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# SURVEY OF ATTITUDES ON FLOODING
# IN THE
# LOWER SADDLE RIVER BASIN, NEW JERSEY

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Bergen County Board of Chosen Freeholders

and

Passaic River Coalition

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# FOREWORD

Flooding has plagued mankind since the beginnings of agriculture and permanent settlements. Although referred to "acts of God", man has manipulated his environment to alter the pathways of rivers and streams and thus increased the flooding impact.

The Passaic River Coalition was first organized because of the concern of many citizens on flooding problems in the Passaic River Basin and their opposition to large structural solutions.

During the ten years that the PRC has been working within this watershed, assumptions were made regarding the attitudes of the public regarding the causes of flooding, methods for dealing with floods, and those institutions and agencies responsible for dealing with them. The survey undertaken through the Bergen County Board of Chosen Freeholders' CETA program reinforced certain assumptions and presented a uniquely well informed response. It provides decision-makers with guidance on the views of the people of Lodi and the surrounding communities, which to us at the PRC, showed an understanding of the many issues beyond our expectations -- the response rate was high from all sectors surveyed and the comments were extensive. The public involved in the survey showed they care about the people in the flood-prone area and about the river itself.

The Passaic River Coalition is pleased to have guided Robert Conte in this research effort and considers this report to be an important document in obtaining a better understanding of the wishes of the people of the Saddle River Basin, a major tributary of the Passaic River Basin.

Ella F. Filippone
Executive Administrator

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D. BENNETT MAZUR
Deputy Director

The Bergen County Board of Chosen Freeholders announces the publication of a "Survey of Attitudes on Flooding in the Lower Saddle River Basin, New Jersey".

The report, prepared by the Passaic River Coalition, the watershed association of the Passaic River Basin, was developed from mailed questionnaires to 541 households in the Lower Saddle River Basin. Residents in the municipalities of Fair Lawn, Garfield, Hackensack, Hasbrouck Heights, Lodi, Maywood, Saddle Brook, Wallington, and Wood-Ridge participated in the survey.

The survey area, centered on Lodi, has experienced numerous severe floods over the last few years. The attitudes of the public as to what has caused these floods and how to deal with them in the future was considered an essential element in any basin flood control plan for the Saddle River.

The people in all municipalities surveyed have similar opinions as to the most important ways to reduce flooding. The first choice is to deepen the river by dredging the sediment that has been deposited and clear the river of the garbage and trash that has been dumped. The purpose of these actions is to return the channel of the Saddle River to its former size so that the river can carry more water and, thus, reduce the level of flooding.

The second choice is to stop building in flood-prone areas. The problems of existing encroachments which interfere with the free flow of the Saddle River were mentioned over and over. Specific examples are the Jasontown Apartments in Wallington, the expansion of Felician College in Lodi, and the railroad trestle between Garfield and South Hackensack. Smaller encroachments by homeowners, business, and commercial activities were also blamed for the reduced capacity of the Saddle River channel.

The respondents identified the federal government to take the lead in implementing plans to reduce flooding. Most wanted all levels of government from the local to the federal to cooperate so that flood abatement could occur at the earliest time possible.

One pervasive opinion, however, was that nothing positive had ever been done to ease the flooding problem, and it was likely that nothing would be done in the future either. Such pessimism is characteristic of those who had had to deal with repeating floods with limited relief in the form of aid from the Red Cross and loans from the Small Business Administration, plus flood insurance paybacks. Several residents have left

their homes permanently because they become panic-stricken every time it rains.

A typical response from a resident of the 100-year flood plain in Lodi is: "How many studies and how much money will be wasted before you realize the only way to correct it is to buy us out. The amount of money spent in the last two years in flood insurance alone could have bought most of us out. But no, do more surveys, spend more money, pay more losses. None of which even helps us mentally when we see it start to rain. Help!"

Sincerely yours,

D. Bennett Mazur
Deputy Director
Chairman
Planning and Public Works

DBM:eb

# PREFACE

Encroachment upon flood plains and development of areas where water infiltrates into the soil have escalated the frequency and severity of flooding, and increased the need for abating the damages caused by floods in many areas of New Jersey. Such action, however, cannot by successful without the support of the citizens involved. Public opinion as it relates to flooding is vital to federal, state, regional, and local governments which may attempt to implement plans to mitigate losses caused by floods.

In the Passaic River Basin, Lodi is undoubtedly one of the municipalities where flooding is more severe and indicators point to increased frequency. For these reasons, a survey of public opinion was conducted in Lodi and surrounding municipalities, using a mailed questionnaire. The tallying and analysis of results will provide valuable information on the perception and understanding of the flooding in this area and on the alternatives that the respondents selected as appropriate in abating the problem.

Substantial background information has been taken from the following sources: U.S. Army Corps of Engineers - New York District; local newspapers; the preliminary and updated Master Plans of Lodi; *Questionnaires: Design and Use*, by Berdie and Anderson; and various books and articles on the Passaic River Basin, the most prominent being the *Passaic River: Past, Present, and Future*, by Norman F. Brydon.

I wish to acknowledge my appreciation to the Honorable Joan Steinacker and Bennett Mazur, Bergen County Board of Chosen Freeholders, and to Mr. Alfred Struhs, Director, Bergen County Department of Personnel, who authorized this project and provided the funds necessary for its completion; and to the staff of the Passaic River Coalition, most notably Mrs. Ella F. Filippone, Executive Administrator, and Nancy Updegraff, Planner, who administered and directed the project.

I am especially grateful to the citizens who responded to the questionnaire. Hopefully, their experiences and recommendations will be utilized by those officials preparing flood control abatement plans.

Robert Joseph Conte

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## SUMMARY

One hundred seventy-one citizens participated in a survey on flooding in the Lower Saddle River Basin. The main focus of the survey was the flooding problem in the Borough of Lodi. Citizens from adjoining communities were also invited to give their opinions.

Two questionnaires were developed, one was sent to Lodi residents within the 100-year flood plain, and the second, to the remainder of the survey area. The questions asked for the opinions, attitudes, and recommendations of those surveyed, such as: severity and frequency of flooding; amount of damages sustained; knowledge and purchase of flood insurance; recommendations of solutions to flooding; appropriate institutions to manage flood control programs; effectiveness of flood warning systems; amount and type of aid received as a result of the flood of November 8, 1977; and willingness to sell house to the government to vacate the most severe flood zones.

The sample was composed of 1) all households within Lodi's 100-year flood plain; and 2) a random sample of the other survey areas, which comprised the municipalities of Garfield, Hackensack, Hasbrouck Heights, Maywood, Rochelle Park, Saddle Brook, Wallington, and Wood-Ridge. A total of 541 questionnaires were mailed on March 5, 1979. The response rate was 34.4 per cent. The largest response came from those in Lodi's 100-year flood plain - 55.1 per cent.

The responses to each question are tabulated in the text. A variety of opinions and recommendations were received, but a consensus was reached in some areas, including:

1. There is a serious flood problem in Lodi.
2. The solution to flooding should include: a) dredging and widening of the Saddle River - because of fill and sedimentation; b) regulations should be enforced to prevent further encroachment into the river and on the flood plains; and c) some areas should be protected by dikes.
3. The federal government should take the lead in correcting the flood problems, including coordination with all levels of government.

The respondents demonstrated an understanding of the complexities of the flooding problem in the Saddle Basin that justifies the development of a dynamic public participation program by federal and state agencies so an implementable flood control program can be developed.

# INTRODUCTION

Flooding is a natural event for which man has not yet found solutions acceptable to a majority of the public. Governmental agencies have attempted to control or abate flood-caused damages for many years. In the Saddle River Basin of northeastern New Jersey, numerous floods have occurred, seemingly with increasing frequency and severity, over the past century. However, no basin-wide flood abatement plan has been implemented.

One of the stated explanations for the unsuccessful flood-abatement plans in the area is lack of public support. Therefore, a survey of public opinion was undertaken in the Lower Saddle River Basin as to: 1) personal experiences with flooding, including frequency, severity, damages sustained, evacuations, and aid received; 2) attitudes toward various approaches to abate flooding; and 3) attitudes toward the appropriate institutions to carry the responsibility for mitigating flood damages. The focus of the survey was on the Borough of Lodi because it seems to sustain more flooding damages than other municipalities in the Lower Saddle River Basin.

The responses to the questionnaire were analyzed to determine the attitudes and perceptions of the sample surveyed and to reveal specific experiences with flooding. From this data, conclusions and recommendations were developed to demonstrate which solutions to the flood problem these people will support.

This method of obtaining public opinion where catastrophes occur frequently, such as Lodi, should be suitable for replication in similar areas where natural or man-made disasters are a common experience of the population.

## THE SADDLE RIVER BASIN

The Saddle River drains an area of 60.6 square miles in southern Rockland County, New York, and central Bergen County, New Jersey. The river originates near Spring Valley, New York, and flows in a southerly direction for 23 miles to its confluence with the Passaic River in Garfield, New Jersey. The Saddle Basin comprises the eastern portion of the Passaic watershed, as shown in Figure 1.

In New Jersey, the Saddle flows through the suburban municipalities of Upper Saddle River, Saddle River, Ho-Ho-Kus, Ridgewood, and Paramus, where it is joined by Hohokus Creek, a major tributary. The Saddle continues flowing southward through the more densely populated municipalities of Fair Lawn, Saddle Brook, Rochelle Park, Garfield, and Lodi. After passing through Lodi, the river turns southwestward and slowly meanders through South Hackensack and Wallington to the Passaic River. The Saddle River and its tributaries are shown in Figure 2.

The Saddle River watershed in located in the lowlands of the Piedmont Physiographic Province. The Piedmont consists of soft red shale interbedded with sandstone and siltstone, and extrusive volcanic basalts, which constitute the Watchung Mountains. These rocks were deposited approximately 193,000,000 years ago during the Triassic-Jurassic Periods of geologic time (Wolfe, 1977).

Unconsolidated glacial materials overlie the bedrock throughout the Saddle Basin. The surface morphology is characterized by "kame hills", formed when sediment was washed into depressions in the melting glacier, and "kettle holes", formed when blocks of ice remained after the glacier's front had receded. Usually, a pond formed in the kettle hole (Wolfe, 1977).

Flooding has been a problem in the Saddle Basin since records were first kept over a century ago. Within the last 80 years, severe floods have occurred throughout the basin resulting in millions of dollars in damages to residential, commercial, and industrial property. Table 1 lists these floods, including climatic and hydrologic data, as well as available information on damages sustained.

In Lodi, flooding in compounded by the backwater effects of the

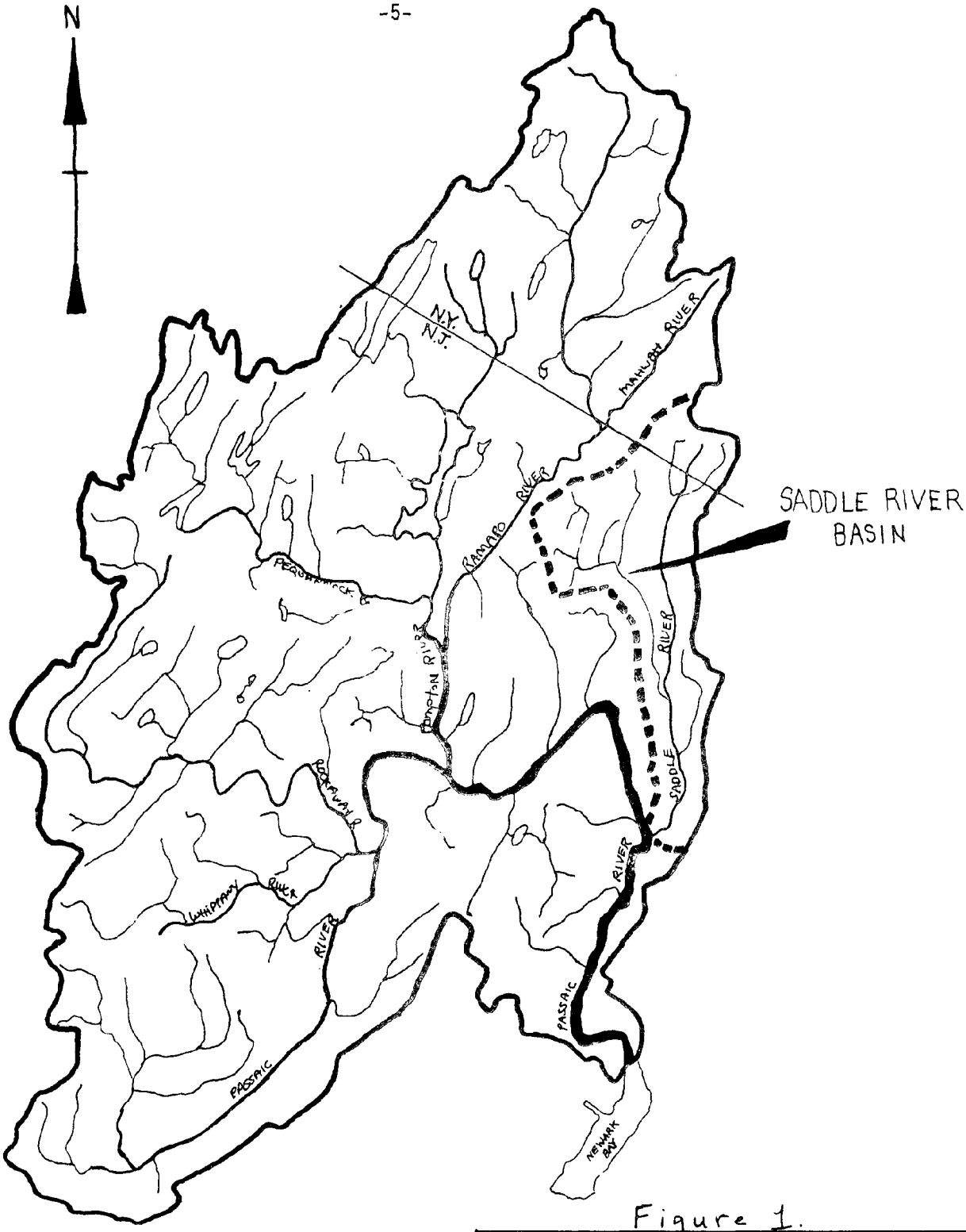


Figure 1.

# PASSAIC RIVER BASIN

INCLUDING LOCATION OF THE SADDLE RIVER BASIN

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SCALE IN MILES

ADAPTED FROM CORPS OF ENGINEERS 1972

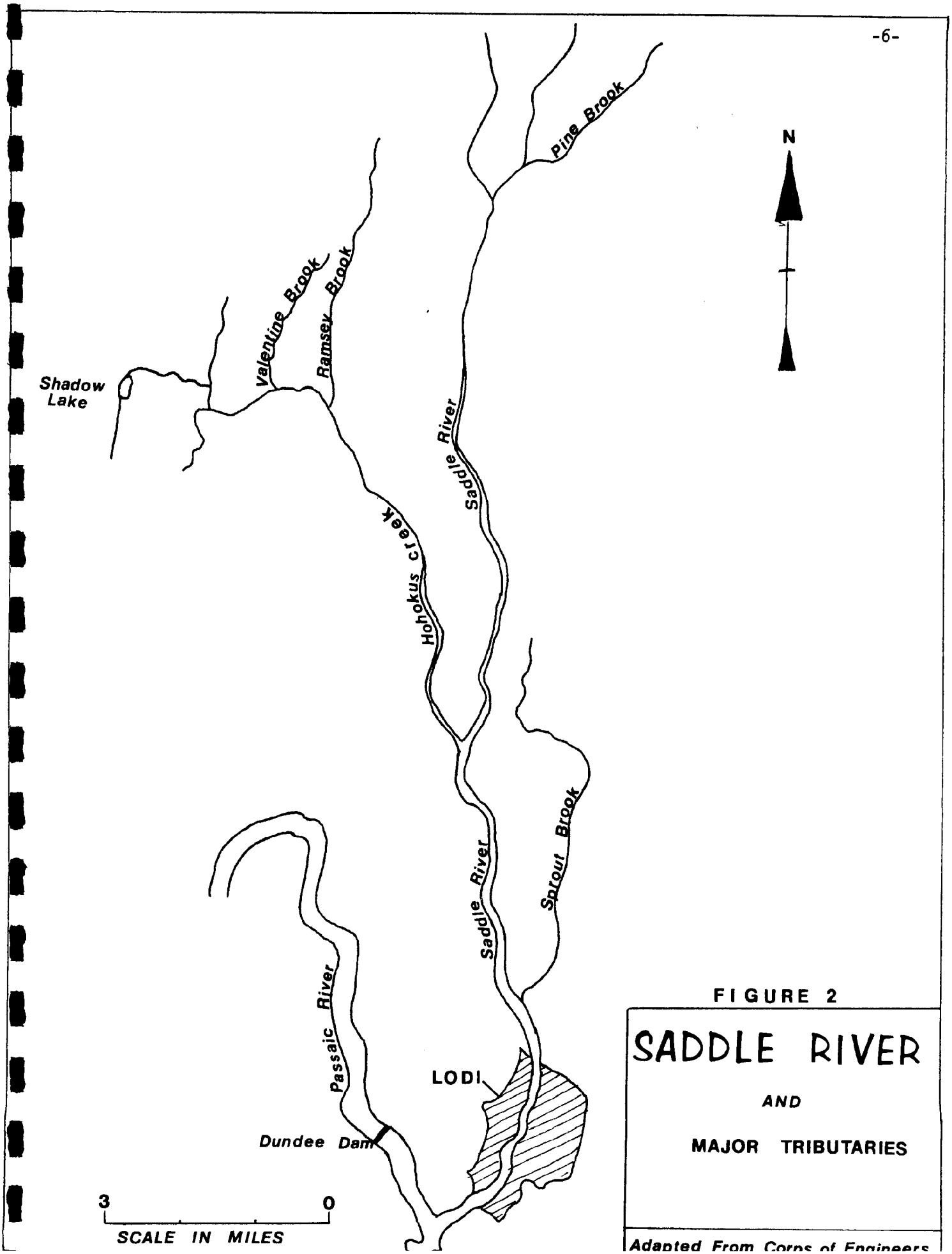



FIGURE 2

SADDLE RIVER

AND

MAJOR TRIBUTARIES

Adapted From Corps of Engineers

TABLE 1. SEVERE FLOODS OCCURRING IN THE SADDLE RIVER BASIN, SINCE 1900

| Date | Average rainfall (inches) | Ground conditions before storm | Length of rainfall (days) | Peak discharge at Lodi (cfs) | Damages (millions of 1978 dollars) |
|---|---|---|---|---|---|
| Jan. 1979 | 4 | Saturated | 4 | 2,890 | N.A. |
| Nov. 1977 | 5.5 | Relatively dry | 3 | 4,200 | Lodi: 12<br>Passaic: 100 |
| Sept. 1971 | 8 | Saturated | 2 | 3,770 | Saddle: 1.8<br>Passaic: 14.2 |
| Aug. 1971 | 8 | Dry | 2 | 3,530 | Included in Sept. data |
| May 1968 | 6 | Saturated | 5 | 3,300 | Lodi: 1.5<br>Saddle: 3.4<br>Passaic: 41.7 |
| July 1945 | 8.5 | Saturated | 9 | 3,500 | Saddle: 17.5<br>Passaic: 200.8 |
| March 1936 | 11.1[a] | Frozen | 14 | 1,720 | Saddle: 2.0<br>Passaic: 119.1 |
| Oct. 1903 | 11.4 | Saturated | 6 | 7,000 | Saddle: 38.4<br>Passaic: 894.9 |

[a]6.0 inches as rainfall and 5.1 inches as water content of snow on ground.

Sources: Lucyshyn, 1980; U.S. Army Corps of Engineers, 1970; 1979; and U.S. Geological Survey, 1972.

Passaic River, especially at high tide and flood stage, and by insufficient channel and bridge capacities along the Saddle River (U.S. Army Corps of Engineers, 1979). However, the basic cause of flood disasters is the development of flood plains. Flooding is a natural phenomenon, and flood plains are created by a stream to carry water in excess of the channel-carrying capacity.

As Ward (1978, p. 2-3), stated: "... flood disasters are man-made in that man has put himself at risk by developing floodplains for settlement, agriculture and industry and by building roads, bridges and railway lines in floodable positions. Such intrusions into the floodway may result from ignorance or for economic reasons (that is, the risk is worth taking or worth safeguarding against). Either way, man's affinity for floodplains has a long history and now affects a substantial proportion of the world's population."

As a result of serious floods in August and September 1971, as well as the previous ones, Lodi planned to widen, deepen, and straighten the Saddle River (Community Housing and Planning Associates, Inc., 1972a). The first phase of the project was to widen and straighten the river; second, to deepen it using a drag line. This latter work was to be done by Bergen County. The third phase was to restore the river banks to a condition represented before encroachment took place, including an urban renewal project to clear land located between the current Main Street project and the Saddle River, and the industrial land between the Saddle River and Arnot Street - Dellglen Avenue - Park Place. Unfortunately, very little has been accomplished on this project, and the hazard is still great as demonstrated so forcefully by the floods of 1977 and 1979.

As none of the proposals have ever been implemented, any future plans for flood reduction should emphasize the need to restore the flood plains to the river. In this way, the major cause of flooding will be eliminated. Any additional work, such as raising bridges, dredging, etc., will then have a chance to be successful in reducing flooding in the Saddle River Basin. Trying to accomplish these supplementary tasks, without the basic restoration of the flood plains, as is recommended by the Community Housing and Planning Associates, Inc., 1972a), is probably a waste of money.

# HISTORY AND DESCRIPTION OF LODI

## History

The Village of Lodi came into existence in 1825 by an Act of the New Jersey Legislature. At that time Lodi had a population of 1,400. The name was suggested by General Lafayette in honor of Napoleon Boneparte's victory at Lodi, Italy, in 1796, which supposedly freed Lafayette from imprisonment by the Austrians (Scott, 1922).

In 1829 the development of Lodi as an industrial community began when James Rennie opened a calico printing mill along the Saddle River. His brother Robert joined him and together they operated a successful business until 1833 when a fire resulted in the total destruction of the Rennie works and the financial ruin of James Rennie. However, Robert Rennie had purchased many acres of land along the Saddle River, and with his investments rebuilt the mill on the same site, and immediately met with great success, as his prints became known throughout the world (Scott, 1922).

Lodi began to grow in the late 1800's, primarily due to the expansion of the old Rennie mills into the United Piece-Dye Works and the construction of several other textile mills in the area. In 1894, Lodi was incorporated as a Borough with a population of 2,000 (N.J. Department of Conservation and Economic Development, 1964).

In the period between 1910 and 1935, population began to increase more rapidly than in the nineteenth century. The completion of state highways 46 and 17 by the New Jersey Highway Department in the mid 1930's affected Lodi in a significant manner. Commercial development spread outside the center of town, and houses were built in all areas.

At the end of World War II, Lodi received another major influx of people and associated home building, including apartments, trailer courts, and two-family residences, especially in the northern sections of the Borough. More industrial and commercial development followed (N.J. Department of Conservation and Economic Development, 1964).

Population increased from 11,552 in 1940 to 25,213 in 1970 (U.S. Bureau of the Census, 1973). This period of growth resulted from outside pressures and altered the small town image of Lodi. This building boom caused the development of marginal flood-prone lands which has been

responsible for increased damages to property and concerns for the future safety of many residents.

The population of Lodi from 1800 to 1975 is shown in Figure 3. An estimate of population for 1977 is 24,551 (Mullin, 1979), indicating a further decrease in Lodi's population from 1975.

Description: Socio-economic Characteristics and Land Use

The Borough of Lodi is located in Bergen County, New Jersey, approximately 12 miles west of New York City. In 1970, 25,213 people lived within the town's 2.19 square miles, resulting in an average density of 11,513 people per square mile (U.S. Bureau of the Census, 1973). Of those 25,213 people, less than 0.5 per cent were non-white. The working force equaled 11,294. Average family income was $11,553 (U.S. Bureau of the Census, 1973).

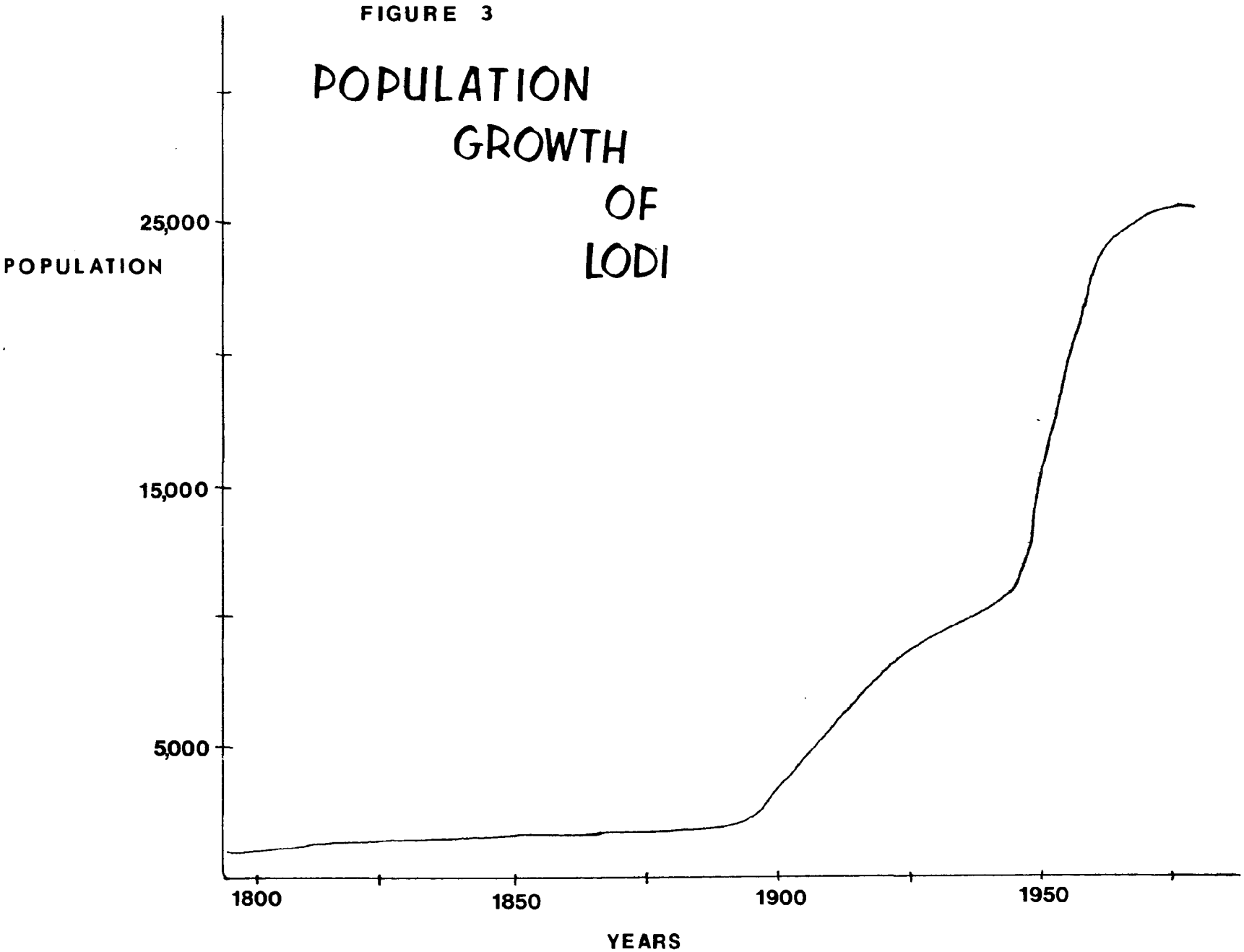
The average family size was 3.34 persons in 1960; in 1970, it was 2.99 persons. This is believed to be part of the nationwide trend to smaller families (Community Housing and Planning Associates, Inc., 1973). Of the population over the age of five, 14,496, or 57.5 per cent have lived in their present home since 1965 (U.S. Bureau of the Census, 1973).

Lodi is approximately 99 per cent developed. Only about 25 acres of a total of 1,468 acres are not developed (excluding the urban renewal project on Main Street) (Community Housing and Planning Associates, Inc., 1972b). A breakdown of land use types is given in Table 2.

TABLE 2. LAND USES IN BOROUGH OF LODI, AS OF OCTOBER 1972

| Category | Acres | Per cent |
|---|---|---|
| Residential | 623.2 | 42.4 |
| One Family | 312.2 | 21.3 |
| Two Family | 200.1 | 13.6 |
| Three Family | 7.4 | 0.5 |
| Four or More Family | 103.5 | 7.0 |

FIGURE 3




Source: U.S. Bureau of the Census, 1973

TABLE 2. (CONTINUED)

| Category | Acres | Per cent |
|---|---|---|
| Commercial | 94.5 | 6.4 |
| Retail and services | 50.4 | 3.4 |
| Heavy commercial | 44.1 | 3.0 |
| Industrial | 152.9 | 10.4 |
| Light industry | 70.9 | 4.8 |
| Heavy industry | 82.0 | 5.6 |
| Mixed use | 21.9 | 1.5 |
| Public | 66.8 | 4.5 |
| Semi-public | 35.8 | 2.4 |
| Cemetary | 39.0 | 2.7 |
| Public utility | 37.2 | 2.5 |
| Streets and highways | 314.9 | 21.5 |
| Railroad right-of-way | 14.0 | 1.0 |
| Water | 17.1 | 1.2 |
| Vacant | 24.5 | 1.7 |
| Vacant (Main Street project) | 26.2 | 1.8 |
| Total | 1,468.0 | 100.0 |

Source: Community Housing and Planning Associates, 1972b)

Profile of the Respondents to the Survey

Question 16 in the questionnaires was designed to obtain a basic socio-economic profile of the respondents. The complete responses are included in Appendix 2. Answers from those in Lodi are included in this section as a comparison to the 1970 Census data for all of Lodi given earlier.

More than 52 per cent of the respondents were male. Most respondents were in the age groups "51-60" and "over 60". Approximately 75 per cent have graduated from high school, and 10 per cent from college. An average of 2.8 persons live in each household. Approximately 75 per have lived in their persent home for more than nine years but most have lived considerably longer than the response to the question asked. Many volunteered than they had lived there for 20, 30, 50, etc. Most respondents have a yearly family income between $15,000 and $20,000.

The above responses are the "average" responses. Extremes existed in nearly all cases. Many respondents were retirees living on a meager income below $5,000. Others were in the above $25,000 category. There is a significant difference between the respondents inside and outside of the 100-year flood plain in some questions: education, income, for example. See Appendix 2 for a complete comparison.

## SURVEY METHODOLOGY

The purpose of this survey was to obtain the opinions and recommendations of a sample of residents in the Lower Saddle River Basin with particular emphasis on their awareness of flooding in the basin, and their concern that a solution be adopted to alleviate the problem. The survey was conducted via mailed questionnaires to 541 households.

### Selection of Survey Area

As important as it was to poll opinions on flooding within the flood-prone areas of Lodi, as described on page 7, obtaining opinions on flooding from people living outside that area in Lodi and in surrounding municipalities was deemed essential. In addition to serving as a control relative to their familiarity and attitudes toward flooding, these residents were questioned to determine their knowledge of and degree of empathy for those people susceptible to recurring floods in Lodi.

The selection of upstream and downstream municipalities for the survey included only those neighboring Lodi. Fair Lawn, Hackensack, Maywood, and Saddle Brook were chosen to represent upstream municipalities, and Garfield, Hasbrouck Heights, Wallington, and Wood-Ridge, downstream ones. The portion of South Hackensack located in the Saddle River Basin qualified as a downstream municipality but only five homes are located in this section, making participation in random sampling impossible. However, each of these households received a questionnaire, at the request of the municipality, but their responses were not included in the tallying of results.

### Development of the Questionnaire

After researching the flood problem in Lodi and the Saddle River Basin and the design of questionnaires, a series of questions were prepared. Each question was refined, and those considered inappropriate or undesirable were eliminated. The original list of 32 questions was thus reduced to 16.

The questionnaire was designed to include basic questions on

flooding. Each question was reviewed several times in an attempt to make certain that none were ambiguous or confusing, and that each would be easily understood by the respondents[1]. Issues developed as questions included:

1. Severity and frequency of flooding;
2. Awareness of flood hazard when home was purchased;
3. Amount of flood damages sustained;
4. Knowledge and purchase of flood insurance;
5. Recommendations of possible solutions to flooding;
6. Responsibility for the correction of flood problems;
7. Effectiveness of flood warning system;
8. Preventive measures undertaken by homeowners;
9. Amount and type of aid received during and after the flood of November 8, 1977;
10. Reasons for remaining in flood-prone areas; and
11. Willingness to sell house to government for fair price.

Questions on annual family income, education, age, sex, number of persons living in household, and length of residency in present home were asked in order to prepare a socio-economic profile of the respondents. An open-ended question was also included to allow respondents an opportunity to discuss the flood problem in Lodi or in general.

The questions were then presented to the staff of the Passaic River Coalition for further review. Their expertise in diversified fields of the natural, physical, social, and political sciences enabled the staff to refine each question again and again. This process added to the overall efficacy of the survey.

An assumption was made that respondents inside the 100-year flood plain in Lodi, as delineated by the Federal Insurance Administration, an agency of the U.S. Department of Housing and Urban Development, had direct

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[1] In designing questionnaires, the major objective is to receive from the sample surveyed, as accurate a response as possible, that is, to conduct a valid survey. Validity is a measure of whether the questions are successful in eliciting similar understanding between the questioner and the respondent (Berdie and Anderson, 1974).

experiences with flooding, while those in other survey areas would not. Therefore, a decision was made to develop a second questionnaire. Questionnaire A - composed of the original series of questions - was prepared for residents inside the 100-year flood plain in Lodi only. Then Questionnaire B was developed from A for use outside Lodi's 100-year flood plain, in upstream, and in downstream municipalities. Questionnaire B consisted of 13 questions of the same type as A except for those questions directly related to the flooding experiences inside the 100-year flood plain. A few additional questions, not on Questionnaire A, were developed for Questionnaire B, as follows: 1) any personal experiences with flooding; 2) opinions on the flood warning system, aid received, and solutions to flooding in Lodi; and 3) frequency of travel through Lodi. Questionnaires A and B are shown as Exhibits 1 and 2.

As Questionnaire B was being distributed to households in Lodi outside the 100-year flood plain and to those in upstream and downstream municipalities, a method of distinguishing the area from which the completed questionnaires had come was most desirable. However, number codes or other markings on individual questionnaires were not considered appropriate as respondents might become suspicious, jeopardizing chances for a maximum return. Therefore, color coding was used: blue, to households in Lodi outside the 100-year flood plain; yellow, to upstream municipalities; and pink, to downstream municipalities. This form of coding made it easy to determine the area of origin of the returned questionnaire, without requiring names and addresses from respondents. Questionnaire A, used inside the 100-year flood plain in Lodi, was printed in white. The Bergen County Board of Chosen Freeholders printed the questionnaires.

A letter to accompany each questionnaire was written to inform the respondents of the nature of the survey, who was conducting it and why, how the information received was going to the used, and why the recipients of the questionnaire should respond. The cover letter is shown as Exhibit 3.

Obtaining the Sample

Questionnaire A was mailed to all households inside the 100-year flood plain in Lodi. A list of 121 households was developed from tax maps

and tax books. Questionnaire B was distributed to 420 households selected at random: 100 from outside the 100-year flood plain in Lodi; 160 from upstream municipalities; and 160 from downstream municipalities.

The 100 households from outside Lodi's 100-year flood plain were selected randomly from the Borough's tax maps and books. This process insured that all homeowners in the area had an opportunity of being chosen. By comparing Lodi's tax map to the 100-year flood plain, a list of all blocks in the area could be prepared. This list of blocks included blocks that were partially in and partially out of the flood plain, but only the outside portion was considered. From this list, 25 blocks were selected using a random numbers table. From the tax maps, four households on each selected block were likewise randomly chosen. This stratified random sampling was used to generate a sample with some geographic clustering. In this way, a list of 100 households was developed as the sample of the area outside Lodi's 100-year flood plain.

A sample of residents in the municipalities upstream and downstream was developed from local telephone books. Unavoidably, households with unlisted numbers or without telephones could not participate in the survey. Forty households were then randomly chosen for each of the municipalities: Hackensack, Maywood, Rochelle Park, and Saddle Brook, upstream, and Garfield, Hasbrouck Heights, Wallington, and Wood-Ridge, downstream. The Bergen County Department of Personnel mailed the questionnaires on March 5, 1979.

EXHIBIT 1. Questionnaire A.

QUESTIONNAIRE

Instructions: Please read each question carefully and check what you believe to be the best answer for each question. After completing the questionnaire, place it inside the self-addressed, stamped envelope that we have provided for your convenience, and mail.

1. Do you consider flooding in Lodi to be:

   A. ____ no problem at all

   B. ____ a mild problem

   C. ____ a serious problem

2. How often to floods affect you in your neighborhood?

   A. ____ floods never occur

   B. ____ once or more per year

   C. ____ once every 2 or 3 years

   D. ____ once every 4 or 5 years

   E. ____ more than once every 5 years

3. Were you aware of a possible flooding problem before you moved into your home?

   A. ____ yes

   B. ____ no

   If yes, how? _____

4. Were you ever forced to leave your house due to flooding?

   A. ____ yes

   B. ____ no

   If yes, when? _____

5. How extensive has the damage to you house and/or property been due to flooding?

   A. ____ no damage

   B. ____ water on the property but not in the house

   C. ____ water in the basement

   D. ____ water on the first floor or above

   Have damages occurred more than once? ____ yes ____ no

   If yes, when did the damages occur? _____

   _____

What was the approximate damage in dollars? _____

_____

6. Please answer each of the following questions on flood insurance.

   A. Have you ever heard of the flood insurance program? ____ yes ____ no

   B. Do you carry flood insurance? ____ yes ____ no

   C. If yes, when did you purchase it? _____

   D. If no, for what reason(s)? _____

   _____

7. Please check, in order of importance, what you believe to be the three best methods for reducing flood damages and costs in Lodi. (NOTE: Use #1 as the most important solution, #2 as the second most important solution, and #3 as the third most important solution.)

   A. ____ Reroute the river

   B. ____ Dams, dikes, levees

   C. ____ Stop building in flood-prone areas

   D. ____ Tighter zoning regulations

   E. ____ Flood insurance

   F. ____ Flood relief aid

   G. ____ Move away from flood-prone areas

   H. ____ Straighten and deepen the river (channelization)

   I. ____ Government regulations

   J. ____ Other (please specify)

   _____

8. Who should bear the responsibility to correct the flooding problem in Lodi? (Check one or more)

   A. ____ Federal government

   B. ____ State government

   C. ____ County government

   D. ____ Local (town) government

   E. ____ Home owner

   F. ____ Business or industry

   G. ____ Developers

   H. ____ No one should bear the responsibility

   I. ____ Other (please explain)

   _____

   _____

9. Have you taken any preventive measures to protect your house from flooding?

   A. ____ yes

   B. ____ no

   If yes, what? _____

10. Did you receive any kind of emergency aid during the flood of November 8, 1977?

A. ____ yes

B. ____ no

If yes, from whom? _____

What type of aid? _____

11. Did you receive any kind of aid after the flood of November 8, 1977?

A. ____ yes

B. ____ no

If yes, from whom? _____

What type of aid? _____

12. Do you believe there is an adequate flood warning system in Lodi?

A. ____ yes

B. ____ no

13. If the government offered to pay a fair amount for your house and land, would you sell?

A. ____ yes

B. ____ no

14. Please check any of the following reasons that might be important factors in remaining in your present house.

A. ____ Convenient location (work, school, etc...)

B. ____ Family and friends nearby

C. ____ Cannot afford to move

D. ____ Cannot sell your house

E. ____ Other (please explain)

_____

_____

15. Please express any additional opinions you have on the flooding situation; either in Lodi or in general.

_____

_____

_____

_____

16. Please check the box which applies to you in each of the following general information questions. (For statistical use only.)

| SEX | AGE | EDUCATION |
|---|---|---|
| ____ Male | ____ under 21 | ____ grade school |
| ____ Female | ____ 21-30 | ____ some high school |
| | ____ 31-40 | ____ high school graduate |
| | ____ 41-50 | ____ some college |
| | ____ 51-60 | ____ college degree or degrees |
| | ____ over 60 | |

| HOW LONG HAVE YOU LIVED IN YOUR HOUSE | NUMBER OF PEOPLE IN HOUSEHOLD | YEARLY FAMILY INCOME |
|---|---|---|
| ____ 0-1 year | ____ 1 person | ____ under $5,000 |
| ____ 1-3 years | ____ 2 people | ____ $5,000-$9,999 |
| ____ 3-5 years | ____ 3 people | ____ $10,000-$14,999 |
| ____ 5-7 years | ____ 4 people | ____ $15,000-$19,999 |
| ____ 7-9 years | ____ 5 people | ____ $20,000-$24,999 |
| ____ more than 9 years | ____ 6 people | ____ over $25,000 |
| | ____ more than 6 people | |

OPTIONAL:

If you would like, sign your name and address here.

_____

_____

EXHIBIT 2. Questionnaire B.

QUESTIONNAIRE

Instructions: Please read each question carefully and check what you believe to be the best answer for each question. After completing the questionnaire, place it inside the self-addressed, stamped envelope that we have provided for your convenience, and mail.

1. Do you consider flooding in Lodi to be:

   A. ____ no problem at all

   B. ____ a mild problem

   C. ____ a serious problem

2. How often do floods affect you in your neighborhood?

   A. ____ floods never occur

   B. ____ once or more per year

   C. ____ once every 2 or 3 years

   D. ____ once every 4 or 5 years

   E. ____ more than once every 5 years

3. Have you ever lived in a house where you have been flooded?

   A. ____ yes

   B. ____ no

4. Were you ever forced to leave your house due to flooding?

   A. ____ yes

   B. ____ no

   If yes, when? _____

5. How extensive has the damage to your house and/or property been due to flooding?

   A. ____ no damage

   B. ____ water on the property but not in the house

   C. ____ water in the basement

   D. ____ water on the first floor or above

   Have damages occurred more than once? ____ yes ____ no

6. Please check, in order of importance, what you believe to be the three best methods for reducing flood damages and costs in Lodi. (NOTE: Use #1 as the most important solution, #2 as the second most important solution, and #3 as the third most important solution.)

A. ____ Reroute the river
B. ____ Dams, dikes, levees
C. ____ Stop building in flood-prone areas
D. ____ Tighter zoning regulations
E. ____ Flood insurance
F. ____ Flood relief aid
G. ____ Move away from flood-prone areas
H. ____ Straighten and deepen the river (channelization)
I. ____ Government regulations
J. ____ Other (please explain)

_____

7. Who should bear the responsibility to correct the flooding problem in Lodi? (Check one or more)

A. ____ Federal government
B. ____ State government
C. ____ County government
D. ____ Local (town) government
E. ____ Home owner
F. ____ Business or industry
G. ____ Developers
H. ____ No one should bear the responsibility
I. ____ Other (please explain)

_____

8. Do you believe that there is an adequate flood warning system in Lodi?

A. ____ yes
B. ____ no

9. Should the government offer to buy the houses and land from Lodi residents located in severe flood hazard areas?

A. ____ yes
B. ____ no

Why or why not? _____

10. Do you believe that Lodi residents received the proper aid during and after the big flood of November 8, 1977?

A. ____ yes
B. ____ no
C. ____ don't know

11. Please answer each of the following questions on flood insurance.

A. Have you ever heard of the flood insurance program? ____ yes ____ no

B. Do you carry flood insurance? ____ yes ____ no

C. If yes, when did you purchase it? _____

D. If no, for what reason(s)? _____

12. Please express any additional opinions you have on the flooding situation; either in Lodi or in general.

_____

_____

_____

_____

13. Please check the box which applies to you in each of the following general information questions. (For statistical use only.)

| SEX | AGE | EDUCATION |
|---|---|---|
| ____ male | ____ under 21 | ____ grade school |
| ____ female | ____ 21-30 | ____ some high school |
| | ____ 31-40 | ____ high school graduate |
| | ____ 41-50 | ____ some college |
| | ____ 51-60 | ____ college degree or degrees |
| | ____ over 60 | |

| HOW LONG HAVE YOU LIVED IN YOUR HOUSE | NUMBER OF PEOPLE IN HOUSEHOLD | YEARLY FAMILY INCOME |
|---|---|---|
| ____ 0-1 year | ____ 1 person | ____ under $5,000 |
| ____ 1-3 years | ____ 2 people | ____ $5,000-$9,999 |
| ____ 3-5 years | ____ 3 people | ____ $10,000-$14,999 |
| ____ 5-7 years | ____ 4 people | ____ $15,000-$19,999 |
| ____ 7-9 years | ____ 5 people | ____ $20,000-$24,999 |
| ____ more than 9 years | ____ 6 people or more | ____ over $25,000 |

HOW OFTEN DO YOU TRAVEL THROUGH LODI?

A. ____ every day

B. ____ once or twice per week

C. ____ once a month

D. ____ once every 2 or 3 months

E. ____ less than once every 3 months

OPTIONAL:

If you would like, sign your name and address here.

_____

_____

PASSAIC RIVER COALITION
AN URBAN WATERSHED ASSOCIATION
246 MADISONVILLE ROAD, BASKING RIDGE, N. J. 07920 • PHONE (201) 766-7550

EXHIBIT 3. Cover letter.

March 5, 1979

Dear Citizen:

The Bergen County Board of Chosen Freeholders and the Passaic River Coalition are currently conducting a study of the flooding problem in Lodi. In order to complete the study, we need your help! Your views and opinions are very important to the success of our study. The results of our study will be published and made available to the public.

The Bergen County Freeholders and the Passaic River Coalition assure you that any information you give will be used only in the final report containing the results of this study. All participants and their private views will be held in strict confidence. Simply fill out the attached questionnaire and return it in the self-addressed, stamped envelope that we have provided for your convenience.

So please, take a few minutes and fill out this important questionnaire, because people can effect government, and we want the government to know how you feel about the problem of flooding in Lodi.

If you have any questions, I can be reached at (201) 646-3504. We thank you in advance for your time and cooperation and look forward to receiving your completed questionnaire.

Sincerely,

Robert Conte
PRC Bergen County Representative

Freeholder Joan Steinacker
Municipalities Liaison

## ANALYSIS OF RESULTS

On March 5, 1979, 541 questionnaires were mailed to households in the survey area. April 5 was chosen as the date to begin tallying the responses. Of the 541 questionnaires mailed, 171 were completed and returned. An additional 42 questionnaires were labeled "return to sender" by the U.S. Post Office because the letters could not be delivered. The number of questionnaires received daily is shown in Table 3. The majority of respondents who completed a questionnaire did so within the first seven days; thus 127, or 74.3 per cent, of the 171 were received before March 15. The significance of this rapid response indicates the concern for the flooding problem and the respondents' desire to participate in the survey.

### Response rate

In calculating the response rate, the total number of questionnaires distributed was adjusted to 499, because the questionnaires marked "return to sender" had no possibility of being answered and returned. Therefore, 171 completed questionnaires equals a response rate of 34.3 per cent (171 of 499). The response rates for each of the areas surveyed are shown in Table 4. The largest response rate, as expected, was from inside Lodi's 100-year flood plain - 55.1 per cent (65 of 118). The response from Lodi, outside the 100-year flood plain, was second highest - 36.4 per cent (36 of 99). Responses from upstream and downstream municipalities were very similar: 25.0 per cent (36 of 144) for upstream, and 24.6 per cent (34 of 138) for downstream.

### Format of analysis

In the analysis of results, the following format is maintained for each question: the question, as written in the questionnaires, is stated; reasons for asking the question are identified; the responses are tabulated[2]; and the results are discussed. Those questions in Questionnaire B only are identified in the analysis as the number in A to which

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[2] In the tables where the responses are tabulated, totals may not equal 100 per cent due to rounding.

it is most closely associated. Throughout the analysis, the questions are numbered as they are in Questionnaire A. Questionnaire A was sent to the residents of Lodi in the 100-year flood plain; Questionnaire B was sent to all other sample areas.

Many unsolicited, but important, comments were made in addition to answers to the questions asked. Such comments are identified in the tables of responses with a superscript letter, and the comments are included as footnotes to these tables in elite (smaller) type.

TABLE 3. COMPLETED QUESTIONNAIRES RECEIVED

| Date | Received | Cumulative total |
|---|---|---|
| March 7 | 8 | 8 |
| March 8 | 48 | 56 |
| March 9 | 19 | 75 |
| March 10 | 14 | 89 |
| March 12 | 12 | 101 |
| March 13 | 18 | 119 |
| March 14 | 8 | 127 |
| March 15 | 1 | 128 |
| March 16 | 4 | 132 |
| March 17 | 6 | 138 |
| March 19 | 3 | 141 |
| March 20 | 4 | 145 |
| March 21 | 4 | 149 |
| March 22 | 4 | 153 |
| March 23 | 2 | 155 |
| March 26 | 1 | 156 |
| March 27 | 4 | 160 |
| March 28 | 3 | 163 |
| March 29 | 1 | 164 |
| March 31 | 1 | 165 |
| April 3 | 2 | 167 |
| April 4 | 2 | 169 |
| April 5 | 2 | 171 |

TABLE 4. SURVEY RESULTS: QUESTIONNAIRES COMPLETED

| Survey area | Number mailed | Number marked return to sender | Adjusted total | Number completed | Per cent completed |
|---|---|---|---|---|---|
| Lodi, inside 100-year flood plain | 121 | 3 | 118 | 65 | 55.1 |
| Lodi, outside 100-year flood plain | 100 | 1 | 99 | 36 | 36.4 |
| Upstream municipalities | 160 | 16 | 144 | 36 | 25.0 |
| Downstream municipalities | 160 | 22 | 138 | 34 | 24.6 |
| Total | 541 | 42 | 499 | 171 | 34.3 |

Analysis of the Responses

Question 1. (Questionnaires A and B):

Do you consider flooding in Lodi to be:

A. ____ no problem at all

B. ____ a mild problem

C. ____ a serious problem

This question was placed first because it established and emphasized the subject matter in the questionnaire. If the majority had selected A or B, the survey would have had little merit. As respondents marked C, flooding is "a serious problem", they would be encouraged to continue answering the questions, because they recognized the gravity of the problem.

An important consideration in the answers to all the questions in both questionnaires is that they are the opinions and perceptions of the respondents, and not necessarily comparable to data gathered by organizations, such as the Army Corps of Engineers. However, recorded data and people's perceptions are both important when trying to solve such problems as flooding.

TABLE 5. RESPONSES TO QUESTION 1. (Do you consider flooding in Lodi to be): (in per cent)

| Survey area | No problem | A mild problem | A serious problem | Other | No response |
|---|---|---|---|---|---|
| Lodi, inside 100-year flood plain | 0.0 | 1.5 | 98.5 | 0.0 | 0.0 |
| Lodi, outside 100-year flood plain | 0.0 | 0.0 | 97.2[a] | 0.0 | 2.8 |
| Upstream municipalities | 2.8 | 2.8 | 94.4[b] | 0.0 | 0.0 |
| Downstream municipalities | 0.0 | 5.9 | 91.2 | 2.9[c] | 0.0 |

[a]1. For my neighbors. 2. For some along the riverbank. (No problem at all for me.)

[b]1. "Serious"; when lives are lost, and destroyed financially and health-wise, how much more serious does it have to get and where was the Lodi town government, inspectors, etc., when these people were issued permits to build in these areas.

[c]1. A disaster.

Public awareness and consensus that a problem exists is a prime motivator in effecting change or corrective action. Thus, the fact that in each area surveyed, more than 90 per cent of the respondents recognized flooding in Lodi to be a serious problem, confirms the existence of consensus, which is important in bringing the concerns of the people who live in the Saddle River Basin regarding flooding to the attention of public officials at all levels of government. The fact that those respondents in survey areas outside of Lodi also perceived the flooding problem to be serious should help in bringing aid to those who suffer the results of flooding.

Question 2. (Questionnaires A and B):

How often do floods affect you in your neighborhood?

A. ____ floods never occur

B. ____ once or more per year

C. ____ once every 2 or 3 years

D. ____ once every 4 or 5 years

E. ____ more than once every 5 years

This question was designed to ascertain the frequency of flooding perceived to occur by the respondents in each of the survey areas. One control on this question was to check the answers given by respondents inside the delineated 100-year flood plain compared to those outside it in Lodi.

One variable which might cause some discrepancy in this question is what meaning the respondents have of "neighborhood". All respondents might not perceive neighborhood to have the same meaning. According to Rapaport (1977, p. 158), neighborhood can mean any of the following:

(a) just the dwelling, the areas around it being merely a matter of convenience which might be the view of people without children or with extensive networks based on community of interests.

(b) the area immediately around the dwelling symbolizing status.

(c) a set of people, either liked or disliked, but forming the immediate social environment.

(d) some ideal, such as a village-like community, with face-to-face associations and intimate relationships or related to an idea, such as Bloomsbury, Chelsea, or Greenwich Village.

(e) an area based on services, and the people who run them...

(f) a distinctive physical area separated from other areas by clear physical or conceptual boundaries.

(g) an area of people subjectively homogeneous by race, ethnicity, religion, lifestyle, ideology and the like, and reinforced by activity patterns and social networks.

Thus, both physical and social parameters can be the basis for determining neighborhood boundaries. But as Rapaport (1977, p. 158) noted

"similar people pick similar areas and reinforce their social and physical character", and a neighborhood may have more or less significance to those who live there.

The concept of neighborhood, as sociological research indicates, has negative aspects in relation to overcoming a common problem, such as flooding. "Since the kind of neighborhood a person lives in is determined to a large extent by his economic status, it may seem more reasonable to him to find a better job that to use his resources in a neighborhood-organization effort" (O'Brien, 1975, p. 28). The relevance of such attitudes in the survey areas cannot be determined without further study.

TABLE 6. RESPONSES TO QUESTION 2. (How often do floods affect you in your neighborhood?) (in per cent)

| Survey area | Floods never occur | Once or more per year | Once every 2 or 3 years | Once every 4 or 5 years | More than once every 5 years | Other | No response |
|---|---|---|---|---|---|---|---|
| Lodi, inside 100-year flood plain | 0.0 | 81.5[a] | 9.2 | 3.1 | 4.6[b] | 1.5[c] | 0.0 |
| Lodi, outside 100-year flood plain | 38.9 | 52.8 | 2.8 | 0.0 | 2.8 | 0.0 | 2.8 |
| Upstream municipalities | 27.8 | 55.5[d] | 11.1 | 2.8 | 2.8[e] | 0.0 | 0.0 |
| Downstream municipalities | 52.9 | 35.3 | 2.9 | 2.9 | 5.9 | 0.0 | 0.0 |

[a]1. After every time a heavy rain. 2. Every time we have heavy rain the Main Street is under water and we have to carry our belongings up to the first floor. 3. Too often. 4. Almost every year or twice a year.

[b]1. Almost once a year since 1968 with few exceptions. Some years twice.

[c]1. In 10 years very regular.

[d]1. Up until our problem was solved we were flooded with 3-4 feet of water 3-4 times a year. It's been fixed about 5 years.

[e]1. We lived in Allendale where there is a high water table.

The responses in Table 6 demonstrate that residents located within the 100-year flood plain in Lodi experience frequent flooding, as every respondent said that flooding had occurred in their neighborhood, and 81.5 per cent said that flooding occurs "once or more per year". A substantial percentage of respondents from other survey areas also perceived that flooding is a frequent event. The responses appear to infer that these respondents either live in highly flood-prone areas (as nearly 48 per cent selected B - "once or more per year") or in areas far removed from streams and low ground (as 40 per cent selected A - "floods never occur").

An interesting result of Question 2 is that 52.8 per cent of those outside Lodi's 100-year flood plain perceived that floods occur once or more per year, whereas only 38.9 per cent said that floods never occur. These figures call into question the accuracy of the 100-year flood plain, and further work is needed to verify this assumption.

This question was placed second to provide insight regarding respondents' experiences and/or knowledge of flooding. Although based on memory, the collective results continue to reinforce the assumption that flooding is a serious problem in Lodi, inside and outside of the 100-year flood plain and in some areas up- and down-stream.

One unexpected outcome, first shown in this question, but also evident in many others, is that flooding is more severe and frequent in the upstream municipalities than in the downstream ones. More than half of the respondents in the downstream municipalities said that "floods never occur", even though it is likely that some respondents live within the flood-hazard area of the Passaic River, as well as those within the flood-hazard area of the Saddle River. Additional study is needed to verify this finding and to establish the reasons for this apparent deviation from the normal hydrologic pattern.

Question 3. (Questionnaire A only):

Were you aware of a possible flooding problem before your moved into your home?

A. ____ yes

B. ____ no

If yes, how? _____

An assured method of informing prospective home buyers/renters as to hazardous conditions, such as flood plains, has been recommended for many years. Requiring such information to be stated on deeds would inform interested buyers, but few municipalities have established such a procedure.

TABLE 7. RESPONSES TO QUESTION 3. (Were you aware of a possible flooding problem before you moved into your home? (in per cent)

| Survey area | Yes | No | No response |
|---|---|---|---|
| Lodi, inside 100-year flood plain | 15.4 | 81.5 | 3.1[a] |

[a]1. N/A.

These results show that the large majority of respondents to the survey from Lodi's 100-year flood plain did not realize that they were buying/renting a house in the flood-hazard area. Many of these people said that they have lived in their present homes for many years (from 20 to 50 years), and there was no flood problem until the last few years.

TABLE 8. RESPONSES TO QUESTION 3. PART 2. (If yes, how?)

Lodi, inside the 100-year flood plain:[a]

1. Family owned home and property for several years.
2. I lived in this area before I bought this house.
3. My father has owned house for 12 years. We moved in on 5/77.
4. Lived in neighborhood all my life.
5. Owners of house told us.
6. We were told that area flooded once, more than 9 years ago. We were misled!

TABLE 8. (CONTINUED)

7. Not as severely as it has come. (Street flooded.)
8. Proximity to river.
9. Needed flood insurance for mortgage.

[a]Comments of those who answered no to Question 3.

1. My grandmonther bought this house when it was first built. There were no buildings anywhere near the river. Now there are apartment houses and factories and stores and the sewers aren't big enough.
2. We bought this house in 1955. We did not have flooding until 1968!
3. Moved in my house February 14, 1940.
4. We didn't experience a flood until 10 years after we purchased our house.

Comments of respondent who did not respond to Question 3:

1. In 1948, flooding wasn't common.

As most homeowners do not receive accurate knowledge of flood conditions from realtors, or previous owners, local officials must consider whether government has a duty under public health and safety provisions to protect citizens by adopting measures to inform them of hazardous conditions within the municipality.

Question 3B. (Questionnaire B only):

Have you ever lived in a house where you have been flooded?

A. ____ yes

B. ____ no

This question was asked to determine if those respondents from outside Lodi's 100-year flood plain had any direct experiences with flooding. Those with flood experiences might be more willing to participate in a questionnaire on flooding than those without any such knowledge or experience.

TABLE 9. RESPONSES TO QUESTION 3B. (Have you ever lived in a house where you have been flooded?) (in per cent)

| Survey area | Yes | No | No response |
|---|---|---|---|
| Lodi, outside 100-year flood plain | 33.3 | 63.9 | 2.8 |
| Upstream municipalities | 41.7[a] | 58.3 | 0.0 |
| Downstream municipalities | 29.4[b] | 70.6 | 0.0 |

[a]1. New Jersey shore.

[b]1. Same as #5 answer.

These results show that more than one-third of all respondents have had experiences with flooding in their residence at one time. The largest percentage occurs in upstream municipalities. How these experiences with or without flooding affect perception and attitudes toward those in Lodi's 100-year flood plain will be examined further in later questions. Since 64.3 per cent had never experienced flooding, their continued response to this questionnaire begins to demonstrate a concern for those in the flood-prone areas.

Question 4. (Questionnaires A and B):

Were you ever forced to leave your house due to flooding?

A. ____ yes

B. ____ no

If yes, when? _____

Both Questions 4 and 5 were designed to obtain information on the degree and severity of flooding experiences of the respondents. Being forced from one's home is one of the most extreme consequences of flooding. People are afraid of looting and other damages to their property, and

many times have to be forced to leave by police or national guard. Responses to this question should give an indication of the severity of the respondents' direct experiences with floods.

TABLE 10. RESPONSES TO QUESTION 4. (Were you ever forced to leave your house due to flooding?) (in per cent)

| Survey area | Yes | No | No response |
|---|---|---|---|
| Lodi, inside 100-year flood plain | 69.2 | 29.2 | 1.5 |
| Lodi, outside 100-year flood plain | 11.1 | 86.1 | 2.8 |
| Upstream municipalities | 19.4 | 80.5 | 0.0 |
| Downstream municipalities | 5.9 | 94.1 | 0.0 |

The responses to Question 4 indicate that the severity of flooding inside Lodi's 100-year flood plain, compared to the other survey areas, is substantially higher, as nearly 7 of every 10 respondents have been forced from their homes. Responses from the other areas show that severe flooding occurs, but fewer respondents are affected. Additional concern with the delineation of the flood plain in Lodi is exhibited by the 11.1 per cent outside the flood plain who had to be evacuated because of flooding.

TABLE 11. RESPONSES TO QUESTION 4. PART 2. (If yes, when?)

Lodi, inside 100-year flood plain:[a,b]

1 - 16. November 1977. (These 16 responses were given as the only such occurrence.)

TABLE 11. (CONTINUED)

17. November 8, 1977 was the last time. Few times previous.
18. In 1968 and 1970 and 1977 and 1945.
19. Once a year.
20. Every flood.
21. Every time.
22. 1945, early 1970's, 1977 (mind flooding in between).
23. 1970 - 7/71 - 9/71 - 72 - 74 - 75 - 76 - 77 - 78.
24. Nov. 1977 - Feb. 1979.
25. 1978 and 1976.
26. 4 or 5 times - 2/77 - 11/77 - 1/79 - 1/79.
27. Sept. 1971, Feb. 1977, Nov. 1977 and at least 6 times more, including Jan. 1979 - twice in one week.
28. 1971 and 1977 and in between.
29. All the time.
30. Twice - 1944 and 1978.
31. Every flooding occurrence.
32. 1970 - 1976 - 1977 - 1979.
33. Numerous times - 11/77 - 1/21/79 - 1/24/79.
34. 3/4's of the time.
35. No heat - 9 years ago 3 times in one week.
36. 1967 - 1977.
37. 4-5 (times).
38. Every time it floods.
39. 1978, also a few times before that.
40. Every time it floods.
41. Election day, Nov. 1977, was out and couldn't get to my house until the water receded in the area.
42. 11/77, 2/77, 1/79 (twice in 1 week).

Lodi, outside the 100-year flood plain:

1. 1965, 1966, 1967, and 1968.
2. 1944 - Sidney Street. (Away from Lodi since 1949).
3. 1950.
4. 1978 - nearby gas station was flooded overflowing its gas tanks forcing us to leave.

TABLE 11. (CONTINUED)

Upstream municipalities:[c]

1. Last year.
2. In the past 25 years, numerous times.
3. March 6-9, 1962.
4. Children - Nov. 1977.
5. Nov. 1977.
6. Nov. 1978.
7. Every flood since 1968.

Downstream municipalities:

1. Nov. 1977 (Kennedy Drive, Lodi).

[a]1. Comment from a respondent who answered no: "Almost in Nov. 1977".

[b]1. Comment from respondent who was evacuated as a result of the November 8, 1977 storm: "10 days".

[c]1. Comment from a respondent who answered no: "I was asked if I wanted to leave but I would not go - Election Day 1977".

Of the dates given in response to Question 4, Part 2, the following represent those when floods were severe enough to force several households to be evacuated, including the number of respondents who mentioned that date:

1979 - 8 responses; 6 mentioned January, and 1, February.

1978 - 6 responses

1977 - 35 responses; 3 mentioned February, and 25, November.

1976 - 3 responses

1971 - 4 responses

1970 - 3 responses

The frequency of mention of more recent floods probably results partly from their likelihood of being remembered by more respondents than those occurring between 1940 and 1969, and partly due to the increasing number of homes affected by each successive flood.

Question 5. (Questionnaires A and B):

How extensive has the damage to your house and/or property been due to flooding?

A. ____ no damage

B. ____ water on the property but not in house

C. ____ water in the basement

D. ____ water on the first floor or above

Have damages occurred more than once? ____ yes ____ no

Questionnaire A only:

If yes, when did the damages occur? _____

What was the approximate damage in dollars? _____

This question was intended to determine the severity of flooding on the property of the respondents. The degree of flooding is important because if flooding damages land only, or whether it damages the house and personel possessions, is of greater importance and corrective measures can be determined accordingly.

TABLE 12. RESPONSES TO QUESTION 5. (How extensive has the damage to your house and/or property been due to flooding?) (in per cent)

| Survey area | No damage | Water on property only | Water in basement | Water on first floor or above | Other | No response |
|---|---|---|---|---|---|---|
| Lodi, inside 100-year flood plain | 1.5 | 3.1 | 56.9[a] | 38.5[b] | 0.0 | 0.0 |
| Lodi, outside 100-year flood plain | 52.8[c] | 2.8 | 41.7 | 0.0 | 0.0 | 2.8 |
| Upstream municipalities | 33.3[d] | 11.1 | 47.2[e] | 2.8 | 0.0 | 5.5 |
| Downstream municipalities | 55.9 | 2.9 | 29.4[f] | 5.9 | 2.9[g] | 2.9 |

[a]1. We had an above ground pool (Hendon). We had to take it down because all the flood waters from previous floods made it unsafe to hold all the water it required.

TABLE 12. (CONTINUED)

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2. I had just remodeled basement - wooden floor - linoleum - marlite in bathroom and paneling. Last week I had to get the exterminator because pavement ants were in my bedroom, bathroom, kitchen on my first floor coming from the basement.

After the 4th time, I spent $1,200.00 waterproofing my foundation and blocking my back entrance with waterproofing cement and bricks and Nov. 1977 the water came above my basement window and I had 6 feet of water - the same week I had finished remodeling.

3. Water came to the ceiling of the basement - up the stairs and out the side door.

4. Lost our car.

5. 7 feet.

6. 9 inches.

7. 6 feet.

8. Two respondents said: "Almost to first floor".

[b]1. Everything on my 1st floor.

[c]1. I know the ordeal these people have - my mother is in a flood area.

[d]1. Little damage - We have no brooks or streams near our house. Yet heavy rains have caused some natural erosion of top soil as the years have passed. Seldom do we get water in our house. It seems when rain is driven from northwest it may then enter our basement in just a few areas that amount to puddles. Thankfully, it is rare.

[e]1. Besides the fright of seeing the water rise to your door steps and being removed from your house with row boats, I am sure that this type of anxiety affects the health of many not to mention the loss and cleaning up.

2. 4.6 inches of it.

[f]1. Lost 1976 Dodge Aspen to flood which occurred November 8, 1977.

[g]1. 8 inches.

2. Basement apartment - we had to relocate due to extensive damage.

---

Comparing the results of Question 5 to Question 4, the reasons for the evacuations become clear as 38.5 per cent of the respondents within Lodi's 100-year flood plain had water in their homes as high as the first floor, and 44 per cent of the respondents in all survey areas had

water in the basement.

TABLE 13. RESPONSES TO QUESTION 5. PART 2. (Have damages occurred more than once? (in per cent)

| Survey area | Yes | No | No response |
|---|---|---|---|
| Lodi, inside 100-year flood plain | 90.8 | 7.7 | 1.5 |
| Lodi, outside 100-year flood plain | 36.1 | 41.7 | 22.2 |
| Upstream municipalities | 41.7 | 22.2 | 36.1 |
| Downstream municipalities | 35.3 | 47.1 | 17.6 |

In addition to the critical nature of the flood problem shown in Table 12, Table 13 illustrates that more than 50 per cent of all respondents have had damages more than once - with the majority being within Lodi' 100-year flood plain. In addition, the affirmative answers from the other areas again demonstrates the extent of the flood problem in the Lower Saddle River Basin.

Responses to Parts 3 and 4 of Question 5 from respondents inside Lodi's 100-year flood plain only are shown in Table 14. The amount of losses are estimated by the respondents. A comparison between these losses and aid given by relief agencies would be an appropriate subject for further study to determine the amount of loss not covered by insurance and other forms of financial and in-kind aid.

TABLE 14. RESPONSES TO QUESTION 5. PARTS 3 and 4. (If yes, when did the damages occur? What was the approximate damages in dollars?)

| When did the damages occur? | Approximate damages |
|---|---|
| 1. Every time it floods. | $1,000 |

TABLE 14. (CONTINUED)

| When did damages occur? | Approximate damages |
|---|---|
| 2. 1968 - first flood; 1971 - Aug. and Sept. - 2 weeks apart; several smaller ones between 1971 and 1979 - Nov. 8, 1977 | Loss of up to and above $35,000 over the years |
| 3. 1945 and 1977 | No response |
| 4. 1977 and 3 other times | @$5,000 |
| 5. 1977, 1979 | $8,000 |
| 6. Nov. 1977 | $7,000 |
| 7. In 1971, 1977 | 1971 - $7,500; 1977 - $11,000 |
| 8. Nov. 8, 1977, also two other occasions, cannot recall year | $17,000 approximate |
| 9. 1968 - 1977 two larger floods | Over $10,000 for loss of clothing, washing machine, refrigerator, dryer, and too many other things |
| 10. 1967 flood - 1977 flood | $5,000 plus personals and property |
| 11. 37 inches in Jan. 1979 and of course Nov. 8, 1977 | $2,700 first time, did not get the damages for second one yet |
| 12. Nov. 8, 1977 and approximately 2 or 3 weeks ago | $1,000 |
| 13. Every time it floods | $800 |
| 14. Nov. 8, 1977, Sept. 1970 | 1977 - $13,500 |
| 15. Basement | $2,700 |
| 16. 1945 - 1947 - 1964 - 1971 | ? |
| 17. 1st floor Sept. 1971 - Nov. 1977 lost one wall of foundation - Feb. 77 - water pressure | Sept. 71 - no flood insurance, SBA loan $5,000. Feb. 77 - $18,789. Nov. 77 - $19,259 plus small amount |
| 18. Nov. 77, June 1967, 2 weeks apart twice Sept. 1972 and unrecorded dates | Nov. 77 - $40,000 |
| 19. Depending upon the extent (size) of flood | $9,200 |
| 20. 1974, 1975, 1977, 1977, 1979, ? | $20,000 a year |
| 21. Nov. 1977 | $15,000 |

TABLE 14. (CONTINUED)

| When did damages occur? | Approximate damages |
|---|---|
| 22. 1/79 - 11/77 - 2/77 and other minor damages lost below $200 deductible | $17,000 we collected in claims and $5,000 loan; actual damages much larger |
| 23. 11/8/77 - on first floor, lost count as to number of times in basement only | 11-8-77 = $20,000 |
| 24. 1970 - 7/71 - 9/71 - 72 - 74 - 75 - 76 - 77 - 78. In 1971 and 1977, spent nights in high school gym. | To put house back to 1969 - $30,000 |
| 25. 1971 and 1977 | 1971 - $18,000; 1977 - $31,000 |
| 26. Nov. 1977 and August 1970 or 1971 | $23,000 |
| 27. Nov. 1977 | $6,000 |
| 28. Nov. 1977, Feb. 1978 | $900 - $2,500 |
| 29. Nov. 77, 2/77, 2/79 | $28,000 |
| 30. During all floods | $30,000 (including losses before flood insurance) |
| 31. Nov. 8, 1977 | $30,000 |
| 32. Every flood | $4,000 a flood - 3 floods a year since '68 |
| 33. 1977, 1979 | Over $22,000 |
| 34. 76 - 77 - 78 - 79 | 1977 loss was $10,000 damage |
| 35. 1975, 1977 | $2,000 |
| 36. 2 years ago and 7 years ago | Approximately $800 |
| 37. 1979 - 78 - 76 - 73 | Overall $20,000 |
| 38. Nov. 1977[a] | $8,000[b] |
| 39. Aug. 1945 - May 1968 - 1971, two floods - Nov. 8, 1977 | $7,000 in 1968; $4,000 in 1977 |
| 40. Nov. 1978 | $12,000; lost almost everything on first floor and all in basement |
| 41. 1971, 1977 | 1971 - $11,000; 1977 - $15,000 |
| 42. Last year election time | About $400 |
| 43. No response | $13,000 |
| 44. March 1979 | No response |

TABLE 14. (CONTINUED)

| When did damages occur? | Approximate damages |
|---|---|
| 45. 1968 - 1971 - 1977; there are more dates I don't remember them | In all floods at least $20,000 |
| 46. 1970 - 1976 - 1977 - 1979 | In excess of $100,000 [a business] |
| 47. 11/77 - other dates which I can't recall | $500 |
| 48. When the cellar flooded | Approx. $4,000 - the cellar is finished |
| 49. 1977 | $40,000 |
| 50. Every time we received the slightest flooding | $9,000 |
| 51. Nov. 8-9, 1977 | Over $5,000 |
| 52. Nov. 8, 1977; Jan. 1979 | $40,000? |
| 53. Nov. 8, 1977 | $4,566.75 |
| 54. Nov. 1977 | $6,000 |
| 55. Nov. 6, 1977 | $5,000 |
| 56. From 1968 till now - at least twice a year | $10,000 - $15,000 |
| 57. 1978 | $11,000 |
| 58. Everytime we get water there's some damage | In 1967 - $5,000; 1977 - $5,000 or more |
| 59. In November 8, 1977 when it hit first flood and lost everything | About $15,000 |
| 60. 11/77 - 1/21/79 - 1/24/79 | At least $10,000 |

[a]1. My car broke down at work in Hackensack Post Office and I wasn't able to get home.

[b]1. I only received $5,000 from flood insurance because I couldn't replace certain items. I only received money for bills and receipts.

The recurrence of damaging floods and the amount of losses sustained by the respondents during these floods demonstrates the need for a program to reduce flooding in the Lodi area. Even though a substantial portion of these losses are covered by flood insurance, the amount of damages to health and well being are never retrieved.

Question 6. (Questionnaires A and B):

Please answer each of the following questions on flood insurance.

A. Have you ever heard of the flood insurance program?

____ yes ____ no

B. Do you carry flood insurance?

____ yes ____ no

C. If yes, when did you purchase it? _____

D. If no, for what reason(s)? _____

The National Flood Insurance Program is a federal program whose primary objectives are: 1) to insure property owners within the flood-hazard areas, and 2) to require municipalities to develop flood plain regulations. These elements have the goal of preventing the increasing personal and societal economic losses floods cause. Flood damages have increased each year, so that by 1975 the annual loss, in property only, totalled $3,438,000,000 (Institute of Rational Design, 1977).

The flood insurance program has three phases:

1. The application phase: any municipality can apply for flood insurance to be available to its citizens only when it can demonstrate it has the legal authority to regulate flood plain uses (Code of Federal Regulations, Title 24, Chapter 10, Subchapter B, 1909.2).
2. Emergency program phase:
   a. Immediately upon the acceptance of a municipality's application, 50 per cent of the limit of insurance coverage is available to be purchased. This is partially subsidized by the government. For a single-family home, the subsidy is 25¢ per $100; for the contents, 35¢ per $100 (U.S. Department of Housing and Urban Development, 1977).
   b. All structures within the area shown on the Flood Hazard Boundary Map must carry flood insurance, but anyone in the municipality can participate.
   c. A detailed study is conducted to determine specific levels of risk to flooding at each elevation (Code of Federal Regulations, Title 24, Chapter 10, Subchapter B, 1909.3).
3. Regular Program Phase:
   a. When an official map is prepared - the Flood Insurance Rate Map -

based on the detailed study, the municipality enters the Regular Phase.

b. In addition to the insurance available under the Emergency Phase, property owners can supplement their coverage, but on an actuarial basis; that is, the rate is determined by the degree of risk identified on the Flood Insurance Rate Map (Code of Federal Regulations, Title 24, Chapter 10, Subchapter B, 1911.7).

c. Within six months of entering the Regular Phase, the municipality must adopt flood plain management regulations, or the municipality will be suspended from the program (Code of Federal Regulations, Title 24, Chapter 10, Subchapter B, 1909.24).

Question 6 was included in an effort to determine how widely known the federal flood insurance program was throughout the survey area. If this program is not well known, officials have not been informing those in need of the partially subsidized flood insurance, now available through private insurance carriers.

TABLE 15. RESPONSES TO QUESTION 6. PART A. (Have you ever heard of the flood insurance program?) (in per cent)

| Survey area | Yes | No | No response |
|---|---|---|---|
| Lodi, inside 100-year flood plain | 93.8 | 4.6 | 1.5 |
| Lodi, outside 100-year flood plain | 80.5 | 13.9 | 5.5 |
| Upstream municipalities | 77.8 | 19.4 | 2.8 |
| Downstream municipalities | 70.6 | 29.4 | 0.0 |

These results indicate that a substantial number of the respondents (particularly those inside the 100-year flood plain in Lodi) have heard of the program, but further study would be needed to reveal their knowledge of its specific provisions.

The second part of Question 6 asked whether the respondents carried flood insurance. This was asked as an indication of the risk that the respondents perceived toward flooding, on the assumption that those who carried flood insurance felt they were in a hazardous location.

TABLE 16. RESPONSES TO QUESTION 6. PART B. (Do you carry flood insurance?) (in per cent)

| Survey area | Yes | No | No response |
|---|---|---|---|
| Lodi, inside 100-year flood plain | 81.5 | 16.9 | 1.5 |
| Lodi, outside 100-year flood plain | 11.1 | 86.1 | 2.8 |
| Upstream municipalities | 8.3 | 91.7 | 0.0 |
| Downstream municipalities | 0.0 | 97.0 | 2.9 |

These responses show that flood insurance is only carried in substantial numbers in Lodi, inside the 100-year flood plain. Lodi entered the regular phase of the National Flood Insurance Program on February 15, 1978 (Federal Insurance Administration, 1978). Results from other survey areas are somewhat misleading as very few of these municipalities are in the Regular Program Phase.[3] Therefore, full coverage is not yet available to those residents. This may explain, in part, why so few respondents carry flood insurance despite flood conditions which were

[3]Maywood became eligible for the regular program on August 15, 1977. Hasbrouck Heights and Wood-Ridge have partially entered the regular program on a community basis, without detailed flood elevations; consultants are preparing studies on Hackensack and Wallington; Saddle Brook, Fair Lawn, and Garfield have detailed information available, but have not yet joined the regular program. Therefore, all municipalities should be in the regular program in the near future (Interview with Joe Picciano, Federal Emergency Management Agency, formerly Federal Insurance Administration, February 6, 1980).

described in earlier questions. Comparative data are available from the Federal Insurance Administration as to the number of policies written in each of the municipalities in the survey area. These data are shown in Table 17.

TABLE 17. FLOOD INSURANCE POLICIES ISSUED IN MUNICIPALITIES IN SURVEY AREA, AS OF JUNE 30, 1978

| Municipality | Number and type of policies |
|---|---|
| Lodi | 114 regular |
| | 276 emergency |
| Hackensack | 110 emergency |
| Saddle Brook | 58 emergency |
| Maywood | 2 regular |
| | 9 emergency |
| Fair Lawn | 126 emergency |
| Hasbrouck Heights | 8 regular |
| | 1 emergency |
| Garfield | 125 emergency |
| Wood-Ridge | 6 emergency |
| Wallington | 30 emergency |
| Total: | 124 regular |
| | 741 emergency |

| | | |
|---|---|---|
| Total: | Lodi | 390 |
| | Upstream | 305 |
| | Downstream | 170 |
| Grand total: | | 865 |

Source: Federal Insurance Administration, 1978.

Policies are unevenly distributed in the municipalities in the survey area. For example, 74 per cent of those in the downstream municipalities are in Garfield, and 77 per cent of those in upstream municipalities are in Hackensack and Fair Lawn. These statistics have been interjected to demonstrate that flooding occurs both upstream and downstream, but a random sampling does not always reach these residents.

The respondents were also asked the date when flood insurance was purchased. These responses are shown in Table 18.

TABLE 18. RESPONSES TO QUESTION 6. PART C. (If yes, when did you purchase it?)

| Date | Number of responses |
|---|---|
| Lodi, inside 100-year flood plain: | |
| 1978 | 5 |
| 1977 | 10 |
| 1976 | 3 |
| 1975 | 7 |
| 1974 | 1 |
| 1973 | 1 |
| 1972 | 4 |
| 1971 | 4 |
| Other responses in which the date was not given or could not be determined: | |
| After the flood. | Last year. |
| When it was available. | After the flood of 1977. |
| When we purchased home. | Three years ago. |
| Unknown. | 77 and 78. |
| Prior to 1977. Date not available. | About nine years ago. |
| After first time home was flooded. | Five years ago, |
| After 1971 flood. When first available. | After early 1970's floods. |
| Approximately 10 years ago. | Seventy's 72-73. |
| When we bought home. | |

TABLE 18. (CONTINUED)

| Date | Number of responses |
|---|---|
| Lodi, outside 100-year flood plain: | |
| After November 8, 1977 | 1 |
| 1966[4] | 1 |
| 1959[4] | 1 |
| 1952[4] | 1 |
| Upstream municipalities: | |
| 1978 | 1 |
| 1976 | 1 |
| Other response to which date was not given or could not be determined: When it was first available for Lodi. | |
| Downstream municipalities: | |
| No responses | |

The majority of respondents who have purchased flood insurance are in Lodi's 100-year flood plain. Only a few respondents outside Lodi's flood plain have purchased flood insurance. In Lodi, outside 100-year flood plain, four responses; in upstream municipalities, three responses; and in downstream municipalities, none. Most respondents who have purchased flood insurance have done so within the last five years. Two reasons probably account for this: first, Lodi was not in the regular flood insurance program until 1978 (after the November 1977 flood), and other municipalities are just beginning to enter the regular phase; and second, a large number of damaging floods have occurred during the 1970's, increasing the need for flood insurance.

Part D of Question 6 was asked of those who have not purchased

[4]These three cannot be federal flood insurance, as it was not available until 1968.

flood insurance to obtain some idea why they thought it was not necessary for themselves.

TABLE 19. RESPONSES TO QUESTION 6. PART D. (If no, for what reasons?)

| Reason | Number of responses |
|---|---|
| Lodi, inside 100-year flood plain: | |
| Not necessary | 2 |
| Too much red tape | 2 |
| Never heard of it | 1 |
| Rent | 1 |
| Turned down | 1 |
| Lodi, outside 100-year flood plain: | |
| Not necessary (not in flood area) | 20 |
| Only get water in basement | 3 |
| Problem not related to river | 1 |
| I believe that there was more than enough help after each flood and to pay insurance premiums would be an extra monthly expense. | 1 |
| Same as #7. (Federal government should bear the responsibility.) | 1 |
| Upstream municipalities: | |
| Not necessary (not in flood area) | 10 |
| Rent | 2 |
| Did not know there was flood insurance | 2 |
| Too expensive | 2 |
| Sump pump in basement | 1 |
| Because we are already paying through real estate taxes and I feel our town should be liable for these occurrences, by correction, and controlling what industries come into town. | 1 |

TABLE 19. (CONTINUED)

| Reason | Number of responses |
|---|---|
| Upstream municipalities: (continued) | |
| I was flooded once. I am going to gamble that it doesn't happen again. I am living here for 24 years and it is the first time. | 1 |
| Downstream municipalities: | |
| Not necessary (not in flood area) | 19 |
| Expensive | 1 |
| Rent | 1 |
| Not totally necessary - two sump pumps installed in basement | 1 |
| I hope, that was the last time | 1 |
| Flood waters only reached calamity proportions two years ago - recommend building banks along river to contain water. | 1 |

Most respondents said they do not carry flood insurance because they do not live in a flood-prone area; others reasons given are its too expensive, there is too much red tape, as well as those who are taking the risk that a serious flood will not occur again in their area.

Question 7. (Questionnaire A and B):

Please check, in order of importance, what you believe to be the three best methods of reducing flood damages and costs in Lodi. (NOTE: Use #1 as the most important solution, #2 as the second most important solution, and #3 as the third most important solution.)

A. ____ Reroute the river

B. ____ Dams, dikes, levees

C. ____ Stop building in flood-prone areas

D. ____ Tighter zoning regulations

E. ____ Flood insurance

F. ____ Flood relief aid

G. ____ Move away from flood-prone areas

H. ____ Straighten and deepen the river (channelization)

I. ____ Government regulations

J. ____ Other (please specify)

_____

Obtaining the opinions of the respondents on methods to reduce damages and costs caused by floods was a major objective of the survey. Whether the majority would select "traditional" flood control measures, which are more familiar, such as dams, dikes, levees, and channel improvements, or the more modern techniques, such as flood plain regulations, evacuation of severe flood-prone areas, or modification of zoning ordinances in flood plains would be indicative of what measures seem appropriate to these citizens. How the respondents received the information to make the selections shown in Table 20, would be an interesting follow-up study.

Because the respondents were asked to rank their top three choices, the following procedure was used in tallying the responses. Each number 1 ranked selection was given a value of three; each number 2, a value of 2; and each number 3, a value of 1. Total values for each selection were calculated for each of the survey areas, as shown in Table 20.

TABLE 20. RESPONSES TO QUESTION 7. (Please check, in order of importance, what you believe to be the three best methods of reducing flood damages and costs in Lodi.)

| Choice | Lodi, inside 100-year flood plain | Lodi, outside 100-year flood plain | Upstream municipalities | Downstream municipalities |
|---|---|---|---|---|
| A. Reroute the river | 30 | 13 | 18 | 7 |
| B. Dams, dikes, levees | 34[a] | 17 | 23 | 16 |
| C. Stop building in flood-prone areas | 48 | 33 | 31 | 53[b] |
| D. Tighter zoning regulations | 13 | 14 | 11 | 12 |
| E. Flood insurance | 2 | 0 | 6 | 5 |
| F. Flood relief aid | 3 | 0 | 3 | 1 |
| G. Move away from flood-prone areas | 31 | 13 | 11 | 9 |
| H. Straighten and deepen the river | 113[c] | 58 | 53[d] | 49[e] |
| I. Government regulations | 13[f] | 0 | 6 | 6[g] |

TABLE 20. (CONTINUED)

| | Lodi, inside 100-year flood plain | Lodi, outside 100-year flood plain | Upstream municipalities | Downstream municipalities |
|---|---|---|---|---|
| J. Other | 12 | 14 | 6 | 8 |
| No response | 2 | 2 | 2 | 0 |
| No rating | 13[h] | 6[i] | 5[j] | 4[k] |
| No selection | 0 | 1[l] | 2[m] | 1[n] |

Additional choices given under J. Other:

Lodi, inside 100-year flood plain:

1. Pipe the brook adjacent to my home.
2. More catch basins to relieve street flooding.
3. Proper drainage of Route 46.
4. No encroachment on the river.
5. All houses near river should either be moved or bought at the expense of the government (city, county).
6. Fastest method - move all politicians (and their families) in flood areas for first hand feel of what a flood in your home means - clean out the mud - have their entire life and health affected by a flood = Guaranteed: something would be done!
7. Make flood basins in lowest areas.
8. Building up banks with retaining walls.

Lodi, outside 100-year flood plain:

1. My problem is not related to the river but to poor planning on the part of the city.
2. Remove railroad trestle between Garfield - South Hackensack over Saddle River.
3. Petition federal funds to purchase property in flood area, then widen and deepen river bed and establish no building in flood zone area.
4. Eliminate railroad bridge in Garfield.
5. Stop property owners from encroaching on river banks.
6. Stop the constant encroachment by private property owners along the river, who believe they own property in the river.
7. Dam the river off at Upper Saddle River with a reservoir and dam it at Passaic River. It is no use to anyone.
8. Stop Lodi dumping contractors' materials alongside the river banks. It's a must.

TABLE 20. (CONTINUED)

Upstream municipalities:

1. Purchase of homes bordering river that are flooded every flood.
2. Enforce stiff penalties to companies and persons who dump liquid or material in river.
3. The river should be allowed to run its natural course and not re-routed for homes and buildings to be erected.

Downstream municipalities:

1. Those who build in flood plain (apartment houses, Felician College) should provide proper channelization - remove filled in area.
2. Fill in flood prone area(s) by (builders) above flood level prior to building - flood prone areas are purchased cheap!
3. Government program to purchase homes that are in critical areas and have been flooded constantly over the years.
4. Keep river free of debris.

[a]1. Build wall by apartments.

[b]1. Politicians allowed a college (Felician College) to be built in the path of the river - how stupid can they have been?

[c]1. Pipe water channels.

2. The rivers and streams should be deepened and made wider.

[d]1. Straighten and deepen river at end below trouble area.

[e]1. Widen the river capacity.

2. This was done before but many years ago and development has caught up with.

[f]1. Because town in doing absolutely nothing - just raising our taxes.

[g]1. Stop illegal building.

[h]Selections made but not ranked:

1. C, G, H
2. B, C, D, H, J,
3. H
4. C, D, E, H, I

TABLE 20. (CONTINUED)

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h (Continued)

5. B
6. A, B, H
7. C, D, F, H
8. H - a must
9. B, D, I
10. B, J, - Army Corps of Engineers
11. B, G, H
12. B, C
13. A, C, G, H (A in Lodi and Wallington). Government is talking of buying 18 homes - to form a flood area after homes are demolished.

[i]Selections made but not ranked:

1. C, D
2. C, H, J
3. A, B, C, D, E, F, H, I
4. B, C, H
5. C
6. C, H

[j]Selections made but not ranked:

1. C, G, H
2. D, H
3. H
4. C, H
5. B, E, I

[k]Selections made but not ranked:

1. C, H
2. B, C, H
3. C, D, H
4. C, H

[l]No selection, but commented: This is up to local engineers.

TABLE 20. (CONTINUED)

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[m]No selection, but commented:

1. Am not qualified to answer.

2. I cannot express a valid opinion as I know nothing about flood control or reconstruction. The people of Lodi so affected and the city, county and state, I think should best be able to judge what are their chief complaints. Someone in this country should be able to help these people with this terrible problem.

[n]No selection but commented: Inasmuch as I live in Wood-Ridge, I don't understand why I received questionnnaire.

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Considering the survey area as a whole, the choices selected most often are: H. Straighten and deepen the river - 32.8 per cent; C. Stop building in flood-prone areas - 19.8 per cent; and B. Dams, dikes, levees - 10.8 per cent. No other selection received more than 10 per cent. The responses within each survey area are quite similar to the totals - the only change in order is that in the upstream municipalities C exceeded H. Comparing these results to the comments provided by the respondents throughout the questionnaires, the respondents are of the opinion that 1) dredging the river, 2) preventing development in streams and banks, and 3) building flood walls are the most appropriate ways to reduce flood-caused damages and costs.

Question 8. (Questionnaires A and B):

Who should bear the responsibility to correct the flooding problem in Lodi? (Check one or more)

A. ____ Federal government
B. ____ State government
C. ____ County government
D. ____ Local (town) government
E. ____ Home owner
F. ____ Business or industry
G. ____ Developers
H. ____ No one should bear the responsibility
I. ____ Other (please explain)

This question was asked to determine which level of government or other institution the respondents would select as being responsible for correcting the flood problem. This is essential to those planning

flood control programs in the Saddle River Basin.

TABLE 21. RESPONSES TO QUESTION 8. (Who should bear the responsibility to correct the flooding problem in Lodi?)

| Selection | Lodi, inside[a] 100-year flood plain | Lodi, outside[b] 100-year flood plain | Upstream[c] municipalities | Downstream[d] municipalities |
|---|---|---|---|---|
| A. Federal government | 56 | 23 | 22 | 21 |
| B. State government | 49 | 20 | 18 | 22 |
| C. County government | 34 | 13 | 14 | 14 |
| D. Local government | 22 | 8 | 9 | 14 |
| E. Home owner | 0 | 2 | 2 | 4 |
| F. Business or industry | 5 | 6 | 2 | 3 |
| G. Developers | 9 | 10 | 5 | 12 |
| H. No one | 0 | 1 | 0 | 0 |
| I. Other | 2 | 2 | 0 | 2 |
| No response | 2 | 1 | 1 | 0 |

Additional choices given under I. Other:

Lodi, inside 100-year flood plain:

1. Whoever is at fault for not allowing the waters to flow freely; too much building on the waterways.
2. All business and industry that are on the banks of the river have profited by using parts of the river bed.

Lodi, outside 100-year flood plain:

1. Those who encroached the river bed.
2. Those people who rerouted the river.

Upstream municipalities:

1. Town government should be responsible for this, by zoning, stop overloading with industries, prevent dumping in brooks and rivers, and the county should be aware of these situations and follow up.

Downstream municipalities:

1. See 6 above. [Builders fill in flood prone areas.]

TABLE 21. (CONTINUED)

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[a]1. A, B, C, D - Should be on a matching fund basis!

2. A, B, C - The government is walking on the moon; I'm sure they can do something about our water problem.

3. A, B, C - It should be a joint responsibility.

4. A - Only because the local regime just passes the buck. There is entirely too much nepotism and too many corrupt politicians. I have lived in Lodi all my life, unfortunately. I can't do much alone.

5. A, B, C, D - Working together.

[b]1. A, B, C, D, G -Include developers of the Wallington Apartments who closed the mouth of the Saddle River close to the Passaic River.

2. A, B, C, D, E, F, G - If it is going to be corrected - everyone must bear the responsibility.

3. F, G - Developers, for messing and clogging the river, encroaching with debris.

4. B, G - If developers would stop narrowing the river we wouldn't have this problem.

5. A, B, C, D - Cost should be shared amongst these four.

[c]1. No response - No one wants to "hold the baby here" but when local government knows about a flooding problem in their town, they should not drag their feet but get help quick for those citizens affected and not waste time blaming each other.

[d]1. A, B, C - Federal and State government changed the river course in Passaic; County permitted building in flood plains in Wallington.

2. A - The Federal government helps every country in the world when disaster strikes. Why not help their own?

---

The consensus of the respondents is that the federal government in association with state, county and local governments should undertake programs to solve the flood problem in the survey area. The commentary and the selection of developers also indicated that those who encroached upon the river should be made to bear appropriate responsibility.

Question 9. (Questionnaire A only):

Have you taken any preventive measures to protect your home from flooding?

A. ____ yes

B. ____ no

If yes, what? _____

Whether residents in flood-prone areas are willing to undertake measures to protect their property will help to explain their attitudes toward the flooding problem. If they thought the problem were unsolvable, they may not attempt to do anything to assist in the solution. Self-help measures, such as sealing basement openings, floodproofing, raising the house, placing damageable property in higher floors, installing sump pumps, etc., may be useful in areas where the flood hazard is not too great.

TABLE 22. RESPONSES TO QUESTION 9. (Have you taken any preventive measures to protect your home from flooding?) (in per cent)

| Survey area | Yes | No | No response |
|---|---|---|---|
| Lodi, inside 100-year flood plain | 64.6 | 30.8[a] | 4.6 |

[a]1. It wouldn't matter what we'd do, nothing would help since we live right on the river bank.

2. What do you suggest we do?

3. Can't get house away from water!

4. There's not preventative measure to take.

5. There is no way.

6. There is no way I can protect my house from flooding.

A significant percentage of the respondents from Lodi's 100-year flood plain have attempted to protect their property from flooding damages. However, such measures cannot be counted upon for protection apart from a basin-wide abatement program when large storms occur. The types of measures undertaken by the respondents are shown in Table 23.

TABLE 23. RESPONSES TO QUESTION 9. PART 2. (If yes, what?)

| Measure | Number of responses |
|---|---|
| Installed pumps | 20 |
| Sealed doors and windows | 15 |
| Waterproofing | 9 |
| Built retaining walls | 5 |
| Repaired foundation | 3 |
| Removed valuables from basement | 3 |
| Raised ground around house | 2 |
| Bought a boat | 1 |

The installation of pumps and the various measures to seal basements were the most numerous actions taken by the respondents. The effectiveness of such measures in future floods cannot be predicted; however, the removal of property from basements that flood on a regular basis would always be a help in reducing property damages.

Question 10. (Questionnaire A only):

Did you receive any kind of emergency aid during the flood of November 8, 1977?

A. ____ yes

B. ____ no

If yes, from whom? _____

What type of aid? _____

Many private and governmental agencies have traditionally provided disaster aid during times of extreme need, such as during earthquakes, tornadoes, hurricanes, fire, tsunamis, and floods. The flood of November 8, 1977 was one of the worst in the Saddle River Basin in this century. The amount and kind of aid and its source provided during such an emergency is important in planning for future needs. The responses to this question from those in Lodi's 100-year flood plain are shown in Table 24.

TABLE 24. RESPONSES TO QUESTION 10. (Did you receive any kind of emergency aid during the flood of November 8, 1977?) (in per cent)

| Survey area | Yes | No | No response |
|---|---|---|---|
| Lodi, inside 100-year flood plain | 66.2 | 33.8[a] | 0.0 |

[a]1. I moved in in 1978.

The results show that slightly more than two-thirds of the respondents inside the 100-year flood plain received some kind of aid during the flood. The source and types of aid received are shown in Tables 25 and 26.

TABLE 25. RESPONSES TO QUESTION 10. PART 2. (If yes, from whom?)

| Source of aid | Number of responses |
|---|---|
| American Red Cross | 34 |
| Small Business Administration | 3 |
| Firemen | 3 |
| Police | 1 |
| Emergency squad | 1 |
| Relative | 1 |
| Total | 43 |

TABLE 26. RESPONSES TO QUESTION 10. PART 3. (What type of aid?)

| Type of aid | Number of responses |
|---|---|
| Money | 17 |

TABLE 26. (CONTINUED)

| Type of aid | Number of responses |
|---|---|
| Food, clothing, etc. | 12 |
| Evacuated from home | 5 |
| Cleaning supplies | 4 |
| Pumped water from basement | 3 |
| First aid | 2 |
| Total | 43 |

Question 11. (Questionnaire A only):

Did you receive any aid after the flood of November 8, 1977?

_____ yes

_____ no

If yes, from whom? _____

What type of aid? _____

This question was asked to determine if the same or different agencies provide emergency aid during and after a disastrous flood.

TABLE 27. RESPONSES TO QUESTION 11. (Did you receive any aid after the flood of November 8, 1977?) (in per cent)

| Survey area | Yes | No | No response |
|---|---|---|---|
| Lodi, inside 100-year flood plain | 47.7 | 49.2 | 3.1 |

These responses show that the aid received after the flood was considered by the respondents to be less than that during the flood. The sources and types of aid are shown in Tables 28 and 29.

TABLE 28. RESPONSES TO QUESTION 11. PART 2. (If yes, from whom?)

| Source of aid | Number of responses |
|---|---|
| Red Cross | 13 |
| Small Business Administration | 12[a] |
| Insurance: | |
| Flood | 8 |
| Car | 2 |
| Fire Department | 2 |
| Water Department | 1 |
| Total | 38 |

[a]1. One was SBL; assumed to be SBA.

TABLE 29. RESPONSES TO QUESTION 11. PART 3. (What type of aid?)

| Type of aid | Number of responses |
|---|---|
| Loan | 12 |
| Payment on insurance claims | 8[a] |
| Clothing, bedding, food | 6 |
| Money | 4 |
| Pumped water out | 2 |
| Total | 32 |

[a]1. They only gave us not even half of what our damages were.
2. Six months later insurance less than half of damages.

From the responses to Questions 10 and 11, the Red Cross is the major provider of emergency aid. Provisions of food, clothing, money, and cleaning supplies comprised the major portion of aid given. The respondents, in many cases, seemed not to discriminate between aid given during and after the flood.

Financial aid, either through the National Flood Insurance Program or the Small Business Administration, was named by 62.5 per cent of those who received aid after the flood. Disaster aid, as differentiated from Small Business Administration loans, was not available because the President did not declare an emergency in New Jersey after the flood of November 8, 1977.

Question 11B. (Questionnaire B only):

Do you believe that Lodi residents received the proper aid during and after the flood of November 8, 1977?

A. ____ yes
B. ____ no
C. ____ don't know

This question was asked to determine if the respondents from the survey areas outside Lodi's 100-year flood plain were aware of the failure of the President to declare the area an disaster.

TABLE 30. RESPONSES TO QUESTION 11B. (Do you believe that Lodi residents received the proper aid during and after the flood of November 8, 1977?) (in per cent)

| Survey area | Yes | No | Don't know | No response |
|---|---|---|---|---|
| Lodi, outside 100-year flood plain | 31.9[a] | 18.0 | 47.2 | 2.8 |
| Upstream municipalities | 16.7 | 13.9[b] | 69.4[c] | 0.0 |
| Downstream municipalities | 11.8 | 11.8[d] | 73.5[e] | 2.9 |

[a]1. Yes - rescue aid; no - financial aid 100 per cent damage aid.

[b]1. To aid people by outsiders, there has to be a good layout of their

TABLE 30. (CONTINUED)

b (Continued)

streets and roads into and out of Lodi. The streets and roads are generally narrow and few go through. Lodi should develop and implement such a street and road pattern so that isolated people can be readily helped. Lodi should provide adequate emergency accomodations, such as sleeping quarters, toilet and bath facilities, food, and clothing for rescued people.

[c]1. I can't speak for all residents.

[d]1. In order to get to business I was forced to rent car at own expense because of loss of car to flood.

[e]1. I would like to know how much the crooks they have in local government kept in their own pocket!

The majority of respondents did not have an opinion, which is not surprising as more than 17 months had passed between the flood and the survey. Those in Lodi, surprisingly, answered yes to this question at a higher rate than those in upstream and downstream communities.

Question 12. (Questionnaires A and B):

Do you believe that there is an adequate flood warning system in Lodi?

A. ____ yes

B. ____ no

One of the first efforts to aid in flooding problems by government was the establishment of a formal flood warning system, based on the organized systematic basis, usually coordinated by the U.S. Weather Bureau, emergency personnel, and the media.

TABLE 31. RESPONSES TO QUESTION 12. (Do you believe there is an adequate flood warning system in Lodi?) (in per cent)

| Survey area | Yes | No | Other | No response |
|---|---|---|---|---|
| Lodi, inside 100-year flood plain | 43.1 | 46.1[a] | 7.7[b] | 3.1 |

TABLE 31. (CONTINUED)

| Survey area | Yes | No | Other | No response |
|---|---|---|---|---|
| Lodi, outside 100-year flood plain | 50.0 | 44.4 | 2.8[c] | 2.8 |
| Upstream municipalities | 25.0[d] | 44.4 | 25.0[e] | 5.5 |
| Downstream municipalities | 26.5 | 41.2 | 26.5[f] | 5.9 |

[a]1. But I dont't blame Lodi.

2. Not all the time.

3. River floods extremely too fast to have adequate warning.

[b]1. What good is the warning system if they don't stop the river from backing up on us.

2. Maybe.

3. Fair.

4. N/A

5. Don't know.

[c]1. Don't know.

[d]1. We watch the river rise.

[e]1. Don't know - live in Rochelle Park.

2. Not being a resident, I have no knowledge.

3. The rain is the warning.

4. Six people said they didn't know.

[f]1. If the land prior to development was above flood level, there is no need for warning.

2. I can't answer this because I live in Wallington.

3. Seven people said they didn't know.

The results of Question 12 indicate that the opinions of the respondents are mixed. The residents of Lodi, both inside and outside of the 100-year flood plain, are more certain whether there is a warning system or

not, than those in upstream and downstream municipalities. However, the preponderance of opinion is that there is not an adequate flood warning system, as 45.1 per cent said no, while 35.0 per cent said yes. Another 17.0 per cent said they did not know. Thus, this question seems to indicate a lack of certainty on the part on those surveyed as to the existence of such a system, and leads to the conclusion that the authorities need to make information on a flood warning system available to the public.

Question 13. (Questionnaire A only):

If the government offered to pay a fair amount for your house and land, would you sell?

A. ____ yes

B. ____ no

One of the solutions to flooding in areas of severe flood hazard is for the government to purchase homes and clear the area for open space. This has been done in some areas; for example, Baltimore County, Maryland. One rationale is that a one-time payment for relocating people from the flood-hazard area is more economical than multiple payments for flood insurance and disaster assistance and the other costs sustained in damages to public facilities serving these homes and the citizens for many years. The benefits of removing people from positions of risk, however, is reason enough.

TABLE 32. RESPONSES TO QUESTION 13. (If the government offered to pay a fair amount for your house and land, would you sell?) (in per cent)

| Survey area | Yes | No | Other | No response |
|---|---|---|---|---|
| Lodi, inside 100-year flood plain | 67.7[a] | 23.1[b] | 6.1[c] | 3.1 |

[a]1. Only if this is the last resort to stop flooding in Lodi.

2. How soon!!!

TABLE 32. (CONTINUED)

---

3. Only if they paid what my house is worth in today's market.
4. Definitely.
5. However, not a fair amount, would sell for market value only.
6. Definitely.
7. The market value.
8. "Immediately".

[b]1. Too old.
2. A fair amount wouldn't put me in a position to replace my house. Anyone aware of the flooding problem on Mitchell Street would make it unsaleable.

[c]1. What's a fair amount.
2. Depends what they would consider a fair amount.
3. Don't know.
4. N/A (apartment).

---

Those respondents who answered yes and gave the most enthusiastic responses are those, primarily, who live in the Chestnut, Richmond, and Norwood Streets area of Lodi. This area has been identified by the Department of Housing and Urban Development as an area of study for evacuation of the homes permanently (Interview with Joe Picciano, Feb. 6, 1980).

The above responses appear to provide support for this proposal, especially by those directly effected. A major concern is the meaning of "fair value"; this was interpreted by the questioners as an amount that would allow transfer to a nonfloodable home without loss of equity. However, many respondents wanted the market value of their homes before they would consider selling to the government. How the market value in these homes compares to what was assumed to be the fair value would require some study.

Question 13B. (Questionnaire B only):

Should the government offer to buy houses and land from Lodi residents located in severe flood hazard areas?

A. ____ yes

B. ____ no

Why or why not? _____

If such measures are to be undertaken by the government, a display of support by the public, especially by those living in the neighboring towns, would be helpful and encouraging.

TABLE 33. RESPONSES TO QUESTION 13B. (Should the government offer to buy the houses and land from Lodi residents located in severe flood hazard areas?) (in per cent)

| Survey area | Yes | No | Other | No response |
|---|---|---|---|---|
| Lodi, outside 100-year flood plain | 72.2 | 25.0 | 0.0 | 2.8 |
| Upstream municipalities | 44.4 | 41.7 | 0.0 | 13.9 |
| Downstream municipalities | 52.9 | 29.4 | 11.7[a] | 5.9 |

[a]1. One respondent marked both yes and no.

2. Three respondents said they didn't know.

A majority of the respondents support the removal of homes in the most severe flood areas with government funds. Those in Lodi, outside the 100-year flood plain, are more positive, probably due to their direct knowledge of conditions in Lodi's flood zone.

Reasons given by the respondents in answer to Question 13B, Part 2, are shown in Table 34. More than 50 per cent of the respondents answered this part of the question. The range of opinions, both positive and negative, are helpful in understanding answers given to many of the questions in this questionnaire.

TABLE 34. RESPONSES TO QUESTION 13B. PART 2. (Why or why not?)

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Lodi, outside 100-year flood plain:

Comments from those who answered yes to Question 13B.

1. Because parts of the land may be acquired for water basins to hold water until the tide of the Passaic River subsides.
2. Only way I see as best solution to correct problem long range, provided this is followed by widening and deepening river bed.
3. Some people in flood areas never had this problem until developers filled in the Saddle River, therefore they should get relief.
4. Because approval to build on such land should have been denied by the government in the first place.
5. Owner has difficulty reselling.
6. The government should buy the homes and make the area along the river a park.
7. To expand the river.
8. To utilize the property to correct the flooding situation.
9. To change land and do whatever is necessary to correct problem.
10. Will aid Item 6 above. (Measures to reduce flood damages and costs.)
11. Because homes are not marketable on a private basis due to bad publicity.
12. Most people put their life savings in property that they never knew has such severe flooding problems. They should not be allowed to lose their savings.
13. No viable alternative.
14. When numerous homeowners built in Lodi they were not informed they were in flood area.
15. So those families would not have further losses.
16. Because the condition was caused by the government's lack of correcting the situation when it first occurred years ago. It got out of hand.

Comments from those who answered no to Question 13B.

1. Most people knew of the danger when they moved.
2. Extra tax burden + how much will government pay - 50% - 75%?
3. Why should they? If the people ignore dumping and encroaching.
4. Might bring more industry, thus more pollution and less desirable community for residents.
5. Keep eye open when buying.
6. Some homeowners in flood area fill in river helping create flooding.

TABLE 34. (CONTINUED)

7. The people who built know the hazard before they buy.
8. Some of those homeowners knew the problem when they purchased these homes. Instead of wasting thousands of dollars to purchase, why not use the money to repair and correct.

Upstream municipalities:

Comments from those who answered yes to Question 13B.

1. Yes, providing purchase of certain or parts of parcels are necessary to implement a good flood control plan. Otherwise, what will the government do with the properties? Increase taxes? Also how many of the involved homeowners desire to be uprooted?
2. The entire flood area should be vacated until something can be done to correct it.
3. Because no person is going to buy a house that is always flooded.
4. If they are offered a fair market proce. Remember it was government that allowed the builders to develop that land.
5. Because these houses should not have been built along the river to begin with.
6. Relief.
7. If the land can be returned to a more natural state, to be used as a park and/or wildlife sanctuary.
8. Read the article that my husband mailed to all Bergen County Freeholders about a county in Maryland that purchased the homes in flood areas.

Comments from those who answered no to Question 13B.

1. No one told then to buy in Lodi.
2. Correct the hazard.
3. Fix problem and there won't be no flood.
4. Don't buy the houses, fix the river.
5. Deepen the river.
6. Only if necessary to reroute or straighten river.
7. Can be rezoned and bought by business firm.
8. That does not solve the problem.
9. Because this will not solve the flood problem, but the money spent on widening and clearing the river beds of junk and debris that were dumped in the river for years should correct flooding.
10. You will not receive full value from government.

TABLE 34. (CONTINUED)

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11. Where would the people go - correct the problem.
12. People should use their head when they purchase or rent a home.

Comments from those who made no selection on Question 13B.

1. What do the residents of the area want? Ultimately, though, the government should help these people so they do not loose everything they have strived for. I suppose if it happens on a regular basis no one can be recompensed adequately and the result will probably be heavy financial loss and ultimate loss of property value.

Downstream municipalities:

Comments made by those who answered yes to Question 13B.

1. To raze and build dikes.
2. Help the homeowner.
3. No one in their right mind would possibly purchase a home built in Lodi's flood zone.
4. Only in the most severe areas.
5. No one else will buy land under water most of the time.
6. They are currently unmarketable.
7. Help pay the expense to relocate out of area.
8. Owners have suffered.
9. Perhaps turn flood areas into public park and no money damages would occur to residents now living there.
10. Government permitted the situation by not controlling building in the area. Engineering Corps of the U.S. Army has not properly overseen development of an inland waterway in which the Saddle Brook flows into.

Comments from those who answered no to Question 13B.

1. They should have sufficient intelligence not to locate in those areas.
2. If they buy, what do they do with the homes.
3. The people who built or bought them knew they were in flood area.
4. Should sell themselves.
5. They should find another way.
6. I feel that the river can be either rerouted or straightened out.
7. Builders/developers or buyers should know what they are buying. Should taxpayers pay?
8. Let the buyer beware. They should have investigated before buying.

TABLE 34. (CONTINUED)

| |
|---|
| 9. Lodi has consistently ignored the problem. |
| 10. Provide channels. |

Responses to Question 13B, Part 2, are mixed. Many are sympathetic to the problem of those residents in the flood-hazard area of Lodi, while others are not in favor of the government purchasing these homes so that the families can relocate. Their reasons include the following: 1) tax dollars will be used; 2) the people should have known of the flood hazard and should, therefore, take the responsibility on themselves; and 3) instead of buying the houses, the government should solve the flooding problem by working on the river.

From the answers to other questions, it must be noted that many homeowners in the flood plain have been there for many years before flooding became a problem. The attitude expressed by many that the "buyer beware", probably only applies to a few of those now living in the 100-year flood plain in Lodi.

As to the opinions given about the use of tax dollars being used, it must be noted that tax dollars are presently being used after each flood for disaster assistance and payments on flood insurance premiums, as well as repair to public facilities serving these homes.

Question 14. (Questionnaire A only):

Please check any of the following reasons that might be important factors in remaining in your present house.

A. ____ convenient location (work, school, etc.)

B. ____ family and friends nearby

C. ____ cannot afford to move

D. ____ cannot sell your house

E. ____ other (please explain)

This question was asked only to those inside Lodi's 100-year flood plain in an attempt to determine possible reasons why these people would remain in a flood-prone area.

TABLE 35. RESPONSES TO QUESTION 14. (Please check any of the following reasons that might be important factors in remaining in your present house.)

| Reason | Number of responses |
|---|---|
| A. Convenient location | 30 |
| B. Family and friends nearby | 25 |
| C. Cannot afford to move | 27 |
| D. Cannot sell your house | 29 |
| E. Other reasons | 4 |
| No selection | 2 |

Additional choices given under E. Other:

1. Who would buy a house in a flood area?
2. Because I'm a widow.
3. We as a family happen to like the area we live in. We have all worked very hard to rebuild the house the way we want it.
4. Living here since 1929. Cannot relocate.

Comments from respondents, including choices made:

1. A, B - I have good memories I live with (even though my husband was electrocuted downstairs taking a bath). I still love my home and I worked very hard to fix it just the way I like it but now it looks like I'm running out of strength, money, and patience. Amen.

2. A, B, D - Who would buy? We have invested in our home to renovate it several times. It is a well kept home.

3. A, D - Wouldn't want to put anyone else in my position.

4. A, D - Also have weekend business (two days a week - beauty shop) - am partially retired.

5. B, C - We are living here since 1926. We are two senior citizens and rent three rooms to an 82 year old woman.

6. C - With high inflation rate and with the amount I invested in the last 40 years, I am retired therefore, I am not able to pay another mortgage on another home.

7. C - Too costly to purchase a comparable home elsewhere.

8. D - People will not purchase a home in a flood area.

9. D - Can't afford to give house away.

TABLE 35. (CONTINUED)

10. D - My house is almost paid in full, a balance of $3,000 remains, also to buy a newer house the mortgage interest is up to 11%. I paid only 4 1/4% when I bought my home 21 years ago. At age 54, I don't think I could carry another mortgage.

11. D - Because of location - we have been unable to sell our house at a fair price.

12. D - I have two old persons and both blind and need plenty of help and aid.

13. D - When house is to be sold, buyer finds out is has been flooded year after year. Four feet in first floor - three times. Basement everytime there's a flood. Basement is completely finished for living - cannot use anymore.

Comments of those who made no selection:

1. I'm in funeral business.

2. N/A.

The responses to Question 14 indicate that there are a variety of reasons why people would not want to move, such as unable to get market value of their house; too old to start another mortgage; or satisfied with present home. Comparing these responses to those in Question 13, many respondents in severe flood areas would be willing to relocate if the financial considerations were solved.

Question 15. (Questionnaires A and B):

Please express any additional opinions you have on the flooding situation; either in Lodi or in general.

This open-ended question was included in the questionnaire to enable the respondents to give any other comments that the questions did not elicit. Usually people like the opportunity to "get it off their chest" when they have a frustrating problem that flooding represents.

Comments from respondents inside Lodi's flood plain:

1. Top priority: eliminate restrictions in Wallington. Own property for approximately 25 years never had flooding until 8 years ago. Man-made restrictions created by a developer in Wallington has caused major hardships on the citizens of Lodi.
2. We hope something can be done about the flooding; everytime we have heavy rains we worry about the river overflowing, and more flooding. We lose sleep and it is an awful way to have to live. Since we started getting flooded I have gotten high blood pressure. People shouldn't have to live this way.
3. Not enough drainage, if more sewers were put in water wouldn't overflow.
4. Something must be done. Not only bad on property, but on physical health. Flood insurance only helps to repair damage - for what? For it to happen again - frustrating!!! We have half a house. We can't keep anything in basement.
5. Stop the encroachment on the river. Every one on the river took as much land as they can.
6. Make sure all mouths of rivers are kept clean. Pipe brook on Massey Street. Deepen the brook like Mr. G. Warshol did when he was mayor. That helped a lot. Put railroad ties to keep dirt from falling in brook.
7. I think federal government should buy homes in Lodi and make a lake and park. They would save money.
8. Factories dumping garbage into the river, apartment house built into river in Wallington, taking plenty of ground from the river to build housing and other factories arrangements. Last flood we had my husband fall in the water and hit his side. He was just operated and he lost his life due to this.
9. It is my opinion that to correct the flooding problem in Lodi is far too great a project for any local governments. It is also my opinion that the federal government will do absolutely nothing to correct this situation. I think the federal government should buy all homes affected and give the people a chance to relocate.
10. Encroachment by Jasontown construction in Wallington, encroachment by Felician College in Lodi are the primary problems for this town. The railroad trestle in Garfield is another obstacle. Constant dredging and deepening helps some but other towns below must help also. We are

10. (Continued)
like a bottle-neck with the water having no place to go when it hits Felician College and Jasontown areas. All towns must cooperate in some manner.

11. Stop encroachment on rivers and streams. Stop changing contour of land via poor construction practices. Have tighter hold on building regulations.

12. The federal government should stop studying the problem and do something concrete to alleviate the problem before it becomes impossible to solve. If the Saddle River were widened and deepened to its original condition and obstructions were removed, the floods would certainly be eliminated.

13. Put people to work. Do away with unemployment and welfare.

14. I feel the county should buy up all the property in Lodi and make one big reservoir for the county, or make a general park.

15. I and my family feel that the government is not paying enough attention to the plight of the public affected by these floods.

16. Being that the streets of Chestnut, Richmond, and Norwood are the lowest level in Lodi, it is essential that the 18 homes be bought by the State Government. This would alleviate the flooding in the Lodi area and could be used as a recreational park for children and adults.

17. My feelings in the matter of flooding is the local government should never have issued permits for building in flood prone areas. Considering every town along the Saddle River drains into it.

18. If the state would get some qualified engineers to seriously check out this situation, I'm sure the problem can be lessened. Nothing will correct this matter but I'm sure it can be less damaging to all concerned.

19. I am beginning to feel it is a lost cause, here and elsewhere. If the finest engineering cannot solve it, how can I, the average layman.

20. The flooding is getting worse in Lodi and surrounding towns. Lodi is the worst. Flood basins should be made in Lodi and the surrounding towns. All the money that was spent on surveys could have been used to solve the problem instead of talking about it. $24 million was spent by the Army Corps of Engineers on a 9 year study which they are saying is now obsolete and they have to do more surveys. This could go on forever. We need results!!

21. Please, I do not care how - but for our peace of mind - please have them try. Try to rectify this dreadful problem.

22. Stop all residents along the river from dumping debris and fill into the river.

23. We feel that the only feasible solution to help alleviate the flooding problem in Lodi, would be for some level of government or "combination of same"to purchase property in the low-lying areas. This land could be dug out to form retention basins. This would not only help property owners "in a desperate situation" as ourselves and our neighbors, but also those up and down river, by lowering the water level. This area might also be used for park land.

24. I live here alone and could not get help from anyone to help pump water out of cellar. It was like no one was to blame and was not their job or had any interest.

25. Better sewerage system on Sidney Street. Also take out the car wash because we have a backup which we found grease rags and grease through our sewer pipes and have to get them cleaned out at least three or four times a year. Also the telephone poles in Stamatos lot which broke our window (basement) in flood of 1977.

26. We have federally funded programs that could be using manpower to clean out the river of all the debris, which is something that is necessary even without flood problems. I find it impossible to accept that this serious problem cannot be solved - fast. The task of cleaning up after a flood is a long and tiresome one - 1 year and 4 months later and we're not through with it yet.

27. The flooding situation should be resolved and not just passed back and forth for discussion from state and local agencies.

28. I think this condition should be taken care of by the Federal Government.

29. HELP!

30. I reside at _ Massey Street, Lodi. We have had numerous flooding and sewer backup trouble for years. When the town employed rivers and stream projects, I was amazed that so much debris can build up and stop the flow of water. Since that project was employed, our problem has subsided somewhat. We need our rivers and streams cleaned, so water can move freely.

31. How many studies and how much money will be wasted before you realize the only way to correct is to buy us out. The amount of money spent in the last two years in flood insurance alone could have bought most of us out. But no, do more surveys, spend more money, pay more losses. None of which even helps us mentally when we see it start to rain. Help!

32. The brook that runs through Lodi should be cleaned regularly and deepened.

33. In my opinion the past borough officials allowed ordinances for people to build along the river bank and infringe on the natural rights of the Saddle River, restricting the flow of water to the point where any excessive rainfall causes serious flooding. We have photos we took of the floods on our block and around our house. They can be used as evidence of the inconvenience this flood problem is causing the families on Sidney Street. Most residents of our block are older people and it's a shame they have to worry about the river every time it rains.

34. All I know it is a tragedy that people have to live this way. You can't believe what you lose during a flood that cannot be replaced. The anxiety becomes great and the work during and after a flood is tremendous.

35. If all properties adjoining the river were surveyed, I believe encroachment would be a major factor for this condition.

36. Please do something about these houses that flood because we are tired to pump out and fix. We can't keep up with this.

37. Drainage on Route 46 deplorable. Heavy rainfall makes Sidney Street a lake. Saddle River goes over its banks and we are flooded and cut off from the rest of the town.

38. The brook near by receives all rain water from northern New Jersey and this brook is too small to take it at one time. This brook should be dug deeper and cleaned out to let water flow through.

39. Lodi has been getting flooded for the last 12 years and in all that time, absolutely nothing has been done to help the situation.

40. In the area I live, we never see any people such as cops, firemen, or borough workers.

41. River should be made deeper and wider, at point of Felician College and apartments in Wallington. It should be corrected, put back flow of river as it was in 1960. After flood of 1971, I moved out and have the house rented, because I can't see it. Have had deposited three times. People back away. Have to rent it cheap so I can get tenant. First floor tenants always move out. Tenant I have now is ready to move out after nine months there. Same problem over and over. I feel government should buy house and demolish it and the other 17 houses in the flood study.

42. If as the flood representatives say, "No one should build from Main Street to the river because it increases the chance of flooding, then why and how was the town of Lodi permitted to build a complex for borough hall, library and police department on these grounds which had at least a foot of rain on the building premises.

43. How long is it going to take before they stop talking and start acting!

44. In my opinion, there has been lots of talk but no action!! This problem has existed for years!! I cannot believe that nothing can be done. It seems to me that the problem is political. We have heard plenty of promises before. I sincerely hope something will be done now!! I hope I haven't wasted my time filling out this questionnaire. Please do something positive.

45. I bet if all the sewers in Lodi and the river were really cleaned out the water would never reach Mitchell Street.

Comments from respondents outside Lodi's 100-year flood plain;

1. New houses should be equipped with a proper drainage system around the foundation so when the ground reaches the saturation point from excess rain, it would avoid basement flooding. Also, the local river should be dredged periodically to accept excess rain-flood water.

2. Improve warnings to residence homeowners, limit basement equipment, elevate (water-electric-gas) equipment (meters), owners should try to move away. Business (no basements) elevate and ramp to high ground (6 feet).

3. Help.

4. The various flooding problems have complex causes, among them is a lack of concern by local city officials.

5. This is not only Lodi's problem - water, of course, flows downstream. Additional building, etc., north of Lodi has forced more water into the

5. (continued)
river - no percolation into the soil - encroachment into the river. Stop building near river and in flood areas.

6. Continued filling of land at river sites should be discontinued. I believe this is partial reason for problem.

7. I expressed my feelings on page 2. (Encroachment and clogging river with debris must be stopped).

8. I feel the wooden railroad bridge in South Hackensack should be eliminated and 80 per cent of the problem would be solved. When heavy rain hits the area, the bridge acts as a dam and causes the entire system to back up.

9. Unfortunately, all the mistakes have been compounded over the years by allowing homes to be built to the river's edge and a local cemetary, hungry for plots has filled in the river banks and expanded its territory without ever being concerned about future repercussions. Let's get some of the things undone!

10. Stop building houses on river banks; make recreation center or parks.

11. The flooding problem in Lodi can be easily solved by deepening the river and increase the sewage capacity around the Main Street area. It is not a very large area to fix.

12. A lot of factors affect the problem of flooding in Lodi. Number one being developers have altered through the years the normal width and depth of the river by fill and debris. There are certain sections of this town that flood every time there is a heavy rain and even with federal compensation the homeowners cannot recoup all of his losses. It is inconceivable that a viable solution cannot be found to this problem.

13. There should be strict laws concerning filling in rivers to create more land for homes along river. Also control dumping and pollution of rivers with debris that causes flooding.

14. The cemetaries have used the river bed by using the dirt from opening of graves and made the river much much narrower. Twenty years ago the river was much wider. I think the cemetaries should be penalized. In 1932, there was room for only about 5 or 6 rows of graves. By the river, these are single plots. Now there are about 20 rows and room for more. Why was this extended toward the river?

15. Lodi, like other flood areas, has not come about this year. They have been flood areas for years. The federal government says it's a state problem, the state says it's a county problem, the county says it's a town problem, and the town say it's the homeowners problem. If they all would have worked together to correct the problem, years ago, it would have cost one-third what it will cost today.

16. It is a shame that with all the investigations made by so many different committees, so little has been done. The reference so many times to the U.S. Army Corps of Engineers (big name of doing nothing) was looking into the matter, by letters sent to them by different professionals, proved to be nothing but a phony. They quieted the people until the next flood <u>and I hope that this questionnaire is not the same</u>!!!!

17. Zoning ordinances in any town where rivers, etc., exist should be reviewed by State authority to determine if building zoning codes are adequate to protect against possibility of encroaching on rivers, thereby creating additional likelihood of damage to property, both real and personal.

18. We have a severe flood problem in our back yard that can be corrected. We have gone to the council of Lodi and they allocated money for a drain to be installed (1 year ago). 5 floods later still no drain. As I write this letter now we have 14 inches of water in our yard. What can be done? Nothing!! I've done my share. I would also like to comment that the homeowner to our rear filled in his yard about 18 inches causing our flood problem to become much more severe. If our town doesn't stop this type of landfill our problems will get worse. There should be an ordinance against this type of practice. Anyone interested in talking to me or seeing the real problem, please!!! call me. P.S. Our problems have just begun.

19. The flood situation had increased due to two situations. Felician College rerouted river, plus Jasontown Apartments in Wallington rerouted and narrowed it down to nothing. Therefore, forcing it to back up into the Lodi area.

21. What is needed in Lodi is a river clearance program such as the one that was instituted under LEAP but on a permanent basis, with 10 men who would start at one end of the river cleaning banks, clearing debris out of river, breaking blockages under each bridge. Believe me there is more than enough work to keep going on a yearly basis because after each heavy rain, more and more debris accumulates. Also with heavy equipment, banks can be made much wider and flood basins should also be constructed.

Comments from respondents in upstream municipalities:

1. As I stated above, and on preceding questions, I think the towns, cities, and counties should correct and be responsible for these situations, as the state and higher government are not always made aware of these serious situations. Where the town government are elected to do these jobs and try hard to control these situations. I don't think they should just be elected to a political circle, but take these positions seriously and do an honest days work.

2. Government officials should stop taking surveys of this situation and start to remedy it.

3. People are dumping tires, bircks, logs, cinder blocks, shopping carts into river which is clogging it up; also erosion is filling up the bed. Also a lot of cement and asphalt is laid and water has to run somewhere, since it cannot be absorbed into the ground.

4. No one specifically is to blame for the problem. You would have to say that local, state, county, and the federal government are to blame because they are allowing all the land to be used up for building and there is no place for water to go when you have heavy rain or sudden thawing of snow. There is no place for it to runoff except into homes and buildings.

5. I feel that rather than try to fight a natural phenomena, live with it and make the best of it.

6. Besides correcting the problem at hand it is necessary to institute a preventive maintenance program keeping the bridges clear of trees, garbage and who knows what is a must in addition to keeping the channels deep and clear.

7. All rivers and brooks should be deepened and widened.

8. This situation has been going on for years, some one in government is passing the buck, something should be done now. I lived in Lodi for 11 years but did not own a home. I bought a house in Rochelle Park, but I knew of people that were flooded out of their homes. It's not fair to them to have to suffer every time the river rises.

9. If each town along the river was compelled to keep it clean and not build on it and dredge it every few years, a flood would not occur. But all the township committees do is vote for higher police budget or school budget and tax the homeowner out of their homes after they are retired.

10. I don't think that the homeowner should take care of the damage. They suffer a great loss in case of a flood. I think that several good engineers should get together and try to improve this problem. Isn't flood insurance quite high?

11. The idea is to speed up the flow of the water, which has solved our problem here in Maywood. After widening, deepening and putting larger pipes under Rt. 17 and through Rochelle Park.

12. I believe that flooding should be controlled County wide. So that town like Hackensack, South Hackensack, Little Ferry, Teterboro, and Moonachie can benefit.

13. I think it should be taken care of this terrible situation for the people of Lodi.

14. It's a shame that in this day, we can't control river flowing over into peoples homes.

15. When one thinks how Holland has fought the sea constantly and reclaimed lands by the acre I always find it difficult to understand our water problems in N.J. Historically, Dutchmen first dyked and reclaimed marsh and swamp land in and around Secaucus, Moonachie, East Rutherford. They said evidence is still there if you can find it. Blaming agency after agency is useless. I think if engineers from areas beyond ours that live on a day to day basis with flooding were consulted with backing of government sources on all levels perhaps the situation could be rectified.

16. We are living in a four room apartment (that we rent) and cannot live in our home because of two and three floods a year. The reason we cannot live there is - if I was involved in another flood I would end up in Bergen Pines.

17. It is believed that the flooding in Lodi has been caused by permitting homeowners and others to use the river as a dumping ground thereby making the channel narrow and shallow. Also were the builders of Rt. 80 familiar with the river and its flooding? It is to be noted that the manipulation of the river can result in gain or loss to homeowners whose property adjoins the river. Help should be furnished Lodi by the County and State as appropriate in formulating and implementing a good flood control plan. Perhaps the expertise of the Corps of Engineers

17. (continued)

can be obtained in developing such a plan. If funds are not available through the County and/or State, then Lodi may have to consider a bond issue. Property should not be sold in flood prone areas without the realtor and owner giving due notice to the prospective purchaser of existing or possible flood conditions.

Comments from respondents in downstream municipalities.

1. Recommend building high concrete embankments along low land areas - not building in area - or transform area into park lands. Where I live presently - water pressure comes through concrete making cracks in floor - my sump pump is my salvation.
2. A commission should be set up to monitor building in the flood plain. Those encroaching on the river channel should be brought to court by the commission. Funds should be sought to channelize the river.
3. Stop building in low areas where flooding might occur.
4. Stop builders form building in flood plains. Buy up land and make parks from "Green Acres" funds.
5. Large macadam parking lots and large factory roof drainage swell the river very fast becuase there is very little natural ground to soak up the water as it was at one time.
6. I feel the local government in Lodi could have prevented this by not allowing building of homes and businesses so close to the river. They allowed people to fill in the river banks so the floods are constantly a threat. Also, people in Wallington are equally at fault for encroaching on the river's banks. It's a tough solution - which may cost millions in today's economy - but river bank property should be bought up by the government. I hope your organization can help the people of Lodi in their flooding problem.
7. People who own homes in flooded areas are victims of circumstances. Anyone that lives in the area either was not fully made aware of the problem or could not comprehend what a terrible problem it can afford. In other situations downstream, developments can cause flooding in areas that never did flood to such serious proportions. Change of river course - Wallington apartments - Felician College expansion.
8. People shouldn't be allowed to build houses and buildings in flood areas. Open land should be let for runoff and flooding.
9. Government should not have to reimburse homeowners who were foolish enough to furnish or renovate basements that flood. Many of these basement apartments are illegal.
10. Lodi officials were more interested in cosmetic improvements and personal benefit instead of the plight of flood prone areas. The monies spent on the "new" Lodi could have alleviated this entire problem. Our elected officials only deal in personal growth with the belief the people can be fooled again and again. History has proved this true.

11. This problem is 40 years old - at least - I remember my grandparents talking about floods years ago. Why hasn't something been done on this sooner? It is about time some action was taken.
12. Government agencies with government funds should assess the problem and provide solutions.
13. Moved from area because of ineffectiveness in dealing with flooding problem. Presently reside in Dumont, N.J.

In answering Question 15, the respondents indicated conditions in the area that they believe have increased the flooding problem. These include:

1. Restrictions to the river's flow caused by encroachments into the river by a) Felician College in Lodi, b) Jasontown Apartments in Wallington, c) the railroad trestle between Garfield and South Hackensack, and d) the cemetaries in Lodi.
2. Other smaller encroachments by individual land owners, deliberate dumping into the river, and erosion clogging the stream's channel.
3. Poor drainage due in inadequate sewers.
4. Building of homes and businesses in low areas where no building permits should have been given.

Recommendations made to solve these problems include:

1. Eliminate restrictions to flow.
2. Stop any further encroachments.
3. Develop a program to clean the river of debris.
4. Deepen and widen the Saddle River.
5. Remove the 18 houses in the Norwood - Chestnut - Richmond area of Lodi amd make a park or an area to store flood waters.
6. Put in more sewers.
7. All the towns in the basin should work together to solve the problem.

Other issues of concern were 1) the health and emotional impact of being flooded numerous times; 2) the frustration that nothing is ever going to be done to reduce flooding; and 3) floods are increasing in frequency and severity making the problem even more difficult to solve.

<u>Optional Question. (Questionnaires A and B)</u>:

If you would like, sign your name and address here.

_____

_____

The opportunity to give their names and addresses was included for the respondents who wished to do so. This was done because of the possibility that a follow-up study would be undertaken, and people's opinions are usually considered more reliable if they are signed.

TABLE 36. RESPONSES TO OPTIONAL QUESTION. (If you would like, sign your name and address here.) (in per cent)

| Survey area | Signed name and address | Did not sign | Other |
|---|---|---|---|
| Lodi, inside 100-year flood plain | 70.8 | 23.1 | 6.1[a] |
| Lodi, outside 100-year flood plain | 55.5 | 44.5 | 0.0 |
| Upstream municipalities | 47.2 | 52.8 | 0.0 |
| Downstream municipalities | 55.9 | 44.1 | 0.0 |

[a]1. One respondent gave address only; and three respondents gave their name only.

The high percentage of respondents who signed their name and address indicates that they are concerned enough about the flooding problem to give their identity and make their opinions and feelings known. This should give the results of the survey added value.

## CONCLUSIONS

An important outcome of the survey was a better understanding of the impact of flooding upon residents of the Lower Saddle River Basin. More than 95 per cent of the respondents from all survey areas recognized that flooding in Lodi is a serious problem. Of the residents of Lodi's 100-year flood plain, all have experienced flooding and 81.5 per cent said that there were floods once or more per year. In the remainder of Lodi and in upstream municipalities, more than 50 per cent experience flooding in their neighborhoods once or more per year, and in downstream municipalities, 35.3 per cent do. Within Lodi's 100-year flood plain, 38.5 per cent have had water in their first floor or above, and 69.2 per cent have been forced to leave their homes because of flooding.

The respondents from all survey areas have similar opinions as to the most appropriate methods to reduce flooding in the area. These recommendations are significant, because the majority have lived in the area long enough to actually see the changes taking place in the Saddle River. The first choice by a wide margin is to deepen the river by dredging the sediment that has been deposited and at the same time clear the river of debris. Many comments mentioned the need to maintain the free flow of the river.

The second choice was to stop building in flood-prone areas. Numerous comments were made on the problems of existing encroachments, both large and small, especially the Jasontown Apartments in Wallington, Felician College's expansion, Lodi, and the railroad trestle between Garfield and South Hackensack. Harsh criticism was made of the local officials that allowed building permits for the homes, apartment buildings, and factories etc., now located in severe flood-hazard areas. Support was expressed to have the most hazardous areas cleared and the families relocated. Preventing more development in the flood plains was seen as a worthwhile effort, but many respondents were pessimistic of success because of the failure to do so in the past. The third choice was to construct flood walls, dikes, or other structures as a last resort if no other flood control measures were successful in stopping the overflow of the streams.

The respondents chose the federal government to take the lead in solving the flooding problem. However, support for the state, county, and local governments was also high. Comments indicated a general doubt that anyone was really going to assist them - because nothing positive has been done since flooding became a pervasive problem.

The survey was successful in getting responses from a large percentage of the sample selected, and in obtaining from those who returned the questionnaires attitudes, opinions, and recommendations that should provide enough information on the amount of damages sustained and the need for action against flooding, to help government officials move forward with a basin-wide plan for abating the flooding now before more floods occur and destroy more property and people's homes and their well-being.

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APPENDIX 1. Results of the Survey.

| Questions | Responses 1[a] | 2[b] | 3[c] | 4[d] |
|---|---|---|---|---|
| 1. Do you consider flooding in Lodi to be: | | | | |
| A. no problem at all | 0 | 0 | 1 | 0 |
| B. a mild problem | 1 | 0 | 1 | 2 |
| C. a serious problem | 64 | 35 | 34 | 31 |
| Other | 0 | 0 | 0 | 1 |
| No response | 0 | 1 | 0 | 0 |
| 2. How often do floods affect you in your neighborhood? | | | | |
| A. floods never occur | 0 | 14 | 10 | 18 |
| B. once or more per year | 53 | 19 | 20 | 12 |
| C. once every 2 or 3 years | 6 | 1 | 4 | 1 |
| D. once every 4 or 5 years | 2 | 0 | 1 | 1 |
| E. more than once every 5 years | 3 | 1 | 1 | 2 |
| Other | 1 | 0 | 0 | 0 |
| No response | 0 | 1 | 0 | 0 |
| 3. Were you aware of a possible flooding problem before you moved into your home? | | | | |
| A. yes | 10 | | | |
| B. no | 53 | | | |
| No response | 2 | | | |
| 3B. Have you ever lived in a house where you have been flooded? | | | | |
| A. yes | | 12 | 15 | 10 |
| B. no | | 23 | 21 | 24 |
| No response | | 1 | 0 | 0 |
| 4. Were you ever forced to leave your house due to flooding? | | | | |
| A. yes | 45 | 4 | 7 | 2 |
| B. no | 19 | 31 | 29 | 32 |
| No response | 1 | 1 | 0 | 0 |

| Questions | Responses | | | |
|---|---|---|---|---|
| | 1[a] | 2[b] | 3[c] | 4[c] |
| 5. How extensive has the damage to your house and/or property been due to flooding? | | | | |
| A. no damage | 1 | 19 | 12 | 19 |
| B. water on the property but not in house | 2 | 1 | 4 | 1 |
| C. water in the basement | 37 | 15 | 17 | 10 |
| D. water on the first floor or above | 25 | 0 | 1 | 2 |
| Other | 0 | 0 | 0 | 1 |
| No response | 0 | 1 | 2 | 1 |
| 5. Part 2. Have damages occurred more than once? | | | | |
| A. yes | 59 | 13 | 15 | 12 |
| B. no | 5 | 15 | 8 | 16 |
| No response | 1 | 8 | 13 | 6 |
| 6. Part A. Have you ever heard of the flood insurance program? | | | | |
| A. yes | 61 | 29 | 28 | 24 |
| B. no | 3 | 5 | 7 | 10 |
| No response | 1 | 2 | 1 | 0 |
| 6. Part B. Do you carry flood insurance? | | | | |
| A. yes | 53 | 4 | 3 | 0 |
| B. no | 11 | 31 | 33 | 33 |
| No response | 1 | 1 | 0 | 1 |
| 7. Please check, in order of importance, what you believe to be the three best methods of reducing flood damages and costs in Lodi. | | | | |
| A. Reroute the river | 15 | 6 | 8 | 5 |
| B. Dams, dikes, levees | 19 | 9 | 12 | 8 |
| C. Stop building in flood-prone areas | 28 | 19 | 15 | 23 |
| D. Tighter zoning regulations | 10 | 9 | 9 | 9 |
| E. Flood insurance | 2 | 0 | 4 | 4 |
| F. Flood relief aid | 2 | 0 | 2 | 1 |
| G. Move away from flood-prone areas | 13 | 7 | 5 | 4 |

| Questions | Responses | | | |
|---|---|---|---|---|
| | 1[a] | 2[b] | 3[c] | 4[d] |
| 7. (continued) | | | | |
| H. Straighten and deepen the river | 44 | 24 | 20 | 20 |
| I. Government regulations | 9 | 0 | 4 | 4 |
| J. Other | 7 | 7 | 3 | 4 |
| No selection | 0 | 1 | 2 | 0 |
| No response | 2 | 2 | 0 | 0 |
| 8. Who should bear the responsibility to correct the flooding problem in Lodi? | | | | |
| A. Federal government | 56 | 23 | 22 | 21 |
| B. State government | 49 | 20 | 18 | 22 |
| C. County government | 34 | 13 | 14 | 14 |
| D. Local (town) government | 22 | 8 | 9 | 14 |
| E. Home owner | 0 | 2 | 2 | 4 |
| F. Business or industry | 5 | 6 | 2 | 3 |
| G. Developers | 9 | 10 | 5 | 12 |
| H. No one should bear the responsibility | 0 | 1 | 0 | 0 |
| I. Other | 2 | 2 | 0 | 2 |
| No response | 2 | 1 | 1 | 0 |
| 9. Have you taken any preventive measures to protect your home from flooding? | | | | |
| A. yes | 42 | | | |
| B. no | 20 | | | |
| No response | 3 | | | |
| 10. Did you receive any kind of emergency aid during the flood of November 8, 1977? | | | | |
| A. yes | 43 | | | |
| B. no | 22 | | | |
| No response | 0 | | | |
| 11. Did you receive any aid after the flood of November 8, 1977? | | | | |
| A. yes | 31 | | | |
| B. no | 32 | | | |
| No response | 2 | | | |

| Questions | Responses | | | |
|---|---|---|---|---|
| | 1[a] | 2[b] | 3[c] | 4[d] |
| 11b. Do you believe that Lodi residents received the proper aid during and after the flood of November 8, 1977? | | | | |
| A. yes | | 11.5 | 6 | 4 |
| B. no | | 6.5 | 5 | 4 |
| C. don't know | | 17 | 25 | 25 |
| No response | | 1 | 0 | 1 |
| 12. Do you believe there is an adequate flood warning system in Lodi? | | | | |
| A. yes | 28 | 18 | 9 | 9 |
| B. no | 30 | 16 | 16 | 14 |
| Other | 5 | 1 | 9 | 9 |
| No response | 2 | 1 | 2 | 2 |
| 13. If the government offered to pay a fair amount for your house and land, would you sell? | | | | |
| A. yes | 44 | | | |
| B. no | 15 | | | |
| Other | 4 | | | |
| No response | 2 | | | |
| 13B. Should the government offer to buy houses and land from Lodi residents located in severe flood hazard areas? | | | | |
| A. yes | | 26 | 16 | 18 |
| B. no | | 9 | 15 | 10 |
| Other | | 0 | 0 | 4 |
| No response | | 1 | 5 | 2 |
| 14. Please check any of the following reasons that might be important in remaining in your present home. | | | | |
| A. Convenient location | 30 | | | |
| B. Family and friends nearby | 25 | | | |
| C. Cannot afford to move | 27 | | | |
| D. Cannot sell your house | 29 | | | |
| E. Other | 4 | | | |
| No response | 2 | | | |

[a]Lodi, inside 100-year flood plain

[b]Lodi, outside 100-year flood plain

[c]Upstream municipalities

[d]Downstream municipalities

APPENDIX 2.

Question 16. (Questionnaires A and B):

Please check the box which applies to you in each of the following general information questions. (For statistical use only.)

SEX

____ male
____ female

AGE

____ under 21
____ 21-30
____ 31-40
____ 41-50
____ 51-60
____ over 60

EDUCATION

____ grade school
____ some high school
____ high school graduate
____ some college
____ college degree or degrees

HOW LONG HAVE YOU LIVED IN YOUR HOUSE

____ 0-1 year
____ 1-3 years
____ 3-5 years
____ 5-7 years
____ 7-9 years
____ more than 9 years

NUMBER OF PEOPLE IN HOUSEHOLD

____ 1 person
____ 2 people
____ 3 people
____ 4 people
____ 5 people
____ 6 people
____ more than 6 people

YEARLY FAMILY INCOME

____ under $5,000
____ $5,000-$9,999
____ $10,000-$14,999
____ $15,000-$19,999
____ $20,000-$24,999
____ over $25,000

RESPONSES TO QUESTION 16. Sex. (in per cent)

| Survey area | Male | Female | Both | No response |
|---|---|---|---|---|
| Lodi, inside 100-year flood plain | 46.2 | 38.5 | 9.2 | 6.1 |
| Lodi, outside 100-year flood plain | 58.3 | 19.4 | 13.9 | 8.3 |
| Upstream municipalities | 55.5 | 36.1 | 5.5 | 2.8 |
| Downstream municipalities | 67.6 | 26.5 | 2.9 | 2.9 |

RESPONSES TO QUESTION 16. Age. (in per cent)

| Survey area | Under 21 | 21-30 | 31-40 | 41-50 | 51-60 | Over 60 | No response |
|---|---|---|---|---|---|---|---|
| Lodi, inside 100 year flood plain | 0.8 | 12.3 | 6.9 | 19.2 | 28.4 | 27.8 | 4.6 |
| Lodi, outside 100 year flood plain | 0.0 | 15.3 | 13.9 | 13.9 | 23.6 | 30.5 | 2.8 |
| Upstream municipalities | 0.0 | 13.9 | 19.4 | 19.4 | 23.6 | 23.6 | 0.0 |
| Downstream municipalities | 0.0 | 11.8 | 20.6 | 11.8 | 32.3 | 23.5 | 0.0 |

RESPONSES TO QUESTION 16. Education. (in per cent)

| Survey area | Grade school | Some high school | High School graduate | Some college | College degree | No Response |
|---|---|---|---|---|---|---|
| Lodi, inside 100 year flood plain | 15.4 | 18.5 | 37.7 | 10.8 | 5.4 | 10.8 |
| Lodi, outside 100 year flood plain | 12.5 | 13.9 | 26.4 | 16.7 | 25.0 | 5.5 |
| Upstream municipalities | 11.1 | 13.9 | 33.3 | 11.1 | 25.0 | 2.8 |
| Downstream municipalities | 5.9 | 11.8 | 25.0 | 20.6 | 36.8 | 0.0 |

RESPONSES TO QUESTION 16. Number of people in household. (in per cent)

| Survey area | Number of people 1 | 2 | 3 | 4 | 5 | 6+ | No Response |
|---|---|---|---|---|---|---|---|
| Lodi, inside 100 year flood plain | 7.7 | 27.7 | 20.0 | 18.5 | 4.6 | 16.9 | 4.6 |
| Lodi, outside 100 year flood plain | 13.9 | 19.4 | 13.9 | 25.0 | 16.7 | 5.5 | 5.5 |
| Upstream municipalities | 5.5 | 30.5 | 16.7 | 30.5 | 11.1 | 2.8 | 2.8 |
| Downstream municipalities | 2.9 | 38.2 | 20.6 | 17.6 | 2.9 | 14.7 | 2.9 |

RESPONSES TO QUESTION 16. Yearly family income. (in per cent)

| Survey area | Under $5,000 | $5,000-9,999 | $10,000 14,999 | $15,000-19,999 | $20,000 24,999 | $25,000 plus | No Response |
|---|---|---|---|---|---|---|---|
| Lodi, inside 100 year flood plain | 10.8 | 7.7 | 13.8 | 30.8 | 12.3 | 7.7 | 16.9 |
| Lodi, outside 100 year flood plain | 19.4 | 5.5 | 8.3 | 13.9 | 16.7 | 22.2 | 13.9 |
| Upstream municipalities | 2.8 | 19.4 | 11.1 | 11.1 | 13.9 | 27.8 | 2.8a 11.1 |
| Downstream municipalities | 2.9 | 5.9 | 11.8 | 14.7 | 17.6 | 29.4 | 2.9a 14.7 |

[a]Retired.

RESPONSES TO QUESTION 16. How long have you lived in your house. (in per cent)

| Survey area | 0-1 year | 1-3 years | 3-5 years | 5-7 years | 7-9 years | 9+ years | No Response |
|---|---|---|---|---|---|---|---|
| Lodi, inside 100 year flood plain | 1.5 | 6.1 | 7.7 | 4.6 | 3.1 | 75.4 | 1.5 |
| Lodi, outside 100 year flood plain | 2.8 | 5.5 | 5.5 | 5.5 | 2.8 | 75.0 | 2.8 |
| Upstream municipalities | 2.8[a] | 11.1 | 2.8 | 8.3 | 5.5 | 66.7 | 2.8 |
| Downstream municipalities | 0.0 | 2.9 | 14.7 | 8.8 | 0.0 | 70.6 | 2.9 |

[a]We just moved to Lodi.

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