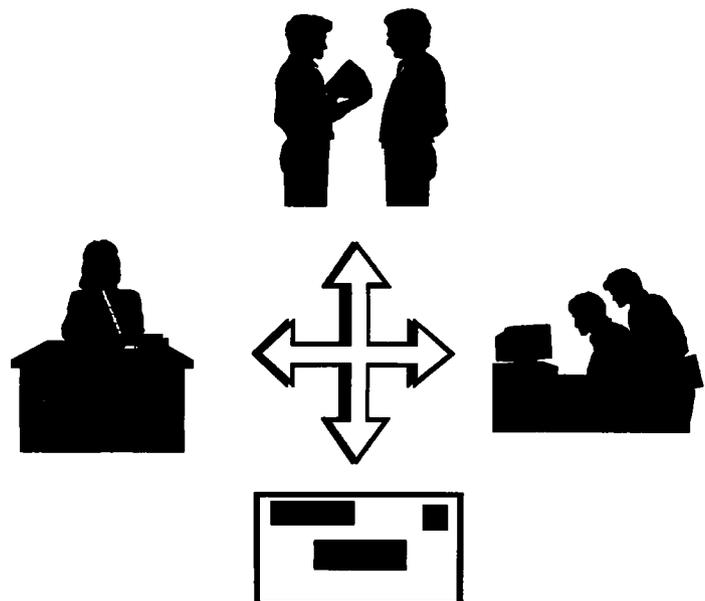




**US Army Corps  
of Engineers**  
Water Resources Support Center



# ***THE USE OF THE MAIL SURVEY METHOD TO DETERMINE HOME CONTENT VALUES IN TWO REGIONAL STUDIES***



# REPORT DOCUMENTATION PAGE

Form Approved  
OMB No 0704-0188

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<b>1. AGENCY USE ONLY (Leave blank)</b>		<b>2. REPORT DATE</b> 30 September 1994	<b>3. REPORT TYPE AND DATES COVERED</b>	
<b>4. TITLE AND SUBTITLE</b> The Use of the Mail Survey Method to Determine Home Content Values in Two Regional Studies			<b>5. FUNDING NUMBERS</b>	
<b>6. AUTHOR(S)</b> Stuart A. Davis, Allan S. Mills, Margot W. Garcia				
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> U.S. Army Corps of Engineers, Water Resources Support Center, Institute for Water Resources, Alexandria, Virginia 22315-3868			<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>  IWR Report 94-R-4	
<b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> U.S. Army Corps of Engineers, Headquarters CECW-PD Washington, DC 20314-1000			<b>10. SPONSORING/MONITORING AGENCY REPORT NUMBER</b>	
<b>11. SUPPLEMENTARY NOTES</b> Available from National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161				
<b>12a. DISTRIBUTION / AVAILABILITY STATEMENT</b> Approved for public release; distribution unlimited.			<b>12b. DISTRIBUTION CODE</b>	
<b>13. ABSTRACT (Maximum 200 words)</b> <p>This is the first in a series of reports that documents application of public survey techniques to obtain information for Corps of Engineer planning studies. This paper demonstrates the use of a modified mail survey method to estimate household content values. The paper provides an example of how sensitive information was collected through a complex, detailed mail survey. Households in the Lower Santa Ana River Basin of Orange County, California and Wyoming Valley of Luzerne County, Pennsylvania were contacted to determine residential content values.</p> <p>A stratified sample was taken in an effort to get adequate response from three flood risk zones in each of the two study areas. Background information was collected on each household as part of an effort to develop mathematical relationships for estimating content values, based on demographic characteristics of the population. This effort demonstrated how preliminary telephone contacts, the promise of anonymity, the incentive of a personal household inventory copy, and use of the Dillman "total design" method encouraged response.</p>				
<b>14. SUBJECT TERMS</b> Survey Sampling, Mail Surveys, Questionnaires, Residential Structures, Residential Contents, Flood Damage			<b>15. NUMBER OF PAGES</b> 65	
			<b>16. PRICE CODE</b>	
<b>17. SECURITY CLASSIFICATION OF REPORT</b> UNCLASSIFIED	<b>18. SECURITY CLASSIFICATION OF THIS PAGE</b> UNCLASSIFIED	<b>19. SECURITY CLASSIFICATION OF ABSTRACT</b> UNCLASSIFIED	<b>20. LIMITATION OF ABSTRACT</b> UNLIMITED	



**THE USE OF THE MAIL  
SURVEY METHOD TO DETERMINE HOME  
CONTENT VALUES IN TWO REGIONAL STUDIES**

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by

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September 1994

IWR Report 94-R-4

## **PREFACE**



This report was completed under the Flood Mitigation, Formulation, Planning, and Analysis research work unit at the Corps of Engineers, Institute for Water Resources (IWR). Mr. Stuart A. Davis and Mr. William J. Hansen are the principal investigators for the research unit. The Flood Mitigation work unit is part of the Planning Methodologies research program, which is under the direction of Mr. Michael R. Krouse, Chief of the Technical Analysis and Research Division at IWR. Mr. Steven R. Cone is the technical monitor of the Flood Mitigation work unit, under the direction of Mr. Robert M. Daniel, Chief of Economics and Social Analysis Branch at the Office of the Chief of Engineers.

Mr. Robert F. Norton provided the technical editing of the document. Ms. Arlene Nurthen was responsible for the document preparation and publication. Much of the information presented in this manual is based on the development and application of two different survey instruments used in on-going flood damage studies. Participating COE Districts and their study areas included: Baltimore District - the Wyoming Valley of Pennsylvania; Galveston District - Houston, Texas; and Los Angeles District - Santa Ana River Basin of California. Susan Durden, formerly Acting Chief of Economics of the Corps Baltimore District; David Miller, formerly Chief of Economics; and Clifford Kidd, Economist for that District, helped to facilitate the Wyoming Valley study. Also assisting with that study were James Brozena, P.E. County Engineer for Luzerne County Pennsylvania, Jack Ruane - Flood Coordinator for Luzerne County, Terri Madeiras, Project Manager for the Orange County, California, Lower Santa Ana River Project, and George Snider of the Orange County Public Works Department. Dr. Gary Johnson of the Urban Studies and Planning Department at Virginia Commonwealth University provided valuable assistance in designing and implementing the Wyoming Valley and Santa River Basin data collection effort. Dr. Diana Weigmann, Assistant Director for Research Administration at the Virginia Polytechnic Institute and State University also provided critical administrative assistance in facilitating the Virginia Commonwealth University data collection for these projects.

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## **CHAPTER ONE**

### **INTRODUCTION**



This paper presents an example of how detailed home contents value inventories can be conducted using a modified version of Don Dillman's (1978) total design mail survey method. Stratified samples were drawn from households in the Santa Ana, California and Wyoming Valley, Pennsylvania regions to assess the value of home contents in each of three flood risk zones. Each home was mailed a questionnaire designed for inventorying and valuing the contents of each room. Background characteristics of residents were also requested in the questionnaire, for use in developing mathematical models for estimating home content values. Response was encouraged by both a preliminary telephone contact and the incentive of a copy of the home contents inventory for respondents to keep. Although response was not as high as desired, both surveys were considered satisfactory for this type of study. This work should serve as a prototype for future Corps of Engineer mail-administered content value surveys.

#### **PURPOSE AND SCOPE OF PAPER**

The purpose of this paper is to provide an example of how mail surveys can be used to collect detailed and sensitive information on the value of household contents. The paper demonstrates the applicability of a modified mail survey technique for determining very detailed and sensitive information. It describes two residential surveys that the U.S. Army Corps of Engineers conducted by mail in 1990, of households in the Lower Santa Ana River Basin of Orange County, California and the Wyoming Valley area along the Susquehanna River in Luzerne County, Pennsylvania. These mail surveys were designed to provide data for testing for possible differences in the value of household contents and content-to-structure ratios for different floodplain risk zones (1% risk zone, .2% risk zone, and less than .2% risk zone). This study represents one component of a larger research effort to gather empirical data from different parts of the country to use in flood damage reduction studies.

This paper includes a discussion of deliberation that took place to decide on the use of the modified method, a description of all steps in the survey process, and special techniques implemented for completing these two surveys. Because the types of information obtained in this survey are expected to be a continual data need for the Corps, the test of the applicability of the survey method is as important as the data collected. Techniques used to encourage residents to return the detailed mail survey questionnaire included a preliminary telephone contact, the promise of anonymity, the incentive of a personal household inventory copy, and the use of the Dillman total design method. More detailed discussion is provided for particular steps and techniques considered critical to the success of the surveys. For example, it was necessary to stratify each of the two survey samples based on three flood risk zones which were to be compared in the analysis of results. It was also necessary to collect background information on each household, so that mathematical relationships for estimating content values could be developed based on demographic characteristics of the populations surveyed.

## **BACKGROUND**

Sample surveys are often necessary to estimate the amount of actual or potential flood damages to structures and their contents. According to the *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (Water Resources Council, 1983), "The basis for the determination of existing damages is losses actually sustained in historical floods . . . Historical data are often incomplete . . . Therefore, data on historical flood losses should be carefully scrutinized and supplemented by appraisals, use of area depth-damage curves, and an inventory of capital investment within the floodplain. Further estimates of damages under existing conditions should be computed for floods of magnitude that have not historically occurred." The *National Economic Development Procedures Manual - Urban Flood Damage* (Davis et al., 1988), indicates that "the inventory of building content requires a good deal more site-specific inspection and interviewing than structural inventory."

Both structural and content values are critical pieces of information in flood damage reduction feasibility studies. However, content values are much more difficult to determine than structure values. While depreciated replacement estimates of structure values can be approximated from a combination of factors that can be observed from the outside of the structure and from real estate tax assessment records, content value estimation requires a very detailed inventory. In any case, more pieces of information are necessary to estimate content value than structure value.

Major portions of the questionnaires for both surveys described in this paper were devoted to the inventory of household structure characteristics and household contents; information necessary to develop content-to-structure value ratios. Content-to-structure ratios for typical study areas can be used to estimate the value of contents lost for particular types of structures when flooding occurs. A content-to-structure ratio is constructed by dividing total value of the contents of a household dwelling on a property by the total value of the principal structure and garage on that property. While content-to-structure values have been primarily what has been used in past estimates of content damage, it is recognized here that content values are the actual data concern. Regression models were developed in this study to estimate residential content values from a number of independent variables.

The mail survey described in this document evolved from face-to-face surveys developed for the same purpose. In 1988, the Corps of Engineers' Institute for Water Resources designed a study to estimate content-to-structure ratios, and to examine the empirical evidence for the assumed relationship between household income and residential household content values. Data collection for this study began in 1988 with face-to-face post-flood surveys of flood victims in Petersburg and Moorefield, West Virginia. The original survey instrument was then revised in 1989 and used to complete a face-to-face survey of 1989 flood victims in Frankfort, Kentucky and Houston, Texas. Because the Santa Ana and Wyoming Valley study areas are both heavily populated and cover large geographic areas, it was decided that mail surveys of these areas would be much less expensive.

A stratified sample was taken in an effort to get adequate response from three flood risk zones in both study areas. Background information was collected on each household as part of an effort to develop mathematical relationships for estimating content values, based on demographic characteristics of the population. This effort demonstrated how preliminary telephone contacts, the promise of anonymity, the

incentive of a personal household inventory copy, and use of the Dillman "total design" method encouraged respondents to complete this time-consuming survey.

### **DESCRIPTION OF STUDY AREAS**

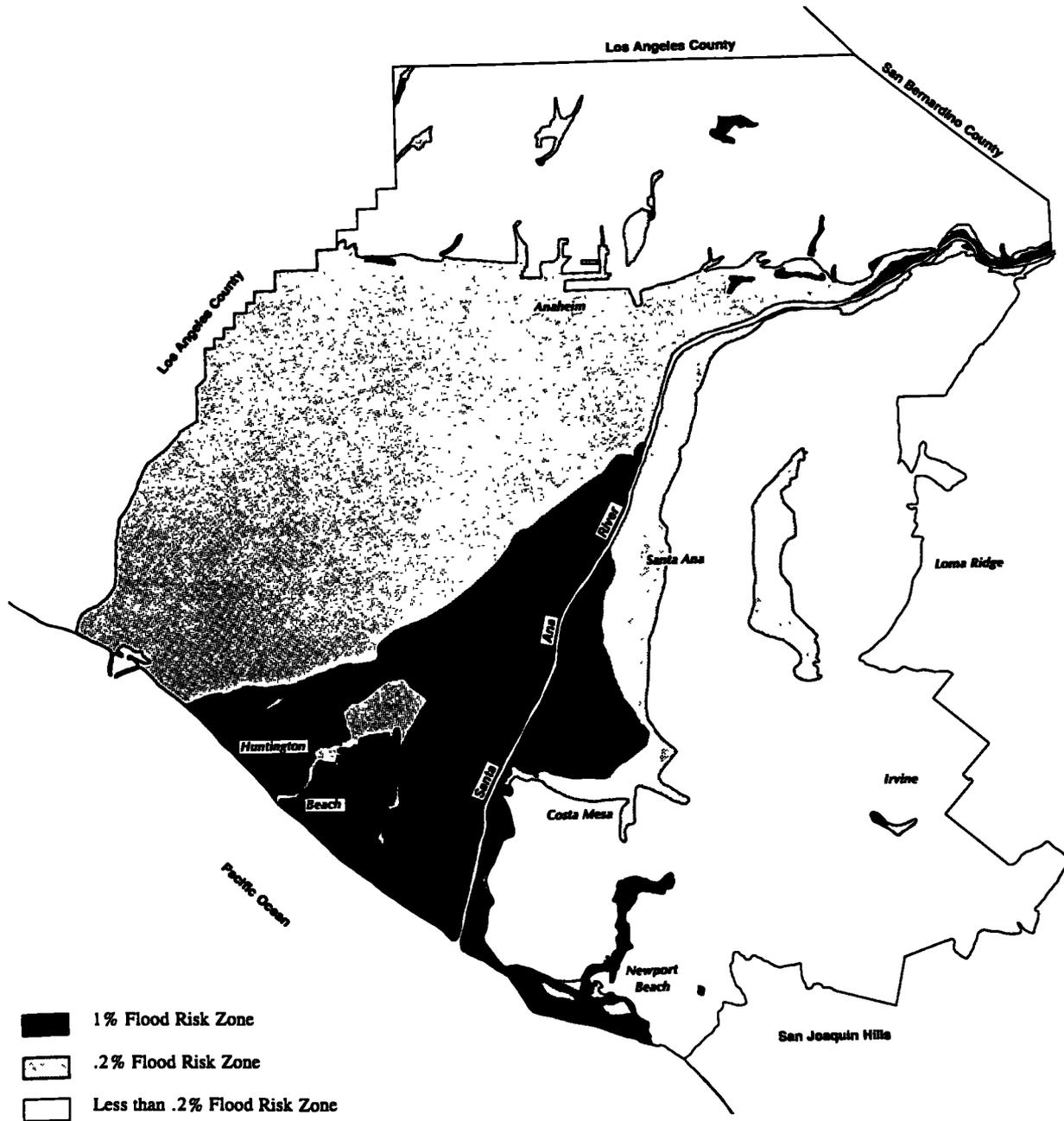
The two study areas chosen for these surveys were selected because they differ greatly in tenure, age of population, income, and other characteristics. These are characteristics which could affect content-to-structure ratios and therefore represented important variables to account for in these surveys.

**Santa Ana Study Area.** The Santa Ana study area for the mail survey was defined as all of Orange County, California, except for a mountainous area along the southern side of the county (Figure 1). Orange County is on the Pacific coast between Los Angeles and San Diego. It has been one of the fastest growing and wealthiest counties in the United States. The lower Santa Ana River floodplain includes most of the major cities in Orange County. The study area included approximately 97% of Orange County's population, including all major cities, such as Anaheim, Santa Ana, and Irvine. Orange County is a relatively affluent residential area with a population that frequently changes residence. The per capita income in 1989 was \$19,890 and average household income was \$45,922. Only 5.2% of the population was below the poverty rate in 1989 and only 5.7% of the 1990 population was 65 or older.

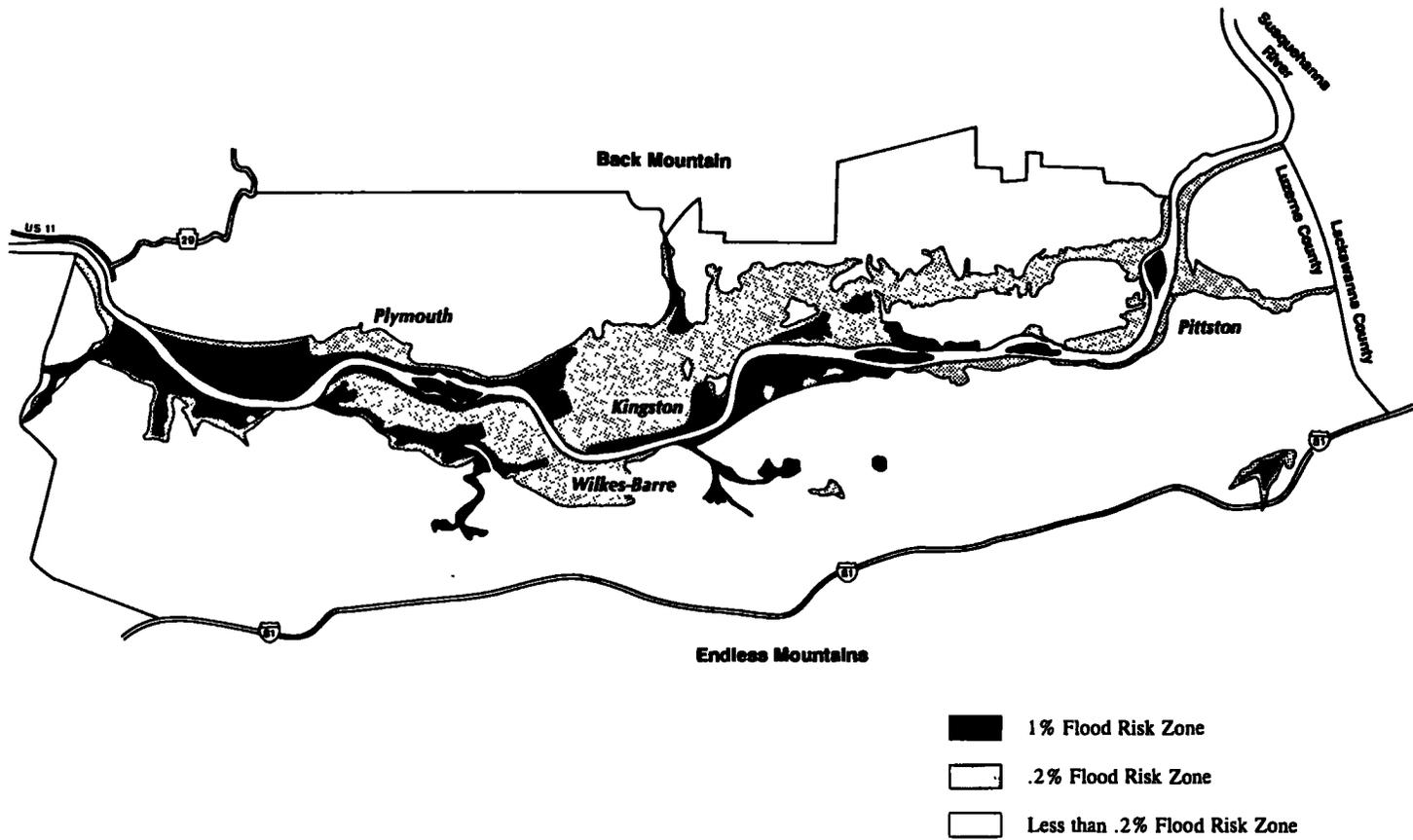
The 1990 census for Orange County reported a population of 2,410,556 residents, an approximate increase of 25% from 1980. Orange County had 875,072 housing units in 1990, 22.7% of which were built between 1980 and 1990 and only 2.7% of which were built prior to 1940. The fiscal 1989-90 total assessed valuation for Orange County was \$139,492,990,603.

**Wyoming Valley Study Area.** The Wyoming Valley study area included several adjoining communities along the Susquehanna River in Luzerne County, Pennsylvania which were severely flooded in 1972. Together, these communities comprise the major population center of Luzerne County. The Wyoming Valley is in northeastern Pennsylvania, approximately 175 miles north of Philadelphia. The Susquehanna River runs through the middle of the county in a southwesterly direction. The principal city in the area is Wilkes-Barre. The population surveyed included households in all communities, cities, and towns along the river from Pittston, at the northeastern edge of the county, to the community of Plymouth to the southwest (Figure 2).

The 1990 U.S. Census reported a population of 328,149 persons for Luzerne County, a 4.3% decrease from the 343,079 population total reported in the 1980 census. Unemployment in Luzerne County has tended to be above the state average. The largest employment sector is manufacturing, followed by the retail trade and service sectors. The population of Luzerne County is somewhat older and has lower per capita income than the Pennsylvania state average. The 1990 Census reported that 19.7% of the county population was 65 years of age or older. The average annual income for 1989 was \$14,235 per capita and \$22,966 per household, about half that of Orange County, California. The 1989 total assessed valuation for Luzerne County was \$595,277,159, with assessments set at 12.5% of the actual property value.



**Figure 1 - Santa Ana Study Area**



**Figure 2 - Wyoming Valley Study Area**

*The Use of the Mail Survey Method to Determine Home Content Values in Two Regional Studies*

## **CHAPTER TWO**

### **CONSIDERATIONS IN SELECTING THE OPTIMUM A SURVEY METHOD**



As mentioned above, finding applicable survey methods for the continual data needs of the Corps of Engineers was as important an objective to this research as acquiring the resulting data. Therefore, it was important to select a survey method or combination of methods that, when tested, could either serve as a recommended procedure or provide an indication of what the recommended survey procedure should be. The following considerations were important in selecting the optimum survey method for efficiently addressing this study objective: obtaining a sufficient number of complete responses, thorough coverage of the study areas, in sufficient time, and at acceptable cost. All of these factors are discussed below.

#### **SUFFICIENT NUMBER OF COMPLETE RESPONSES**

The data needs required the completion of a very long, sensitive, and complex survey. To obtain the information required would most often take over an hour. This was obviously too long to keep anyone on the telephone, therefore a telephone survey could not be used for the actual data collection. Face-to-face surveys generally have the highest response and completion rates. Face-to-face surveys allow the interviewer to determine if a respondent has taken the time to respond to every pertinent question. There was a concern that with the personal nature of this survey face-to-face interviewers would have a particularly difficult time in overcoming the public's increasing fear of crime. With mail surveys it is not always clear whether a returned questionnaire is complete or not. However, the anonymity offered by mail surveys could convince some people to respond who otherwise would not. Dillman (1978) has demonstrated that high response rates are possible even for lengthy mail surveys.

#### **GEOGRAPHIC COVERAGE**

The Wyoming Valley and Santa Ana areas both have very large and dispersed populations. The Wyoming Valley Study area had approximately 72,000 households and there were approximately 849,000 households in the Santa Ana area in 1990. To have a representative sample, it was required that each household have a known probability of being selected. Given the budget constraints, telephone and mail surveys were the only feasible ways of having sufficient coverage of all households identified.

#### **TIME**

Time was an important consideration in two ways. The survey had to be done in sufficient time to meet the research schedule, and there had to be sufficient time allowed for each respondent to carefully consider all household possessions of any value. The telephone method was considered the quickest way to survey a large population, but it did not allow sufficient time for respondents to carefully inventory the value of their household contents. The face-to-face survey method offered a less hurried setting than the telephone for the respondent to contemplate the value of his or her possessions. The mail survey method offered additional time for respondents to refer to receipts that would have their original costs for household

items. However, there was a danger, in this case, that a mail survey conducted with waves of follow-up mailings might take too long to meet the research schedule.

### **COST**

Any lengthy survey of a very large population is likely to be expensive no matter what survey method is used. The cost-effectiveness of any method had to be considered on the basis of how many completed surveys that method would produce for a given amount of money. Face-to-face surveys would require very large staffs, allow for few interviews a day per person and likely require large per diem and transportation charges. Telephone interviews are generally less expensive, but, in this case, the lengthy interviews that would be required would result in large long distance phone bills. Mail surveys were expected to be the least expensive, even with the costs of follow-up mailings and return postage. The cost-effectiveness of mail surveys depends upon an adequate and representative response.

### **OUTCOME**

A face-to-face survey would likely have been the method of choice if cost had not been a consideration. However, it appeared that the cost of lengthy face-to-face interviews from large samples of households taken in these two large urban areas situated on opposite sides of the U.S. would have been prohibitive. A telephone survey may have taken less time to complete, but costs would have been higher than by mail and it would not have been possible to obtain the required level of detailed information about home contents by telephone. The mail survey method with a telephone preface was, therefore, selected as the most cost-effective data collection method for this study, as compared to a pure telephone survey or face-to-face personal interviews.

A combination of telephone and mail survey methods was actually used. A random-digit-dialing (rdd) sample supplement of unlisted phone numbers was also used in Orange County, California to make the mailing list from the phone directory more representative. It was the only way to determine the identity and addresses of unlisted people who make up more than half the population of the county. A telephone screening was first used to get "commitments" to complete the survey. A mail survey was then conducted, with a follow-up postcard and another follow-up mailing to those who had not yet responded. Details of the survey method are described below and in the section on survey implementation.

## **CHAPTER THREE SURVEY DESIGN**



The questionnaire developed for the mail survey included the structure and contents items thought to be most important for determining household content values and content-to-structure ratios. Most of these items were selected based upon results of previous face-to-face surveys. Because of the highly sensitive nature of the survey, an advance contact by telephone was made with each household to be surveyed. This was designed to help legitimize the mail survey and communicate its value, to assure confidentiality, to describe a copy of the household contents inventory which they could keep, as an incentive, and to get a verbal commitment from selected respondents to complete the mail survey questionnaire when it arrived.

### **TELEPHONE SCRIPT**

An advance telephone contact was made with each household to be surveyed by the Survey Research Lab at Virginia Commonwealth University, using the script shown below:

"Hello, I'm (Name of Interviewer), calling from Virginia Commonwealth University for our Department of Urban Studies and Planning. . . We are conducting a study for the U.S. Army Corps of Engineers in cooperation with (Luzerne County, PA.) or (Orange County, CA.) . . . The information gathered will be used in determining flood protection programs, such as the one proposed by the (Name of Flood Control Project). Your participation is extremely important because you were selected as part of a scientific sample of residents in the area. All information that is gathered is being kept strictly confidential. If you participate you will be mailed a questionnaire requesting information on your household contents. The questionnaire is designed so that you may keep a copy of the information. This record of your possessions will be very helpful if you ever have a loss of property from flood, earthquake, fire, or some other disaster. The questionnaire takes a fair amount of time to fill out, but we sincerely need your help in providing the necessary information for our study. Your participation is voluntary, and you may refuse to give any or all of the requested information. Are you willing to participate in this mail survey?"

**YES Thank You for Your Time**

**NO Thank You for Your Time**

The correct mailing address was then requested or verified for respondents who said "yes".

Those who were reluctant to say "yes" were given the names and phone numbers of both the survey director at Virginia Commonwealth University and the county flood control project director. Upon receiving a refusal to participate, a "conversion attempt" was made by interviewers at a later date to try to get someone in each household to agree to participate.

## **MAIL SURVEY CONTENT**

The mail survey was designed to provide three general types of information: 1) household contents inventory, 2) structural information, and 3) demographics.

Information on household contents was collected by a room-specific home contents inventory. The first 11 white sheets inside the questionnaire booklet consisted of items for the home contents inventory. Each white sheet was followed by an identically printed yellow sheet of carbonless copy paper. Bold type in a box on the lower right of each yellow sheet read "Your Personal Copy 1990 Household Inventory". The 11 white inventory sheets and their yellow copies were titled as follows:

1. LIVING ROOM
2. DINING ROOM
3. KITCHEN AND PANTRY
4. BEDROOMS
5. MEN'S CLOTHING
6. WOMEN'S CLOTHING
7. CHILDREN'S CLOTHING
8. DEN, OFFICE, LIBRARY, OR FAMILY ROOMS
9. SPORTS, RECREATION, AND HOBBY ITEMS KEPT IN RESIDENCE
10. LAUNDRY, BASEMENT, AND GARAGE ITEMS
11. BATHROOM ITEMS, MEDICAL APPLIANCES, AND MISCELLANEOUS ITEMS

The 11 inventory sheets above were adapted from similar sheets included in 1989/90 face-to-face interview questionnaires. In order to maximize mail response, it was thought necessary to reduce the number of sheets to 11 from the 16 differently titled inventory sheets used in the 1989 Frankfort, Kentucky and 1990 Houston, Texas face-to-face survey questionnaires. This was done by combining some categories of contents and some rooms (pages).<sup>1</sup> In place of four separate bedroom pages in the face-to-face questionnaire, the mail questionnaire used only one page to inventory the combined contents of all bedrooms. In place of separate pages for garage and basement contents, the mail questionnaire combined them both on one page. In place of three pages for up to three bathrooms, all bathroom items were combined on one page. Most of the mail questionnaire pages also had fewer items and response categories than included in the face-to-face survey questionnaires. However, more items were included on some of the mail questionnaire pages, based upon face-to-face survey results and results of pretests. In place of one line for clothing on the face-to-face questionnaire bedroom pages, three separate pages of items were included in the mail questionnaire for men's, women's, and children's clothing.

Three pages of structural questions followed the 11 page home contents inventory in the questionnaire. These included questions on type of building, building style, heating/cooling system,

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<sup>1</sup> For example, five different types of power tools from the face-to-face questionnaire were combined into one single item in the mail questionnaire "power tools".

roofing, exterior walls, bathrooms, square footage, market value, flood insurance, and the flooding history of the structure.

The last page of the questionnaire contained the following demographic questions: zip code, marital status, education, age, and annual household income. Some additional demographic questions were also included among two of the three pages of structural questions; e.g. number of people living at the residence, number of years living in the residence, and whether the home was owned or rented.

### **MAIL SURVEY FORMAT**

A booklet questionnaire was the general format chosen for the mail survey instrument. A booklet format of reduced size, with a graphic illustration on the cover, has been shown to produce better response for mail surveys than using the standard 8 1/2" x 11" page format (Dillman, 1978). Front and back covers of the booklet questionnaire were printed on glossy litho-coated paper, color-coded to correspond to the three floodplain strata of the sample. Blue was used for households surveyed in the 1% risk floodplain, grey was used for the .2% risk floodplain, and green was used for households located in the less than .2% risk floodplain. The Office of Management and Budget survey approval number and expiration date were printed at the top of the front cover. Nothing was printed on the back cover.

The front cover of the survey booklet was formatted to be attractive and create interest in the study topic. The survey title was printed in larger letters across the top, below the OMB information. Below the title in smaller letters were printed "Virginia Commonwealth University" and "U.S. Army Corps of Engineers". Logos for both the Corps of Engineers and Virginia Commonwealth University were also included on the cover to further communicate that the survey was being conducted for the Corps by a university. The front cover also had three graphic disaster scenes arranged vertically on the left side of the page, serving to visually arouse respondent interest in the purpose of the study. The name, address, and phone number of the survey project director, Dr. Margo Garcia, was arranged vertically on the right side of the cover. Also printed on the right front was a "thank you" for filling out the questionnaire and a request that the questionnaire be returned to the survey director at her university address.

The inside of the front cover was formatted to convey the instructions shown below for filling out the questionnaire. It was critical to have clear instructions because no interviewer would be present to answer respondent questions during a mail survey. The instructions began by saying that most pages of the questionnaire were designed for respondents to do a thorough inventory of the contents of their home. Contents were defined as items within the home which are not permanently attached to the building. The instructions indicated that the simplest way to complete the inventory was to walk through each room in the home to which each page applied.

Respondents were specifically instructed to:

- 1) Indicate how many pieces of each item there are in the room(s) to which each page applies.

AND  
EITHER

- 2) Indicate total current cash value for each item.

OR

- 3) Indicate total original costs when purchased, for each type of item. If you obtained an item as a gift or if you inherited it, enter total cash value you think it was worth at the time.

AND

Indicate the number of years ago that you obtained each item. If you obtained more than one of the item over the years, estimate the average number of years ago that you obtained the items.

Respondents were given the option of providing the total purchase cost and year purchased instead of the total current cash value. This was for those cases where people have no idea of what an item would be worth in cash after they have owned it for many years.

In addition to having the above instruction printed on the top half of the inside cover, it was also arranged horizontally across the page in columns, corresponding to the way in which response categories were arranged on each inventory page. Horizontal and vertical lines were also used to help clarify this instruction, and alternative response columns (#2 and #3) were separated by lines on each of the inventory pages.

The lower half of the page of instructions on the inside front cover contained the following statements:

The information you provide does not have to be absolutely precise. If in doubt, make your best guess. Be sure to fill out each page which lists items found in your house. Most types of items will be listed on only one page. If an item you own is listed on a room page different from the room where the item is found in your house, put the item value and number of years owned for the item on that page.

After you complete the inventory sheets, please answer the final background questions and mail back our questionnaire. **DON'T FORGET TO TEAR OUT THE YELLOW COPIES TO KEEP WITH YOUR INSURANCE RECORDS.**

Your participation in this survey is voluntary and you may refuse to give any or all of the requested information.

This final instruction was set off within a shaded box at the lower right-hand corner of the page, so as not to be overlooked by the reader.

### **MAIL OUT PACKAGE**

A critical aspect of mail survey design is the package of materials that is sent out together with, before, or after the initial mailing of the survey questionnaire. For this study these materials consisted of cover letters, postcards, and postage-paid-return envelopes.

**Cover Letters and Return Envelopes.** Two different cover letters were used for both of these surveys. The first letter accompanied the initial questionnaire mailing, together with a postage-paid-return envelope. The second was mailed approximately four weeks later, with a replacement questionnaire (and postage paid return envelope) urging those who had not responded to the first mailing to mail back a

completed questionnaire. Each letter was hand signed by Dr. Margot Garcia, the survey director at Virginia Commonwealth University. Both letters referred to the fact that the recipient had agreed during the telephone advance contact to complete the mail survey questionnaire. Both letters also contained telephone numbers for Dr. Garcia and for the county flood control project managers, who respondents could call if they had any questions.

**Postcards.** Two postcards were also used for both of these surveys. The first postcard accompanied the initial questionnaire mailing. The cover letter asked respondents to sign and mail back this postcard separately from the completed questionnaire. This was to notify the survey director that the questionnaire had been completed, because to ensure confidentiality no respondent identification number was attached to the questionnaire itself. The second postcard was a reminder to respond, mailed to respondents one week after the initial questionnaire mailing.

### **PRETESTING**

The pretest is an essential part of refining the survey instrument. It provided some assurance that an adequate transition had been made from the face-to-face format which had been used in Texas and Kentucky, and also that the survey would be appropriate to the communities being surveyed. For the pretest, preliminary questionnaire drafts were first circulated for comment within IWR and then among colleagues at Virginia Commonwealth University. The questionnaire was then pretested with Luzerne and Orange County employees and Corps employees from both District offices. They were asked to use the instrument to record all of the requested information for their homes, keep track of the time necessary to do so, and make note of any difficulties or problems encountered. Revisions necessary after the pretest included such things as combining laundry, basement, bedroom and garage items. Other items often found in study area homes, but not included in the preliminary drafts of the questionnaire, were also added.

## **CHAPTER FOUR SAMPLING**



### **SAMPLE FRAME**

The target population for the Santa Ana study area was the entire population of occupied housing in the county, except for those residences in the southeastern portion, outside a border defined by the San Joaquin Hills. The target population for the Wyoming Valley study area was all of the occupied housing defined by map lines paralleling the river and located approximately half way up the sides of high ridges bordering each side of the Susquehanna River Valley. American Automobile Association (AAA) maps were used as base maps for defining these boundaries, because they provided detailed street location and numbering information. The study boundary was generally drawn at the point where housing developments stopped, as defined by AAA base maps and on-site verification.

The sampling frame for the Wyoming Valley survey consisted of all households within this study area identifiable by listed phone numbers. The sampling frame for the Orange County study area used both listed and unlisted phone numbers because the percentage of unlisted phone numbers was much higher here (54% were unlisted).

### **STRATIFICATION**

It was necessary to design stratified samples of the Santa Ana and Wyoming Valley study areas by flood risk zones. This was so that analysis of survey results could include analysis of whether flood risk was a significant variable in determining household content values and to test for possible differences in the value of household contents for different flood risk zones. The sampling strata were defined by mapping both study areas. Transparent acetate sheets were overlain on American Automobile Association maps of both areas. Two floodplain boundary lines were drawn on the acetate sheets to separate each study area into three strata: a 1% risk floodplain, a .2% risk floodplain, and a less than .2% risk floodplain. The floodplain boundary lines were drawn in by hand by piecing together this information from many large scale maps published in 1981 by the Federal Insurance Administration.

The three sampling strata and the outer boundary of the population of sampled households for the Santa Ana study area are shown in Figure 1. Figure 2 shows the three sampling strata and the outer boundary of the population sampled for the Wyoming Valley study area.

### **DRAWING THE SAMPLE**

The sample was purchased from Survey Sampling, Inc. of Fairfield, Connecticut. It was randomly drawn from telephone listings for each of the flood risk strata described above and shown in Figures 1 and 2. Households selected in the sample were classified in appropriate strata based upon the census tract or census block group code attached to listed phone numbers in Survey Sampling's database. The unlisted

**TABLE 1  
POPULATION PROPORTIONS BY FLOOD RISK ZONE**

	Santa Ana	Wyoming Valley
1% Flood Risk Zone	14.5 %	3.5 %
.2% Flood Risk Zone	41.8 %	30.5 %
Less Than .2% Flood Risk Zone	<u>43.7 %</u>	<u>66.0 %</u>
	100.0 %	100.0 %

It was originally assumed that the stratified sample would be drawn proportionate to size of the actual percentages of households within each stratum (the above estimates). However, upon receiving the above percentage estimates for the population, the Institute for Water Resources became concerned that such a proportionate sample would not yield as much response in high risk strata as desired for analysis purposes. It was thus decided to over-sample the higher risk strata.

Table 2 shows the total number of phone numbers finally allocated to each stratum for the two samples. The objective for the total sample was to draw enough phone numbers to obtain approximately 2000 respondents agreeing to complete the mail survey, approximately 1000 from each of the two study areas and relatively equal numbers from each of the three strata within each study area. Thus, the sample size for the Wyoming Valley was 1083 listed numbers for each of the three strata. The sample for Santa Ana reflects an unlisted sample supplement to the listed sample, matched disproportionately so that the combined listed and unlisted numbers would generate approximately equal total numbers of questionnaires completed from each of the three strata.

The unlisted Santa Ana sample was much larger than the listed sample. This is because it was expected that a large proportion of these unlisted numbers would be non-working phone numbers or business phones. Survey Sampling could not delete Yellow Page business listings from their unlisted database as they did for the sample drawn from their listed database. There was also concern that people with unlisted numbers would be more likely to refuse to participate in the survey.

**TABLE 2  
ALLOCATION OF PHONE CALLS**

	Santa Ana	Wyoming Valley
1% Flood Risk Zone	840	1083
.2% Flood Risk Zone	345	1083
<u>Less than .2 % Flood Zone</u>	<u>315</u>	<u>1083</u>
Listed Phone Numbers:	1500	3249
<u>Unlisted Phone Numbers:</u>	<u>2632</u>	<u>0</u>
Total Sample:	4132	3249

## **CHAPTER FIVE SURVEY IMPLEMENTATION**



### **INFORMING THE PUBLIC**

It was critical for the local coordinators to inform the public (through the newspapers) and key political persons in each community of IWR study plans and study progress. Community leaders were phoned by the local coordinators and informed of the study. For the Wyoming Valley, news releases were sent to the local newspapers approximately one week before the survey began. This served to legitimize the study for selected respondents from both study areas. In addition, respondents who were later reluctant to participate when contacted by phone were given the name and phone number of the local study coordinator so they could personally verify that the survey was legitimate. A large number of people did contact the Wyoming Valley study coordinator to get this verification.

### **LOGISTICAL SUPPORT**

The large number of governmental units included in both the Santa Ana and Wyoming Valley study areas made it essential for Corps District offices to rely on county officials to coordinate with these governmental units to assure their support and coordination for successful survey implementation. For the Santa Ana, California study area, coordination was performed by the Orange County Environmental Management Agency. The person in charge of coordination there was the project manager for the Lower Santa Ana River Flood Control Project. For the Wyoming Valley study area, coordination was performed by the Luzerne County Road and Bridge Department's flood coordinator.

The local coordinators also provided IWR with area floodplain maps and other informational resources needed to design the study. They also provided direct input with respect to design of the survey questionnaire. County officials gave helpful suggestions to make the purpose of the survey and its value to the reader more explicit, stressing confidentiality, and using the cover letter to identify how the respondent could confirm the legitimacy of the study. County officials were also helpful in insuring that the wording of the questionnaire was consistent with the local vernacular and could be clearly understood, and that all the major items found in area homes were listed in the survey. Personnel from their respective agencies later assisted in pretesting the questionnaire and providing comments for final revisions. This began with suggestions to IWR as to what kinds of items were thought most important to add to or delete from the initial draft of the questionnaire.

Each of the study area county agencies also hosted two persons from the IWR study team for site visits. In each case, the visit began with a meeting in the agency offices with their flood project coordinator and other agency officials. Their familiarity with the study areas made these site visits very productive. The Wyoming Valley site visit was also coordinated with a person sent by the Baltimore District, Corps of Engineers, who had supervised a similar survey of structure and content value losses after the 1972 Wyoming Valley flood. He rode with IWR team members in an automobile tour of the area, pointing out examples of variation in structure types which were photographed in different flood risk zones.

## **TELEPHONE SCREENING**

The Survey Research Laboratory (SRL) of Virginia Commonwealth University was subcontracted to conduct the telephone screening. All SRL interviewers and survey supervisors were paid employees who have received training in the fundamentals of interviewing technique and procedure. Interviewers were continuously supervised, and the ratio of interviewers to supervisors was never higher than six to one. Interviewing times for the telephone screening in the local time of the areas being called were approximately 4-9 PM Sunday through Thursday, 4-8 PM Fridays, and 10 AM to 2 PM Saturdays. The Wyoming Valley phone calls were made first each day, because those respondents were in the same time zone as Virginia Commonwealth University in Richmond, Virginia. Immediately following this, the Santa Ana study area residents were called. The telephone screening began on April 23 and ended on July 2, 1990.

The telephone screening process used a computer assisted survey execution system (CASES), developed by the University of California at Berkeley. A script based upon possible responses to these solicitations was programmed to appear on a computer screen which was read to respondents. Responses were keyed into a computerized database immediately upon being received. The script used was the result of several preliminary drafts and revisions made in consultation between SRL and the principal investigators, and after telephone pretesting with respondents from the two study areas. Interviews conducted during the first two nights of telephone interviewing were treated as the pretest of the telephone script. The main problem found by interviewers was that the original script was too long and respondents become impatient. Interviewing was consequently suspended until the following week so that the script could be shortened without changing content.

Up to 20 attempts were made to reach an adult at each phone number in the sample before giving up. Upon reaching a qualified respondent, the phone interviewers would identify themselves by name as calling from the Department of Urban Studies and Planning at Virginia Commonwealth University for the U.S. Army Corps of Engineers. They would then verify that they had called the correct number and that the number was that of a residential household. In the event of a non-residential phone, the interview was terminated.

## **MAIL SURVEY**

The mail survey was conducted in three "waves". The first wave consisted of mailing a questionnaire with accompanying materials to everyone who had agreed by phone to participate in the survey. The next wave was a postcard sent one week later to remind respondents to complete the questionnaire; it also said "thank you" to those who had already promptly returned it. The third wave was approximately three weeks after the postcard (one month after the first mailing). It consisted of mailing another copy of the questionnaire with accompanying materials.

The materials accompanying the questionnaire with the first and second wave mailings served to form a comprehensive mail-out "package", every part of which was critical to the success of the mail

survey. This mail-out package included a tagboard separator<sup>2</sup> to be used with the inventory pages of the questionnaire, a cover letter, a self-addressed and postage-paid return envelope, and a postage-paid postcard to mail back separately when returning the questionnaire (See Appendix A).

The first wave cover letter was designed to persuade respondents to complete the survey questionnaire and mail it back. It emphasized the legitimacy and importance of the study, a promise of confidentiality, and the immediate benefit to the respondent of keeping the yellow copy of the contents inventory for personal records. Each letter was personally addressed to each respondent on Virginia Commonwealth University stationery. Each letter was also hand signed in ink by the Survey Project Director. The letter asked respondents to return the enclosed postcard separately from the questionnaire so that the project director would know that the questionnaire had been completed and mailed. This served to reinforce the promise of confidentiality. The back of the postcard simply said, "I mailed the completed survey booklet on (date)", with a blank below this for the respondent's signature.

The second wave mailing consisted of only the postcard reminder and thank you. It was sent out approximately one week after the first wave mailing.

The third wave mailing was similar to the first. The mail out package included a replacement questionnaire and postcard to notify Virginia Commonwealth University when it was mailed back, and a second version of the cover letter. This "package" was mailed approximately one month after the first mailing, and three weeks after the second wave reminder postcard. The third wave letter began by reminding respondents that they had agreed over the phone to fill out the questionnaire, but that no postcard had yet been received to indicate that they had mailed back a completed questionnaire. The letter emphasized the importance of respondent participation in this flood control study, and underlined the promise that all information they provided would be kept confidential. There had been indications from some who had been mailed the first questionnaire that confidentiality was a particularly important issue in motivating survey response. One letter was received from a respondent who doubted that the survey response would remain confidential. Comments on some other returned questionnaires indicated that the survey was "too intrusive".

### **TELEPHONE FOLLOW-UP**

Another phone survey was conducted for a sample of 300 non-respondents, 150 who refused to participate in the mail survey when first phoned and 150 who had agreed to participate but did not mail back their questionnaire. The purpose was to find out why they had not responded and to identify any differences in characteristics between respondents and non-respondents. Results are discussed later in the sub-section on assessment of non-response.

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<sup>2</sup> The tagboard separator was a piece of stiff card stock, providing a hard backing to write on, and protecting subsequent pressure sensitive yellow copy pages from being activated.

## **CHAPTER SIX**

### **SURVEY RESPONSE**



#### **TELEPHONE SCREENING**

The telephone screening produced an acceptance rate of 59.3%, with 2808 "yes" responses and 1929 "no" responses (refusals). "Yes" meant respondents agreed to fill out and mail back the mail questionnaire. It was not possible to get valid "yes" or "no" responses from 2644 other phone numbers drawn in the sample. The reasons for this were: two persons were inaccessible (e.g. because a secretary screens calls), 164 did not speak English, 85 were ill and could not talk on the phone, 11 had no one in the household that was eligible (e.g. all under 16 years old), 63 were business phone numbers, 1025 phones were not in service, 222 never had any answer, 36 always had a busy signal, 24 had phone circuit problems, 155 had repeated calls that only reached answering machines, 215 had callbacks requested for a later time that were never completed, and 13 were not contacted for other reasons.

Table 3 shows the telephone survey acceptance rates for both the Wyoming Valley and Santa Ana study areas. The overall acceptance rate for the Wyoming Valley listed sample was 60.5%. The highest Wyoming Valley acceptance rate (67.2%) was obtained from household respondents living within the .2% flood risk zone, and the lowest rate (49.8%) was obtained from household respondents living within the < .2% flood zone. The overall acceptance rate for the Santa Ana listed sample was 57.6%. The highest Santa Ana rate (59.0%) was again obtained from household respondents living within the .2% flood risk zone. Similarly, the lowest acceptance rate for the Santa Ana listed sample (52.0%) was again obtained from the less than .2% zone. The Santa Ana acceptance rate for the unlisted sample supplement was 59.7%, slightly higher than the rate for the listed sample.

An electronic data set of names and addresses was created by SRL for those who agreed to participate. This was used to generate personalized cover letters for the mail survey.

#### **MAIL SURVEY**

Questionnaires were mailed to all 2808 households from which an "acceptance" was obtained in the telephone survey. A total of 647 questionnaires were returned, 229 from the Santa Ana, California sample and 418 from the Wyoming Valley, Pennsylvania sample. However, over 42% of all 647 questionnaires returned were not completed sufficiently to be included in the analysis. There were missing responses to many items. Of these, 55 from Santa Ana and 209 from the Wyoming Valley were not filled out completely enough to analyze. The smallest number of returns was received from zone A in both sampling areas. Some of the questionnaires were returned with missing covers, making it impossible to determine from which flood zone they came. These response results are summarized in Table 4.

<b>Table 3</b>	
<b>Phone Survey Acceptance Rates</b>	
<u>Wyoming Valley</u> : 1624 Accepted / 2683 Asked = <u>60.5%</u>	
1% Risk Zone: 599 Accepted / 929 Asked = <u>64.5%</u>	
.2% Risk Zone: 585 Accepted / 871 Asked = <u>67.2%</u>	
< .2% Risk Zone: 440 Accepted / 883 Asked = <u>49.8%</u>	
<u>Santa Ana</u> : 1184 Accepted / 2054 Asked = <u>57.6%</u>	
1% Risk Zone: 289 Accepted / 526 Asked = <u>54.9%</u>	
.2% Risk Zone: 144 Accepted / 244 Asked = <u>59.0%</u>	
< .2% Risk Zone: 104 Accepted / 200 Asked = <u>52.0%</u>	
Unlisted Nos.: 647 Accepted / 1084 Asked = <u>59.7%</u>	

<b>Table 4</b>			
<b>Summary of Mail Survey Response</b>			
	Santa Ana	Wyoming Valley	Total Survey
Zone A (1% Floodplain)	48	29	77
Zone B (.2% Floodplain)	61	97	158
Zone C (< .2% Floodplain)	64	79	143
Unknown Floodplain	1	4	5
Incomplete Questionnaires	55	209	264
Totals	229	418	647

**ASSESSING NON-RESPONSE**

Reasons for Non-Response. Table 5 shows reasons given for not responding. These reasons were obtained from 300 post-survey telephone follow-up interviews with non-respondents, 150 who refused when

contacted in the preliminary telephone survey and 150 who agreed in the phone survey to mail back a completed mail questionnaire, but failed to do so.

Over two-thirds of the non-respondents interviewed, who refused when first contacted by telephone, said that they did not know or could not remember why they had refused to participate in the mail survey (see top half of table 5). For those giving reasons for their refusals, the reason given most often was "too busy/no time," followed by "thought it was a sales call," "don't answer (any) surveys," and "no flood potential (where I live)." Two people also claimed they were not contacted by telephone, indicating that someone else in those households received the phone call and gave the refusal.

Over one-third of non-respondents interviewed who did not mail in their completed questionnaire said that they did not know why they had not done it (see bottom half of table 5). For those who did know why they did not respond, the reason given most often was "too long", followed by "too busy/no time," "too difficult," "too lazy/procrastination," and "sickness". Fifteen non-respondents claimed they had never received the questionnaire, another fifteen claimed that they had mailed back their completed questionnaires, and seven promised to do it. Other reasons given for not responding included "misplaced survey," "mistook for junk mail", "questionnaire addressed to a different person," and "away from home (when questionnaire arrived)".

Non-Respondent/Respondent Differences. In addition to directly asking non-respondents why they refused to participate or did not return the mail questionnaire, the follow-up non-response survey also asked, for comparison purposes, several questions which had been included in the mail survey. Comparisons were made on the following survey items: whether or not residence had ever been flooded, risk-of-flood rating for the neighborhood, whether or not home was owned or rented, the number of people living at the residence, household income, and the marital status, age, and education of the principal wage earner of the household.

There was relatively close correspondence between the response distributions of respondents and non-respondents for most of these variables. For example, 29.3% of respondent samples from both surveys reported that their residence had been previously flooded, compared to 29.9% of the interviewed non-respondents who gave the same response.

However, fairly large differences were found for two of the comparison variables, homeownership and number of years of school completed by the principal wage earner of the household. A total of 26.9% of the non-respondents reported they did not own their home, compared to only 15.4% of the respondents who were not homeowners. Proportionately more non-respondents (48.3%) compared to respondents (29.1%) reported completing only 12 years or less of schooling.

From these comparisons, it appears that non-response can be partially explained by a perceived lack of relevance of the survey purpose, at least for households where residents did not own their own home. It also seems logical to conclude that non-response can be partially explained by level of education of the principal wage earner. This is not an uncommon finding for mail surveys generally, and is particularly understandable for a complex and sensitive survey such as this one. The fact that response distributions

**Table 5  
Reasons Given for Non-Response**

<u>Reasons for Refusing Telephone Request:</u>	Number of Times Mentioned
Don't Know/Don't Remember	108
Too Busy/No Time	9
Thought it was Sales Call	4
Don't Answer Surveys	3
No Flood Potential	2
Was Never Contacted	2
<u>Reasons for Not Returning Mail Questionnaire:</u>	
Don't Know	56
Too Long	28
Claimed Never Received It	15
Claimed They Mailed It	15
Promised to Mail it	7
Too Busy/No Time	4
Too Difficult	4
Too Lazy/Procrastination	4
Sickness	4
Misplaced Survey	1
Mistook for Junk Mail	1
Addressed to A Different Person	1
Away From Home	1

for all other variables compared did not appreciably differ gives some assurance that non-response did not necessarily bias survey results.

This assessment of non-response must be interpreted with caution, because of two considerations with respect to the manner in which the comparison of non-respondents to respondents was conducted. First, although randomly selected, the 300 non-respondents interviewed represent a matched sample, with half representing telephone non-response and the other half representing mail non-response. Therefore, because it was matched for type of non-response, the non-respondent sample does not represent all non-respondents with equal probability. A second consideration is that respondents from both the Santa Ana and Wyoming Valley samples were lumped together for purposes of comparison to the sample of non-respondents. The reasons for non-response are not necessarily the same for both survey study areas. Area-specific differences could confound the results of this non-response assessment.

**EVALUATION OF SURVEY BIASES RELATIVE TO CENSUS DATA**

Another method used to check for potential survey bias was to compare sample means to those in the general population, as estimated by the U.S. Census. To evaluate potential survey biases, data for several housing and demographic variables from both the 1991 Orange County, California and 1991 Luzerne County, Pennsylvania mail questionnaires were compared to 1990 census data for these two counties. Only the portion of the Luzerne County census which matched the sample area was used for these comparisons. All of the Orange County census was used because the sampled region covered 97% of the county population. The median market values for owner-occupied property are compared because this is what was reported in the census. Table 6 shows that the median market value calculated from the mail survey data is \$12,700 lower than the census data values for Orange County, California and \$9,000 higher than the census data for Luzerne County, Pennsylvania.

<b>Table 6</b>		
<b>Survey Comparison to Census: Median Market Values for Orange County, California and Luzerne County, Pennsylvania</b>		
	<b>1991 Survey</b>	<b>1990 Census</b>
<b>Orange County, CA.</b>	<b>\$240,000</b>	<b>\$252,700</b>
<b>Luzerne County, PA.</b>	<b>\$ 65,000</b>	<b>\$ 56,000</b>

Tables 7 and 8 show survey difference in the survey and census data for estimates of homeownership and married household proportions for both the California and Pennsylvania samples. Resulting survey portions of owned homes were 80.3% for the Orange County sample and 76.5% for the Luzerne County sample, compared to 60.1% and 62.6%, respectively, reported by the 1990 census. Resulting survey proportions of households occupied by married persons in the two respective county samples were 65.7% and 63.6%, compared to 53.5% and 48.7% reported by the census.

<b>Table 7</b>		
<b>Survey Comparison to Census: Occupied Home Ownership</b>		
	<u>1991 Survey</u>	<u>1990 Census</u>
Orange County, CA.	80.3%	60.1%
Luzerne County, PA.	76.5%	62.6%

<b>Table 8</b>		
<b>Survey Comparison to Census: Married Households</b>		
	<u>1991 Survey</u>	<u>1990 Census</u>
Orange County, CA.	65.7%	53.5%
Luzerne County, PA.	63.6%	48.7%

Table 9 shows a similar comparison for average number of persons per occupied housing unit. Mean values for the 1991 California and Pennsylvania surveys are both higher than the 1990 census means. The Orange County, California survey mean was 3.3, compared to 2.9 reported for the county in the 1990 census. The Luzerne County, Pennsylvania mean was 5.0, compared to 2.4 reported for this county in the 1990 census. This may be due, in part, to some extreme values in the survey data (maximum values of 228 persons in one Pennsylvania household and 100 persons in one California household). Therefore, medians may be a better basis for comparison than the mean. Median values for both the California and Pennsylvania surveys were 2.0 persons per household, and medians for the census were also 2.0 for both study areas.

Table 10 compares survey response to census data for annual household income. There was close correspondence between survey income distributions and census income distributions for the two county sample areas.

**Table 9**  
**Survey Comparison to Census: Average Number of Persons/Household for**  
**Orange County, California and Luzerne County, PA.**

	1991 Survey	1990 Census
Orange County, CA.	Mean = 3.3	Mean = 2.9
	Median = 2.0	Median = 2.0
Luzerne County, PA.	Mean = 5.0	Mean = 2.4
	Median = 2.0	Median = 2.0

**Table 10**  
**Survey Comparison to Census: Household Income**

	1991 Survey	1990 Census
<b>Orange County, CA.</b>		
Less than \$20,000	9.0% (18)	16.6% (137,276)
\$20,000 - \$39,000	21.9% (44)	25.8% (214,162)
\$40,000 - \$59,999	31.8% (64)	23.0% (190,414)
\$60,000 - \$100,000	21.9% (44)	23.4% (193,946)
Over \$100,000	15.4% (31)	11.2% (93,051)
	100.0% (201)	100.0% (828,849)
<b>Luzerne County, PA.</b>		
Less than \$20,000	35.1% (117)	47.1% (33,787)
\$20,000 - \$39,000	38.7% (129)	32.2% (23,111)
\$40,000 - \$59,999	17.7% ( 59)	14.0% (10,033)
\$60,000 - \$100,000	7.2% ( 24)	5.3% ( 3,808)
Over \$100,000	1.2% ( 4)	1.4% ( 974)
	99.9% (333)	100.0% (71,713)

## **CHAPTER SEVEN**

### **SUMMARY OF MAJOR RESULTS**



Each completed questionnaire underwent extensive data screening. The data screening focused on insuring that only those questionnaires that had sufficiently complete background and inventory information would be used in the analysis. The most serious problem was from individuals not completing their estimates of content value. Many times respondents indicated that they had a particular item, but did not indicate either the current cash value or the replacement cost and age of the item. To be considered complete enough to be used in the analysis, the survey form had to have all of the information on the building structure, all of the household demographic data, and at least 70% of the content value estimates for those items identified as present. Average item values were used for missing values on some questionnaires that were otherwise complete enough to use in the analysis.

Depreciated replacement value was a critical variable used to calculate the numerators in the content-to-structure ratios. Every piece of information had to be complete to do the computation of depreciated replacement values. Some of the variables necessary for estimating depreciated replacement values are subjective, including effective age, quality, and condition of the building. Since it would be unfair and unreliable to ask individuals to make subjective judgements about their own property, it was assumed that with normal upkeep effective age would generally be one-half of the chronological age. Quality and condition were determined for each zip code, based on discussions with individuals familiar with each area. Further adjustments were made in effective age estimates based on Marshall and Swift (1987) formulas of the effect of quality and condition.

Total content value was computed for each respondent, using 1990 price levels. Means were computed for total content value, depreciated replacement value, market value, and content-to-structure value ratios; with depreciated replacement values used as the numerator in the ratio. The Wyoming Valley and Santa Ana studies produced content-to-structure value ratios of .727 and .442, respectively.

Regression analysis was used to develop a model to explain variation in total contents. The Luzerne County regression analysis produced the most elaborate model. Six variables were found to be significant, with 't' values of .186 and higher. These included: married, log of structure market value, log of square feet, log of income, tenure, and widowed. Only the dummy variable, indicating the respondent was married, which had a 't' value of 3.96, and a beta coefficient of .307 was particularly high. The market value, income, and square feet variables had elasticities of .198, .179, and .131 respectively. Overall, the regression had an  $R^2$  of .256 and was significant at the .9999 confidence level.

The regression model for Orange County was the strongest fit of the two case studies. It produced an  $R^2$  of .372 and was significant at the .9999 confidence level. Four variables, all with positive coefficients, were significant, including log of income, with a beta coefficient of .334; log of depreciated replacement value, with a beta coefficient of .328; married, with a beta coefficient of .164, and widowed, with a beta coefficient of .169. These variables were consistent with the other case studies. The regression indicated that contents increased 44 cents for each dollar increase in income and 71 cents for every dollar increase in depreciated replacement value.

IC = 2.678	+ .183II	+ .004T	+ .300ISf	+ .284ISv	+ .436M	+ .344W
t = (2.19)	(2.27)	(1.88)	(2.43)	(2.51)	(3.96)	(1.86)
beta =	(.179)	(.198)	(.131)	(.198)	(.307)	(.152)
R <sup>2</sup> = 0.256						

where:

IC = log of total content value  
 II = log of income  
 T = tenure (length of time at that residence)  
 ISf = log of square feet  
 ISv = log of structure market value  
 M = married  
 W = widowed

IC = -2.711	+ .440II	+ .712IDr	+ .254M	+ .468W
t = (-1.63)	(4.71)	(4.53)	(2.25)	(2.42)
beta =	(.334)	(.328)	(.164)	(.169)
R <sup>2</sup> = 0.32				

where:

IC = log of total contents  
 II = log of income  
 IDr = log of depreciated replacement value  
 M = married  
 W = widowed

Regression analysis on both samples, using total content value as the dependent variable, found neither the flood zone nor the flood risk variable to be significant in any of the regressions.

An analysis comparing different flood zones found that there was no significant difference between the mean c/s ratio of the flood zones in either community at the 95% confidence level. At the 90% confidence

level, there was no significant difference between the content-to-structure value ratios between zone A and zone C. There was also no significant difference when flood risk zones A and B were combined and compared to zone C. In both samples, zone B had a significantly lower ratio than zone C at the 90% confidence level. Since the flood zone and flood risk factors were insignificant in the regression equations, it is probable that the small differences between c/s ratios from zone B to zone C may well be due to other factors. On the basis of this evidence, it was concluded that flood risk does not significantly reduce household content investment for either community.

### **COMPUTATION OF CONFIDENCE INTERVALS**

This section describes the computation of the 95% confidence intervals for both the Pennsylvania and California surveys, using total content value as the critical variable.

The following parameters were estimated for the Pennsylvania sample of 208 useable survey forms:

Mean Value of Total Contents (X) = \$36,246  
Standard Deviation (S) = \$21,299  
Variance (S<sup>2</sup>) = \$4.536474 \* 10<sup>8</sup>

The Standard Error of X (SE<sub>X</sub>) =  $\sqrt{(1-(n/N)) * S^2/n} = 1,475.624$

Confidence Interval = X ± (t<sub>n-1; .95</sub>) \* SE<sub>X</sub> = \$36,246 ± (1.96 \* 1,475.624)

95% Confidence Interval = \$36,246 ± \$2,892

The following parameters were estimated for the California sample of 174 useable survey forms:

Mean Value of Total Contents (X) = \$45,946  
Standard Deviation (S) = \$38,983  
Variance (S<sup>2</sup>) = \$1.5196743 \* 10<sup>9</sup>

The Standard Error of X (SE<sub>X</sub>) =  $\sqrt{(1-(n/N)) * S^2/n} = 2,954.987$

Confidence Interval = X ± (t<sub>n-1; .95</sub>) \* SE<sub>X</sub> = \$45,946 ± (1.96 \* 2,954.987)

95% Confidence Interval = \$45,946 ± \$5,792

### **COST COMPARISONS**

After these two mail surveys were completed the data collection costs were compared to costs for what had been done for the face-to-face content inventory in Houston, Texas. Only data collection costs were used in the comparison. It was assumed that all other costs would be about the same. The Houston survey cost approximately \$26,000 for 152 completed surveys for an average cost of about \$175 per survey. The Pennsylvania and California mail surveys cost approximately \$50,000 for 382 complete surveys, for an average cost of \$130 per survey. Because the Santa Ana and Wyoming Valley study areas are so dispersed it is likely that face-to-face data collection would be even more expensive on average for those areas than it was for Houston.

## **CHAPTER EIGHT**

### **PROMISES AND PITFALLS OF THIS SURVEY APPROACH**



This application of a mail survey to content inventory and valuation contents and structures demonstrates that with detailed planning, adequate resources, a sufficient incentive, and the promise of anonymity to the respondents it is possible to obtain considerable personal information through a mail survey. Thus, it promises to be a useful tool for certain types of survey situations. The mail survey can be especially useful in large geographic areas to obtain a representative sample for less expense than a face-to-face survey. Mail surveys also offer the opportunity to have more control over quality, with no interviewer bias.

The mail survey method is not without pitfalls, however, which precludes it from being a method applicable to all kinds of survey situations. While generally mail surveys are more economical than face-to-face or other forms of survey administration, especially when response rates are approximately equal, very low response can make mail surveys less economical than face-to-face surveys. Response to this mail survey was much lower than for similar face-to-face surveys conducted in Texas, Kentucky, and West Virginia. This is a trade-off to be expected when attempting to collect such detailed information by mail. It puts the entire burden upon the respondents. They must write all requested information on the questionnaire and take the effort to mail it back. Some respondents will accept this burden and others will not. In a face-to-face interview the interviewer can record the information for respondents. The interviewer can also answer respondent questions and can probe for more complete responses than are sometimes possible to obtain with a mail questionnaire. An interviewer can also make judgements about the quality and condition of home contents. These are data are not possible to obtain with a mail survey.

A very low response is an admitted pitfall of this survey approach. Despite the fact that the resulting data from both the Santa Ana and Wilkes-Barre surveys were satisfactory with respect to study objectives and the analysis procedures employed, the low rate of response is still troublesome. The fact that the data appear to be fairly representative in terms of census demographic characteristics is no guarantee that there are not undetected study-related non-response biases. Therefore, an objective of any future applications of the mail survey method to this type of study should be to substantially improve the survey response rate. The cost-effectiveness of the advance telephone contact on increasing response to the two mail surveys is unclear.

The cost of reduced response by mail for very large urban areas like Orange County, California, which are spread over many square miles, may be judged acceptable. For such areas, mail surveys may cost less than face-to-face surveys. By comparison, smaller urban areas like the Wyoming Valley in Pennsylvania might better be surveyed using personal interviews. The cost per interview may actually be lower for face-to-face than by mail when done in small study areas in an urban setting.

The effective response was greatly reduced by the number of incomplete survey forms. Over 42 percent of the combined total of respondents did not adequately fill in the survey form. This lack of completeness limited the precision of the results, increased the danger of survey bias, and decreased the cost-effectiveness of the survey. Clearly, the respondents had problems with knowing what values to give to their possessions. This problem of incompleteness was definitely more serious than with face-to-face surveys. It

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could possibly be reduced for mail surveys by including a suggested range of low, medium, and high per-unit values and stressing the importance of complete results to the potential respondents.

Overall, these two mail surveys demonstrate that the mail survey method works for this type of study and has promise for similar applications where large amounts of detailed and sensitive information on home contents is desired. It is a viable alternative to the method of face-to-face personal interviews usually used to collect data for this type of study.

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**APPENDIX**  
**HOME CONTENTS**  
**VALUE SURVEY**



OMB Approval #0702-0116  
Expiration Date: 10/31/92

## Home Contents Value Survey

Virginia Commonwealth University  
U.S. Army Corps of Engineers



Thank you for your help by  
filling out this questionnaire.  
If you have any questions  
please phone collect (804)  
367-1134 between 9 a.m. and  
5 p.m. Eastern Daylight Time.



Please return this question-  
naire in the enclosed, postage  
paid envelope to:



Dr. Margot W. Garcia  
Department of Urban Studies  
and Planning  
Virginia Commonwealth  
University  
812 W. Franklin Street  
Richmond, Virginia  
23284-2008

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**INVENTORY INSTRUCTIONS:**

Most pages of this questionnaire are designed for you to do a thorough inventory of the contents of your home. Contents are items within your home which are not permanently attached to the building.

The simplest way for you to complete this inventory is to walk through the room to which each page applies. For each type of item listed on a page:

(1 )	AND	(2)	OR	(3)	
EITHER					
Indicate how many pieces of each item there are in the room(s) to which the page applies.		Indicate <u>total current cash value</u> for each item.		Indicate <u>total original costs when purchased</u> , for each type of item. If you obtained an item as a gift or if you inherited it, enter total cash value you think it was worth at the time.	Indicate the <u>number of years ago</u> that you obtained each item. If you obtained more than one of the item over the years, estimate the <u>average</u> number of years ago that you obtained the items.

The information you provide does not have to be absolutely precise. If in doubt, make your best guess. Be sure to fill out each page which lists items found in your house. Most types of items will be listed on only one page. If an item you own is listed on a room page different from the room where the item is found in your house, put the value and number of years owned for the item on that page.

After you complete the inventory sheets, please answer the final background questions and mail back our questionnaire. **DON'T FORGET TO TEAR OUT THE YELLOW COPIES TO KEEP WITH YOUR INSURANCE RECORDS.**

Your participation in this survey is voluntary and you may refuse to give any or all of the requested information.

**LIVING ROOM**

For All such items, please give:

1) the total number of pieces,

AND EITHER

2) the total current cash value,

OR

3) the original purchase cost, and average number of years owned.

(1)	(2)	(3)		
Total No. of Pieces	Total Current Cash Value	Total Original Purchase Costs	Average Number of Years Ago Items Obtained	
_____	Unattached Bookcases .....	\$ _____	\$ _____	_____ Years Ago
_____	Books .....	\$ _____	\$ _____	_____ Years Ago
_____	Couches/Sofas .....	\$ _____	\$ _____	_____ Years Ago
_____	Chairs .....	\$ _____	\$ _____	_____ Years Ago
_____	Tables .....	\$ _____	\$ _____	_____ Years Ago
_____	Lamps .....	\$ _____	\$ _____	_____ Years Ago
_____	Curtains/Drapes/Blinds .....	\$ _____	\$ _____	_____ Years Ago
_____	Unattached Carpets/Rugs .....	\$ _____	\$ _____	_____ Years Ago
_____	Stereo Equipment .....	\$ _____	\$ _____	_____ Years Ago
_____	Records/CDs/Cassettes .....	\$ _____	\$ _____	_____ Years Ago
_____	Television Sets .....	\$ _____	\$ _____	_____ Years Ago
_____	VCR Equipment .....	\$ _____	\$ _____	_____ Years Ago
_____	Video Tapes .....	\$ _____	\$ _____	_____ Years Ago
_____	Pictures .....	\$ _____	\$ _____	_____ Years Ago
_____	Antiques .....	\$ _____	\$ _____	_____ Years Ago
_____	Pianos .....	\$ _____	\$ _____	_____ Years Ago
_____	Other .....	\$ _____	\$ _____	_____ Years Ago
_____	.....	\$ _____	\$ _____	_____ Years Ago
_____	.....	\$ _____	\$ _____	_____ Years Ago
_____	.....	\$ _____	\$ _____	_____ Years Ago



DINING ROOM

For All such items, please give:

1) the total number of pieces,

AND EITHER

2) the total current cash value,

OR

3) the original purchase cost, and average number of years owned.

(1)	(2)	(3)
Total No. of Pieces	Total Current Cash Value	Total Original Purchase Costs      Average Number of Years Ago Items Obtained
_____ Unattached Buffet/Bar .....	\$ _____	\$ _____ Years Ago
_____ Chairs .....	\$ _____	\$ _____ Years Ago
_____ Tables .....	\$ _____	\$ _____ Years Ago
_____ Unattached China Cabinets ....	\$ _____	\$ _____ Years Ago
_____ China .....	\$ _____	\$ _____ Years Ago
_____ Glassware .....	\$ _____	\$ _____ Years Ago
_____ Silverware .....	\$ _____	\$ _____ Years Ago
_____ Curtains/Drapes/Blinds .....	\$ _____	\$ _____ Years Ago
_____ Linens .....	\$ _____	\$ _____ Years Ago
_____ Unattached Carpets/Rugs .....	\$ _____	\$ _____ Years Ago
_____ Tables .....	\$ _____	\$ _____ Years Ago
_____ Other .....	\$ _____	\$ _____ Years Ago
_____ .....	\$ _____	\$ _____ Years Ago
_____ .....	\$ _____	\$ _____ Years Ago
_____ .....	\$ _____	\$ _____ Years Ago
_____ .....	\$ _____	\$ _____ Years Ago
_____ .....	\$ _____	\$ _____ Years Ago



**BEDROOMS**

For All such items, please give:

1) the total number of pieces,

AND EITHER

2) the total current cash value,

OR

3) the original purchase cost, and average number of years owned.

(1)	(2)	(3)
Total No. of Pieces	Total Current Cash Value	Total Original Purchase Costs      Average Number of Years Ago Items Obtained
_____ Beds .....	\$ _____	\$ _____ Years Ago
_____ Box Springs/Mattresses .....	\$ _____	\$ _____ Years Ago
_____ Bedding/Bedspreads/Etc .....	\$ _____	\$ _____ Years Ago
_____ Chest of Drawers .....	\$ _____	\$ _____ Years Ago
_____ Night Tables .....	\$ _____	\$ _____ Years Ago
_____ Other Tables .....	\$ _____	\$ _____ Years Ago
_____ Lamps .....	\$ _____	\$ _____ Years Ago
_____ Chairs .....	\$ _____	\$ _____ Years Ago
_____ Trunks (Hope Chests) .....	\$ _____	\$ _____ Years Ago
_____ Curtains/Drapes .....	\$ _____	\$ _____ Years Ago
_____ Unattached Rugs .....	\$ _____	\$ _____ Years Ago
_____ Pictures .....	\$ _____	\$ _____ Years Ago
_____ Television Sets .....	\$ _____	\$ _____ Years Ago
_____ Other .....	\$ _____	\$ _____ Years Ago
_____ .....	\$ _____	\$ _____ Years Ago
_____ .....	\$ _____	\$ _____ Years Ago
_____ .....	\$ _____	\$ _____ Years Ago
_____ .....	\$ _____	\$ _____ Years Ago
_____ .....	\$ _____	\$ _____ Years Ago
_____ .....	\$ _____	\$ _____ Years Ago



**WOMEN'S CLOTHING**

For All such items, please give:

1) the total number of pieces,

AND EITHER

2) the total current cash value.

OR

3) the original purchase cost, and average number of years owned.

(1)	(2)	(3)	
Total No. of Pieces	Total Current Cash Value	Total Original Purchase Costs	Average Number of Years Ago Items Obtained
_____ Coats and Jackets .....	\$ _____	\$ _____	_____ Years Ago
_____ Raincoats .....	\$ _____	\$ _____	_____ Years Ago
_____ Dresses .....	\$ _____	\$ _____	_____ Years Ago
_____ Pants & Slacks .....	\$ _____	\$ _____	_____ Years Ago
_____ Skirts .....	\$ _____	\$ _____	_____ Years Ago
_____ Blouses & Shirts .....	\$ _____	\$ _____	_____ Years Ago
_____ Suits .....	\$ _____	\$ _____	_____ Years Ago
_____ Sweaters .....	\$ _____	\$ _____	_____ Years Ago
_____ Underwear .....	\$ _____	\$ _____	_____ Years Ago
_____ Socks/Stockings (pairs) .....	\$ _____	\$ _____	_____ Years Ago
_____ Shoes and Boots (pairs) .....	\$ _____	\$ _____	_____ Years Ago
_____ Handbags/Purses .....	\$ _____	\$ _____	_____ Years Ago
_____ Hats .....	\$ _____	\$ _____	_____ Years Ago
_____ Jewelry .....	\$ _____	\$ _____	_____ Years Ago
_____ Scarves .....	\$ _____	\$ _____	_____ Years Ago
_____ Other .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago

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**CHILDREN'S CLOTHING**

For All such items, please give:

1) the total number of pieces,  
AND EITHER

2) the total current cash value,

OR

3) the original purchase cost, and average number of years owned.

(1)	(2)	(3)	
Total No. of Pieces	Total Current Cash Value	Total Original Purchase Costs	Average Number of Years Ago Items Obtained
_____ Coats and Jackets .....	\$ _____	\$ _____	_____ Years Ago
_____ Raincoats .....	\$ _____	\$ _____	_____ Years Ago
_____ Dresses .....	\$ _____	\$ _____	_____ Years Ago
_____ Pants .....	\$ _____	\$ _____	_____ Years Ago
_____ Skirts .....	\$ _____	\$ _____	_____ Years Ago
_____ Suits .....	\$ _____	\$ _____	_____ Years Ago
_____ Sweaters .....	\$ _____	\$ _____	_____ Years Ago
_____ Shirts/Blouses .....	\$ _____	\$ _____	_____ Years Ago
_____ Socks/Stockings (pairs) .....	\$ _____	\$ _____	_____ Years Ago
_____ Shoes and Boots (pairs) .....	\$ _____	\$ _____	_____ Years Ago
_____ Sportswear .....	\$ _____	\$ _____	_____ Years Ago
_____ Underwear .....	\$ _____	\$ _____	_____ Years Ago
_____ Jewelry .....	\$ _____	\$ _____	_____ Years Ago
_____ Other .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago

DEN, OFFICE, LIBRARY, OR FAMILY ROOMS

For All such items, please give:

1) the total number of pieces,

AND EITHER

2) the total current cash value,

OR

3) the original purchase cost, and average number of years owned.

(1)	(2)	(3)	
Total No. of Pieces	Total Current Cash Value	Total Original Purchase Costs	Average Number of Years Ago Items Obtained
_____ Unattached Bookcases .....	\$ _____	\$ _____	_____ Years Ago
_____ Books .....	\$ _____	\$ _____	_____ Years Ago
_____ Couches/Sofas .....	\$ _____	\$ _____	_____ Years Ago
_____ Chairs .....	\$ _____	\$ _____	_____ Years Ago
_____ Tables .....	\$ _____	\$ _____	_____ Years Ago
_____ Desk/File Cabinets .....	\$ _____	\$ _____	_____ Years Ago
_____ Lamps .....	\$ _____	\$ _____	_____ Years Ago
_____ Curtains/Drapes/Blinds .....	\$ _____	\$ _____	_____ Years Ago
_____ Unattached Carpets/Rugs .....	\$ _____	\$ _____	_____ Years Ago
_____ Unattached Bar .....	\$ _____	\$ _____	_____ Years Ago
_____ Stereo Equipment .....	\$ _____	\$ _____	_____ Years Ago
_____ Records/CD's/Cassettes .....	\$ _____	\$ _____	_____ Years Ago
_____ Television Sets .....	\$ _____	\$ _____	_____ Years Ago
_____ VCR Equipment .....	\$ _____	\$ _____	_____ Years Ago
_____ Video Tapes .....	\$ _____	\$ _____	_____ Years Ago
_____ Computer Hardware .....	\$ _____	\$ _____	_____ Years Ago
_____ Computer Software .....	\$ _____	\$ _____	_____ Years Ago
_____ Pictures .....	\$ _____	\$ _____	_____ Years Ago
_____ Sewing Machines .....	\$ _____	\$ _____	_____ Years Ago
_____ Typewriters .....	\$ _____	\$ _____	_____ Years Ago
_____ Other .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago





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**BATHROOM ITEMS, MEDICAL APPLIANCES, AND MISCELLANEOUS ITEMS  
(If Not Already Listed for Other Rooms)**

For All such items, please give:

1) the total number of pieces,

AND EITHER

2) the total current cash value,

OR

3) the original purchase cost, and average number of years owned.

(1)	(2)	(3)	
Total No. of Pieces	Total Current Cash Value	Total Original Purchase Costs	Average Number of Years Ago Items Obtained
<b><u>BATHROOM ITEMS</u></b>			
_____ Medication .....	\$ _____	\$ _____	_____ Years Ago
_____ Hygiene Items .....	\$ _____	\$ _____	_____ Years Ago
_____ Towels .....	\$ _____	\$ _____	_____ Years Ago
_____ Bathroom Appliances .....	\$ _____	\$ _____	_____ Years Ago
_____ Cosmetics/Perfumes .....	\$ _____	\$ _____	_____ Years Ago
_____ Other .....	\$ _____	\$ _____	_____ Years Ago
<b><u>MEDICAL APPLIANCES</u></b>			
_____ Wheelchairs .....	\$ _____	\$ _____	_____ Years Ago
_____ Walkers .....	\$ _____	\$ _____	_____ Years Ago
_____ Other .....	\$ _____	\$ _____	_____ Years Ago
<b><u>MISCELLANEOUS ITEMS</u></b>			
_____ Art Work .....	\$ _____	\$ _____	_____ Years Ago
_____ Indoor Plants .....	\$ _____	\$ _____	_____ Years Ago
_____ Telephones .....	\$ _____	\$ _____	_____ Years Ago
_____ Curtains/Drapes/Blinds .....	\$ _____	\$ _____	_____ Years Ago
_____ Luggage .....	\$ _____	\$ _____	_____ Years Ago
_____ Briefcases .....	\$ _____	\$ _____	_____ Years Ago
_____ Other .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago
_____ .....	\$ _____	\$ _____	_____ Years Ago

**BACKGROUND QUESTIONS**

Please fill in the following background questions circling the appropriate number and filling in the blanks.

**Q1. From the list below, please circle the number in front of the type of building that most closely matches your residence.  
(CIRCLE ONE NUMBER)**

- |  |                           |
|--|---------------------------|
| 1. SINGLE FAMILY   | 4. TOWNHOUSE, END UNIT    |
| 2. LOW-RISE MULTIPLE FAMILY<br>(3 STORIES OR LESS)           | 5. TOWNHOUSE, INSIDE UNIT |
| 3. MID- AND HIGH-RISE MULTIPLE<br>FAMILY (4 OR MORE STORIES) | 6. DUPLEX                 |
|  | 7. MOBILE HOME            |

**Q2. From the list below, please circle the number of the building style that most closely matches the style of this residence.  
(CIRCLE ONE NUMBER)**

1. ONE STORY
2. TWO STORY
3. THREE STORIES
4. SPLIT LEVEL
5. 1 1/2 STORY (WITH THE 1/2 FINISHED)
6. 1 1/2 STORY (UNFINISHED 1/2)
7. 2 1/2 STORY (WITH THE 1/2 FINISHED)
8. 2 1/2 STORY (UNFINISHED 1/2)
9. 3 1/2 STORY (WITH THE 1/2 FINISHED)
10. 3 1/2 STORY (UNFINISHED 1/2)
11. BI-LEVEL (2 STORY WITH 1ST UNFINISHED)
12. OTHER (Please Explain):

**Q3. From the list below, please circle the number of the heating and/or cooling system that most closely matches the system installed in this home. (CIRCLE ONE NUMBER)**

**Heating Only:**

- |   |                               |
|---|-------------------------------|
| 1. FORCED AIR                           | 5. FLOOR, RADIANT HOT WATER   |
| 2. GRAVITY FURNACE<br>(HOT AIR, NO FAN) | 6. CEILING, RADIANT, ELECTRIC |
| 3. FLOOR FURNACE<br>(NO HEAT DUCTS)     | 7. BASEBOARD, ELECTRIC        |
| 4. WALL FURNACE<br>(NO HEAT DUCTS)      | 8. BASEBOARD, HOT WATER       |
|   | 9. RADIATORS, HOT WATER       |
|   | 10. RADIATORS, STEAM          |

**Heating and Cooling:**

11. WARMED AND COOLED AIR
12. HEAT PUMP SYSTEM

**Cooling Only:**

13. EVAPORATIVE WATER COOLER (SINGLE OR SHORT DUCTS)
14. REFRIGERATED, WITH CONDENSER AND DUCTS

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**Q4. From the list below, please circle the number of the type of exterior wall covering that best matches most of the exterior of this home. (CIRCLE ONE NUMBER)**

- |                     |                    |
|---------------------|--------------------|
| 1. PLYWOOD          | 6. MASONRY VENEER  |
| 2. HARDBOARD SHEETS | 7. COMMON BRICK    |
| 3. STUCCO           | 8. FACE BRICK      |
| 4. SIDING           | 9. STONE           |
| 5. SHINGLE          | 10. CONCRETE BLOCK |

**Q5. From the list below, please circle the number of the roofing type that most closely matches the roof of this home. (CIRCLE ONE NUMBER)**

- |   |                     |
|---|---------------------|
| 1. COMPOSITION SHINGLE                    | 6. CLAY TILE        |
| 2. BUILT-UP ROCK<br>(EMBEDDED IN ASPHALT) | 7. GALVANIZED METAL |
| 3. WOOD SHINGLE                           | 8. SLATE            |
| 4. WOOD SHAKE                             | 9. COMPOSITION ROLL |
| 5. CONCRETE TILE                          | 10. PLASTIC TILE    |

**Q6. How many bathrooms OF THE FOLLOWING TYPES are there in this home?**

There are: \_\_\_\_\_ FULL BATHS (SINK, TOILET, AND TUB, WITH OR WITHOUT SHOWER)

There are: \_\_\_\_\_ 3/4 BATHS (SINK, TOILET, AND SHOWER)

There are: \_\_\_\_\_ 1/2 BATHS (SINK AND TOILET)

**Q7. Please give the total square feet of finished floor area for floor area for all rooms in this home, not including the basement. (GIVE YOUR VERY BEST ESTIMATE)**

AREA NOT INCLUDING BASEMENT: \_\_\_\_\_ SQUARE FEET

**Q8. Please give the total square feet of floor area for the basement in this home. (GIVE YOUR BEST ESTIMATE)**

TOTAL BASEMENT AREA: \_\_\_\_\_ SQUARE FEET

FINISHED BASEMENT AREA: \_\_\_\_\_ SQUARE FEET

**Q9. Please circle all of the home features listed below that apply to this home: (CIRCLE ALL THAT APPLY)**

- |                    |                             |
|--------------------|-----------------------------|
| 1. ATTACHED GARAGE | 5. UNFINISHED BASEMENT AREA |
| 2. DETACHED GARAGE | 6. FINISHED BASEMENT AREA   |
| 3. BUILT-IN GARAGE | 7. OPEN SLAB PORCH          |
| 4. CARPORT         | 8. FIREPLACE                |

**Q10. What year was your home built? \_\_\_\_\_**

**Q11. How many years have you lived at this address? \_\_\_\_\_ YEARS**

**Q12. How many people live at this residence? \_\_\_\_\_ PEOPLE**

Q13. Do you own this home? (circle)

1. YES 2. NO

Q14. If you own this home, how much would it be worth if it were to be sold in the real estate market today? (YOUR BEST GUESS)

\$ \_\_\_\_\_

Q15. Has this residence ever been flooded? (circle)

1. YES 2. NO

Q16. If yes above, please indicate below how high the water got relative to the front entryway of this house during the last time it was flooded.

Water was: \_\_\_\_\_ FEET (ABOVE? or BELOW?) the front entryway.  
[Circle]

Q17. Do you now have flood insurance for this residence:(Circle)

On the Building(s)? 1. YES 2. NO

On the Contents? 1. YES 2. NO

Q18. If you answered yes to either of the above, please give the dollar amount(s) of flood insurance coverage you now have:

\$ \_\_\_\_\_ On Buildings

\$ \_\_\_\_\_ On Contents

Q19. Some people have had flood insurance policies that they have discontinued at some point in the past. Have you ever discontinued a flood insurance policy? (Circle)

1. YES 2. NO

Q20. If you answered yes above, why did you discontinue your policy? (circle)

1. POLICY COST INCREASED
2. LOSS OF JOB/REDUCED INCOME
3. OTHER PERSONAL PROBLEMS
4. DISSATISFACTION WITH PAYMENT AFTER FLOOD
5. NO LONGER CONSIDERED FLOODING A SERIOUS RISK
6. OTHER REASONS (Please Specify):

Q21. If a friend was about to move into your neighborhood and asked for your advice, what would you tell him/her about the risk of flooding? (circle)

5. 4. 3. 2. 1.  
VERY HIGH HIGH MODERATE LOW VERY LOW

Q22. What is your zip code? \_\_\_\_\_

Q23. What is the marital status of the principal wage earner of this household?  
(CIRCLE ONE NUMBER)

1. SINGLE
2. MARRIED
3. WIDOWED
4. DIVORCED OR SEPARATED
5. OTHER

Q24. Please circle the number below which indicates the total years of schooling that the principal wage earner of this household completed. (CIRCLE ONE NUMBER)

<u>Grade School</u>	<u>High School</u>	<u>College/Technical</u>	<u>Graduate School</u>
1 2 3 4 5 6 7 8	9 10 11 12	13 14 15 16	17 18 19 20 21+

Q25. What was the age of the principal wage earner of this household on his/her last birthday?

\_\_\_\_\_ YEARS OLD

Q26. The list below contains income categories. Please circle the number of the category that contains your annual household income (before taxes) for 1989. Include income for you and all other members of this household.  
(CIRCLE ONE NUMBER)

1. UNDER \$10,000
2. \$10,000 - \$19,999
3. \$20,000 - \$29,999
4. \$30,000 - \$39,999
5. \$40,000 - \$49,999
6. \$50,000 - \$59,999
7. \$60,000 - \$69,999
8. \$70,000 - \$79,999
9. \$80,000 - \$89,999
10. \$90,000 - \$99,999
11. \$100,000 - \$124,999
12. \$125,000 - \$149,999
13. \$150,000 - \$174,999
14. \$175,000 AND OVER

THANK YOU FOR YOUR COOPERATION