and across the river from Sarnia, Canada, Marysville, Michigan is an established community with a solid potential for future growth and development. The 1870 census total was 5,610 but local estimates place the current population total closer to 7,000, with the strong likelihood that approximately 1990, the City will comprise nearly 15,000 residents.

One advantage Marysville has over its immediate neighbor to the north, the City of Port Huron, is an abundance of area suitable for development. Marysville consists of some seven square miles with less than one-half having been subdivided. Additionally, the City has some significant economic assets -- two large energy producing plants (one gas and the other electric), a large Chrysler Motors marine products plant, a processing and mining plant of the Morton Salt Company and a number of other smaller but viable manufacturing and processing plants.

This growth potential has prompted city officials to question whether the Police Department is organized and equipped to meet its current as well as future service demands. This study is an outgrowth of that concern, focusing principally upon manpower utilization and deployment practices of the department.

Survey Method

The local information which serves as the basis of this report was gathered by the consultant through on-site conversations with the individuals listed below. Interviews were confidential and no person is quoted or otherwise identified in this report. Individuals contacted in the course of the study include the following:

Fred Brougham
Police Officer, Police Department
Marysville, Michigan

Leonard J. Farrer
Chief of Police
Marysville, Michigan

Ernest Fisher
City Manager
Marysville, Michigan

Richard Hinkley
Sergeant, Police Department
Marysville, Michigan

Thelma Maynard
Clerk, Police Department
Marysville, Michigan

The report itself is in three parts -- a brief overview of the Marysville Police Department; an analysis of current manpower deployment and utilization practices coupled with a recommendation for modification; and, finally, a few brief comments on organization and records management.

Survey Purpose

The City of Marysville requested that an appraisal of its manpower utilization and deployment practices be made and that suggestions be offered for modification if any changes appeared appropriate. Financial support for this brief survey was made available by the Law Enforcement Assistance Administration, U.S. Department of Justice.

SECTION II. OVERVIEW OF THE POLICE DEPARTMENT

Ten police officers service the City of Marysville, one chief, one captain, three sergeants and five police officers. One civilian, a clerk, provides clerical support service to the Department. Dispatching is handled by the St. Clair County Sheriff's Department; although from time to time the Marysville Fire Department and Police Department will itself receive telephone requests for assistance during regular office hours. As a rule, however, the Sheriff's Department receives the majority of all emergency service requests in the Marysville area and dispatches all calls, even those going to the fire department. A 911 emergency telephone system will be implemented in the Fall, which should reduce the number of calls going to either the fire or the police department directly.

The department works three basic shifts with weekly rotation. This method of scheduling is best described as a platoon system. It features one-fourth ($\frac{1}{4}$) of the personnel always on days off.

The current distribution of manpower is as follows:

	<u>1st Watch</u> <u>7:00 to 3:00 pm</u>	<u>2nd Watch</u> <u>3:00pm to 11:00pm</u>	<u>3rd Watch</u> <u>11:00pm to 7:00am</u>
Monday	3	2	2
Tuesday	3	2	2
Wednesday	2	2	2
Thursday	2	2	2
Friday	3	2	2
Saturday	2	2	2
Sunday	2	2	2

Additionally, one officer works a swing shift, i.e., from 8:00 p.m. to 4:00 a.m. Wednesday through Sunday so that on most nights three police officers are on duty. During those periods one two-person unit and one-person unit are used for patrol. Otherwise, one-person units are used.

The schedule above includes the Chief of Police who regularly works first watch and does not rotate with the other personnel. The civilian staff member works the 7:00 a.m. to 3:00 p.m. schedule as well. After 3:00 p.m., Monday through Friday, the Police Facility is closed.

A State Police Post is located in the City of St. Clair, some ten or so miles south of Marysville along the St. Clair River. This agency provides back-up assistance from time-to-time and has a well trained investigators, a mobile crime laboratory and related specialized equipment available to assist the Marysville Police Department as required. Similarly, the St. Clair County Sheriff's Department occasionally provides assistance to the Marysville Department. More frequently however it is the Marysville agency that helps out the Sheriff's Department in the unincorporated areas close to the City limits.

As noted above the Chief of Police always works the 1st watch and during that period frequently functions as a patrol officer. Administrative duties do occupy a portion of the chief's time, but supervision is perhaps the most important task of the Chief. One clerical task which the Chief handles on a continuing basis is the processing of permits for possession and the carrying of hand-guns. A registration requirement of the State of Michigan requires that the Chief must sign these permits. As a consequence the Chief generally handles the entire registration process personally. The Captain does not appear to have any administrative duties but rather functions as a senior police officer for a particular platoon; a role very similar to that of a sergeant.

General budget information pertaining to the Police Department is depicted in Table 1. As would be expected, between 80 and 85 per cent of the departmental budget goes for personal services. There has been an overall increase of nearly 70 per cent in the police budget from 1971-72 to the current proposed budget. But in actuality there has been little change in the budget itself. That is, priorities have remained the same, the staff size has remained the same and so forth. The budget's growth has not

resulted from a net change in positions, but rather reflects salary adjustments and similar factors.

TABLE 1
GENERAL POLICE BUDGET
MARYSVILLE, MICHIGAN, 1971-72/1976-77

	<u>1971-72</u>	<u>%</u>	<u>1972-73</u>	<u>%</u>	<u>1973-74</u>	<u>%</u>
Police Salaries	\$130,000	86.3	\$145,500	88.6	\$165,000	87.0
Operating Expenses ⁽¹⁾	6,150	4.1	6,500	4.0	7,900	4.2
Building & Equipment Maintenance ⁽²⁾	3,050	2.0	3,150	1.9	4,200	2.2
Equipment Purchase	7,700	5.1	4,600	2.8	7,800	4.1
Other ⁽³⁾	<u>3,750</u>	<u>2.5</u>	<u>4,550</u>	<u>2.8</u>	<u>4,550</u>	<u>2.4</u>
TOTALS	<u>\$150,650</u>	<u>100.0</u>	<u>\$164,300</u>	<u>100.1</u>	<u>\$189,450</u>	<u>99.9</u>

(1) Includes budget items: "gasoline and oil," "operating supplies" and "uniform allowance."

(2) Includes budget items: "lights," "heat," "building maintenance" and "equipment maintenance."

(3) Includes budget items: "special police," "jury and witness fees" and "conferences and workshops."

TABLE 1
(Continued)

GENERAL POLICE BUDGET
MARYSVILLE, MICHIGAN, 1971-72/1976-77

	<u>1974-75</u>	<u>%</u>	<u>1975-76</u>	<u>%</u>	<u>1976-77*</u>	<u>%</u>
Police Salaries	\$179,674	83.7	\$186,703	84.1	\$205,916	81.2
Operating Expenses ⁽¹⁾	11,900	5.5	11,250	5.1	12,750	5.0
Building & Equipment Maintenance ⁽²⁾	5,250	2.4	5,500	2.5	6,900	2.7
Equipment Purchase	13,212	6.2	13,525	6.1	22,324	8.8
Other ⁽³⁾	<u>4,650</u>	<u>2.2</u>	<u>5,050</u>	<u>2.3</u>	<u>5,778</u>	<u>2.2</u>
TOTALS	<u>\$214,686</u>	<u>100.0</u>	<u>\$222,028</u>	<u>100.1</u>	<u>\$253,668</u>	<u>99.9</u>

* Proposed Budget.

(1) Includes budget items: "gasoline and oil," "operating supplies" and "uniform allowance."

(2) Includes budget items: "lights," "heat," "building maintenance" and "equipment maintenance."

(3) Includes budget items: "special police," "jury and witness fees" and "conferences and workshops."

SECTION III. MANPOWER UTILIZATION AND DEPLOYMENT

Proper allocation of resources is the key concept in planning. A small police agency has little margin for error because of the limited number of sworn police officers available to it. Careful attention must be paid to manpower deployment and utilization practices, perhaps even more so than with larger agencies where an occasional lapse in sound manpower utilization planning is less likely to be as critical as it would be in a smaller department.

For years police administrators and public officials have relied upon such measures as crime rates, the incidence of traffic-related problems and police-to-population ratios to justify police staffing levels. While such measures undeniably bear upon the question of police performance, there are no universal standards for determining police manpower requirements. Rather, the appropriate level of manpower needed for a particular community can only be determined by a careful assessment of type and frequency of requests for police assistance within that community.

Incident Categories

In order to determine manpower requirements it is first necessary to know by several categories the types of incidents that occur within the area served. Included would be both requests for service and those which the officer initiates. Finally, it is important to know what portion of the responding officer's time is spent handling each particular incident. Since the nature of incidents that a department handles varies widely, it is useful to develop several general categories to illustrate the types of incidents typically handled by the department. To facilitate this task a stratified sample was selected with equal distribution among the days of the week spread over a year's time beginning with June 1, 1975 and ending May 31, 1976. The information was taken from a department's daily complaint log

and categorized into the following four types:

Type I. ----- Reported crimes including burglarly, larceny, assaults, rape, robbery, motor vehicle theft and homicide, etc.

Type II. ---- Traffic incidents including property damage accidents, moving violations, personal injury accidents, parking violations, driving while intoxicated, etc.

Type III. --- Service, including found property, missing persons, assistance to other police agencies, suspicious circumstances, disturbances, animals complaints, assisting fire department, miscellaneous complaints, etc.

Type IV. --- Other, including hand-gun registration, liquor license inspections, local ordinances.

In the period surveyed (June 1, 1975 to May 31, 1976) the Marysville Police Department responded to 314 police incidents. This sample represents approximately ten per cent of the total department work load as reflected in the daily complaint log. These incidents were distributed among the four types as follows:

<u>Type</u>	<u>Number</u>	<u>Per Cent</u>
I	51	16.2
II	71	22.6
III	163	51.9
IV	29	9.2
Total	<u>314</u>	<u>99.9</u>

The next step in determining appropriate staffing levels is to determine the total number of minutes, on the average, it takes for a responding officer to complete field action with each incident type. Unfortunately, no

such data is available for the Marysville Police Department as the central dispatcher in the Sheriff's Department does not maintain such records. Further, an examination of the daily officer logs kept in Marysville reveals that time-incident data is not recorded there either, although there are provisions for such information on the form. Modifications should be made in the reporting system which will enable this information to be captured. More on this point will be offered latter.

Based upon studies in other jurisdictions however, it can be assumed that more serious police incidents (specifically those included in Type I) will require between one and one-half and two times as many minutes to complete as will the non-serious incidents (Type IV). Accordingly, it will be assumed that it takes 60 minutes to handle Type I incidents, 30 minutes to handle Type IV incidents and 45 minutes to handle Type II and III incidents. Using these assumptions, the following calculations are made:

<u>Type</u>	<u>Number</u>	<u>Average Time</u>	<u>Total Time</u>	
			<u>Minutes</u>	<u>Hours</u>
I	51	60	3060	51.0
II	71	45	3195	53.25
III	163	45	7335	122.25
IV	29	30	870	14.5
Total	314		14,460	241

Patrol activity encompasses more than simply the time required to respond to and complete incidents. Administrative duties such as station service, report writing, court appearances and time for personal necessities must also be accounted for in determining time spent on individual assignments. Additionally, time must be provided for preventive patrol. Consequently, two additional time factors, each equal in time value to the time required to respond to and complete service incidents, are employed. Thus, total patrol activity is considered to consist of three separate elements of equal time value: completing

service incidents, administrative needs and preventive patrol. By employing this formula it is possible to determine total patrol requirements expressed in terms of man-hours as follows:

	<u>Minutes</u>	<u>Hours</u>
Service Requirements	14,460	241
Administrative Needs	14,460	241
Preventive Patrol	<u>14,460</u>	<u>241</u>
Total	<u>43,380</u>	<u>723</u>

Manpower Availability

The next step is to determine actual manpower availability. This is accomplished by subtracting the number of work hours absent from duty for each police officer in the department. An examination of the leave records of the individual officers of the Marysville Police Department during the past year shows the following average usage:

Days Off	832 hours per year
Sick Leave	96 hours per year
Vacation Leave	206 hours per year
On-Duty Training	<u>20 hours per year</u>
Total	<u>1,154 hours per year</u>

The total time unavailable for work must then be subtracted from the theoretical number of hours to fill one position a year: 8 hours x 365 days = 2,920 hours. This is then used to determine the availability factor:

$$2,920 \text{ hours} - 1,154 \text{ hours} = \underline{1,776 \text{ hours}}$$

$$\frac{2,920 \text{ hours}}{1,776 \text{ hours}} = 1.7$$

This means that 1.7 police officers are required to staff one position

in the Marysville Police Department on an annual basis. This figure (1.7) is then used to determine actual manpower requirements.

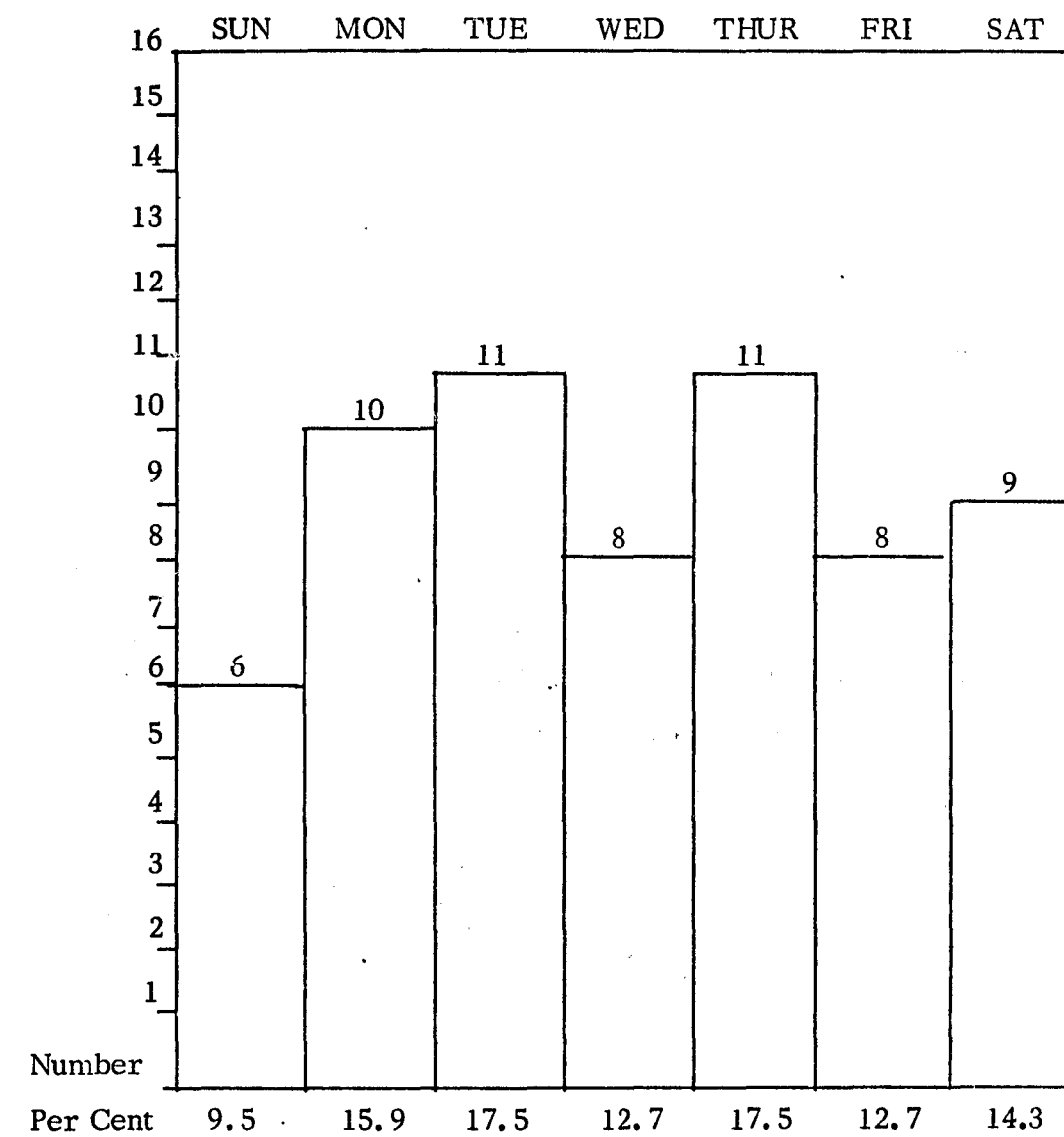
In order to assess the adequacy of existing scheduling practices, incidents should be evaluated by time and day of week to note particular patterns and periods of need. Figures 1 and 2 provide the basic support data based upon a sampling of the Marysville department's records. As can be seen, the department responds to an average on nine incidents daily with peak days being Tuesday and Thursday and peak hours occurring during the first watch. The following overall pattern emerges:

<u>Time Period</u>	<u>Average Incidents</u>	<u>Man-Hours Required*</u>
0000-0200	0.7	1.6
0201-0400	0.5	1.2
0401-0600	0.2	0.5
0601-0800	0.2	0.5
0801-1000	1.1	2.5
1001-1200	1.0	2.3
1201-1400	1.0	2.3
1401-1600	1.1	2.5
1601-1800	0.8	1.8
1801-2000	0.9	2.1
2001-2200	1.0	2.3
2201-2400	0.4	0.9
Total	<u>8.9</u>	<u>20.5</u>

*"Man-Hours Required" is determined by multiplying the average number of incidents by the average amount of time spent in handling an incident.

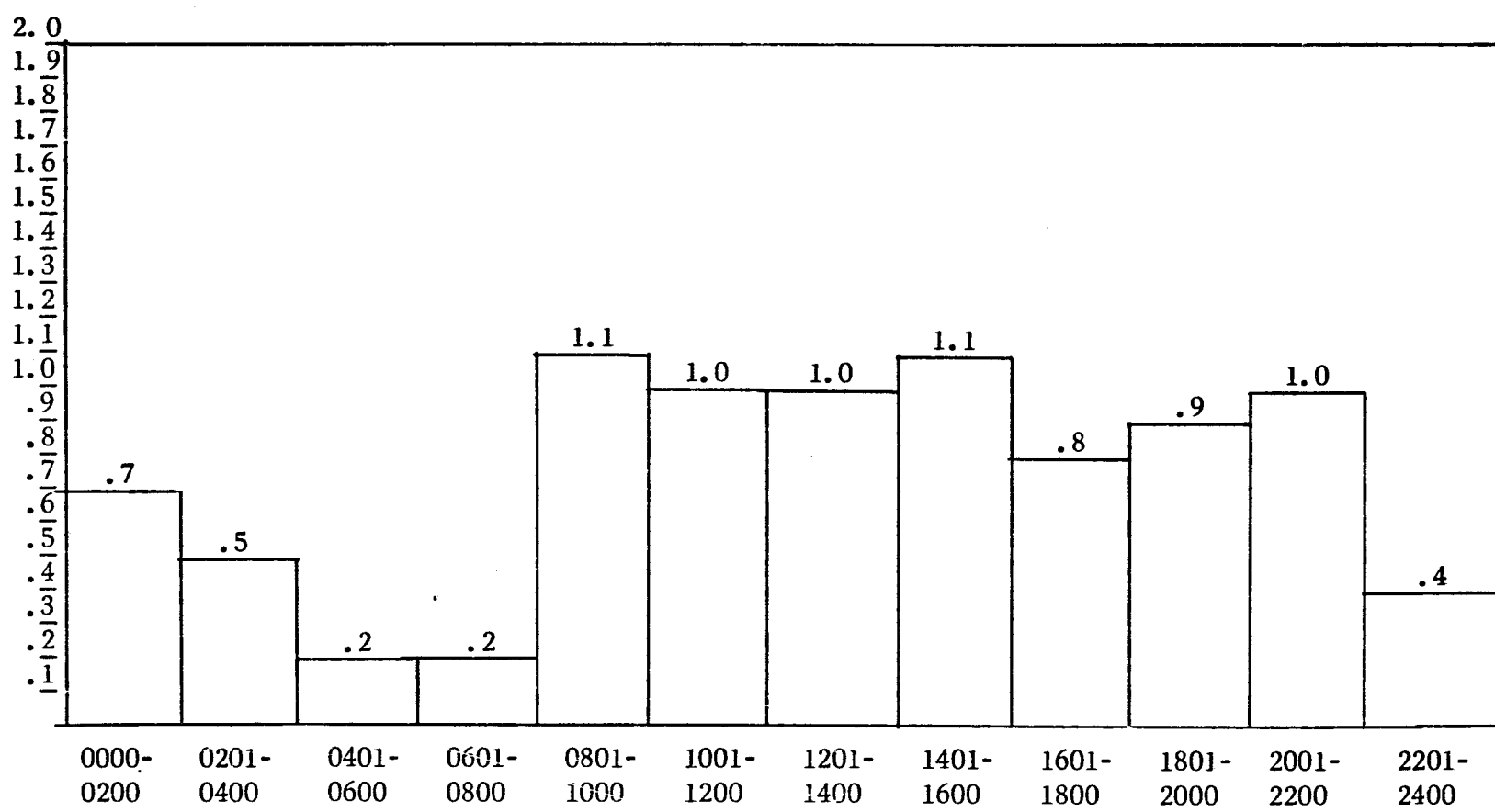
FIGURE 1

AVERAGE CALLS FOR SERVICE BY DAY OF WEEK
CITY OF MARYSVILLE, MICHIGAN
POLICE DEPARTMENT



AVERAGE CALLS FOR SERVICE BY TIME OF DAY
IN TWO HOUR INCREMENTS
MARYSVILLE, MICHIGAN POLICE DEPARTMENT

FIGURE 2



In an average 24-hour period the Marysville Police Department will handle 8.9 incidents requiring 20.5 man-hours to complete. This figure (20.5) is then multiplied by the availability factor of 1.7 to determine actual manpower requirements (34.85) and then divided by 8.0 since each police officer works an eight (8) hour day. The resulting figure, 4.3, is then rounded to 5.0, indicating that five police officers would be required, 24 hours a day, to handle all calls for services for the Marysville Police Department.

This analysis can be checked in the following fashion:

- 1. Estimated incidents annually (314 x 10.4) = 3,266
(10.4 is the sample percentage used in reviewing incident data)
- 2. Time required (2.3 hours per incident) = 7,510
- 3. Annual available hours per officer = 1,766
- 4. $\frac{7,510}{1,766} = 4.25$ police officers

Assuming five officers are required for patrol duty, it is necessary to assign them to schedules consistent with fluctuations in activity levels. Theoretically, one-quarter of the total patrol complement is available for duty each eight-hour day with one-quarter on days off. This means 1.25 police officers per eight hour period. Such an arrangement is not consistent with incident levels, however. Based upon the distribution of incidents shown above, the following manpower allocation would be appropriate:

<u>Time Period</u>	<u>Per Cent Incidents</u>	<u>Patrol Level</u>	<u>Per Cent</u>
0000-0800	18	1	20
0800-1600	47	2	40
1600-2400	35	1	20

As can be seen, it is not possible to allocate the personal strictly by

the formula presented, principally because it is essential that at least one police officer be on duty at all times even though in the period between 0400 and 0800, the department receives virtually no requests for assistance (See Figure 2 for details).

In summary, then, it is suggested that Marysville requires a police patrol strength of five officers as based upon a review of the types of tasks the personnel are now performing. As activity levels increase, so too will the need for more sworn police personnel. It should be noted also that the chief of police position is in addition to the five patrol officers with the thrust of that position being one of day-to-day supervision. Administrative duties in a department of this size are not of major concern particularly since dispatching and other specialized services are available from other agencies and require little management attention.

SECTION IV. FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

A few general observations can be offered regarding departmental practices and policies which relate to the principal findings of this report.

First, there seems to be little need for a rank structure within the department, other than the position police officer and Chief of Police. The captain and the three sergeants currently perform the same duties, i.e., serving as senior officer on duty during a shift and as a consequence there is little difference in what they do other than, perhaps, an occasional special record-keeping assignment by the captain. None functions as a supervisor. The sergeants and captain neither assign or review work nor do they discipline employees or are they otherwise engaged in traditional supervisory tasks. In the proposed six person police department, there would be even less need to have such positions.

Second, Police Department office hours should be changed so that as much as possible it is open the same hours as other city offices. Some transactions can only be accomplished through personal visits (e.g. securing copies of accident reports, hand-gun registration, etc.), therefore, there should be some continuity between office hours of all city departments so that a citizen may readily determine when city offices, including the police department, are open.

Third, better use must be made of the officer's daily logs and related management information tools. Most officer's daily logs are filled out in a casual manner and it is not possible, therefore, to reconstruct with any accuracy the activities of a given officer. Of particular importance in determining manpower needs is information regarding the time spent in processing particular types of incidents. This information could be recorded on the daily log but an even more adequate solution would be for the central dispatcher to assign a case number, record the time a request for service was received, note the time an officer was dispatched to the scene, record the time an officer responded to the incident and the time the officer was

again available for a new assignment. All this information can (and should be) logged by the dispatcher and provided to the Marysville Police Department on a regular basis. Requiring all case numbers to be assigned by the dispatcher would provide a needed element of control to the system as well.

Fourth, more attention should be given to supervisory tasks, particularly in follow-up work on continuing investigations. A review of the daily complaint log suggests that officers tend to follow-up on case work on an independent basis with little overall coordination. Perhaps this is an area where some joint efforts could be considered with the St. Clair County Sheriff's Department.

Finally, the overall manpower reduction implied by the principal finding of this study should be implemented carefully, and only through natural attrition. It is not recommended that individuals be dismissed or that layoffs be instituted merely to achieve a reduction in force. This will allow time, too, for the City of Marysville to conduct a more comprehensive study itself using the procedures suggested here without the need to have to rely principally upon sample survey information.

END