Appendix A
Technical Documentation

The 1998 Survey of USDA's Single Family Direct Loan Housing Program was a nationwide telephone survey designed to provide information on the characteristics of the low-income rural residents who receive home mortgages from this program. The survey was conducted under the direction of USDA's Economic Research Service (ERS), at the request of USDA's Rural Development mission area. Key design elements of the survey were based on results of a 1997 feasibility study conducted by the Social and Economic Sciences Research Service (SESRC), Washington State University (Phillips, Dillman, and Salant, 1997) . SESRC was also responsible for implementing the actual survey. The survey's target population consisted of Section 502 borrowers whose loans closed between October 1994 and April 1998. Telephone interviews with borrowers were conducted during summer and fall of 1998, and yielded a final sample of 3,027 completed interviews.

These survey data were collected as part of ERS's mission to provide information on changing rural housing needs in the United States and to assess the relationship between Federal housing assistance programs and rural development. Results of the study will be used to: (1) assess the use and effectiveness of the Section 502 loan program; (2) develop performance indicators to measure the program's effectiveness; and (3) investigate the potential effects of Federal policy changes on program participation.

The sampling frame (or list from which the sample would be drawn) was constructed from USDA's Dedicated Loan Origination and Servicing (DLOS) System.[1] Names of borrowers who had more than one loan were included only once in the sampling frame, and borrowers with loans solely for the repair of an existing home were excluded. Also excluded were program participants from Guam, Puerto Rico,

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[1]The Dedicated Loan Origination and Servicing System, initiated in October 1997 by Rural Development, is a centralized loan origination and servicing information data base for all loans financed under the Section 502 Direct Loan Program.

and the Virgin Islands. These exclusions resulted in a final sample frame of 58,230 borrowers.

A simple random sample of 9,500 borrowers was drawn from this list. The eligibility of individuals in the sample of 9,500 borrowers was determined during the actual interview process. Persons eligible for the survey met the following criteria:

■ Their names appeared in the file as the primary or secondary borrower on a Section 502 loan;
■ They used the loan to purchase a home, rather than to repair it;
■ They closed on the loan during the specified period; and
■ They lived in the home at the time of the survey.

Borrowers who had sold their home, paid off their mortgage during the study period, or lived elsewhere were not eligible.

The full sample of 9,500 borrowers was divided into 10 replicates of equal size. These replicates were drawn one at a time, and the borrowers within them contacted, until the desired number of interviews with current borrowers were completed. Interviewers attempted to contact seven full replicates of 950 cases each, plus one partial section of 635 cases randomly drawn from the eighth replicate to obtain the desired number of interviews. These 7,285 cases make up what is called the "fielded sample," or that part of the original, randomly selected sample of 9,500 borrowers whom SESRC attempted to contact. The final disposition of the 7,285 fielded cases is shown in appendix table A1. Sixty-one percent, or 4,429 cases, were either completed interviews, partial completes, refusals, "could not be interviewed," or "could not be reached." The remaining 2,856 cases were exempted for various reasons, such as non-working telephone numbers and ineligibility.

Questionnaire design

SESRC, ERS, and RHS worked together to develop a questionnaire that would meet the project's research objectives and could be administered in an average

interview time of 20 minutes. Suggestions for improvements were solicited and received from reviewers at Iowa State University, University of Minnesota, the Housing Assistance Council, and the National Association of Home Builders, as well as from USDA staff in Rural Development's Policy and Planning Office and Office of Budget and Program Analysis.

The final survey instrument included questions on the following topics:

- Characteristics of current and previous housing;
- Housing costs;
- Satisfaction with current residence, neighborhood, and USDA financing experience;
- Demographic characteristics of household members;
- Education and employment characteristics of borrowers;
- Access to public transportation and child care;
- Participation in public assistance programs; and
- Sources and amounts of household income.

The questionnaire was pretested on 100 cases. A Spanish-translation questionnaire and bilingual interviewers were made available to Hispanic respondents who experienced difficulty with the English-language script. USDA administrative data indicated that about 12 percent of the potential respondent universe nationwide was of Hispanic origin, although in some States, such as California, the proportion of potential Hispanic respondents exceeded 65 percent.

Survey Implementation

Procedures to implement the survey of Section 502 borrowers were designed to minimize possible non-response error by maximizing the proportion of people in the sample who actually responded to the survey. To obtain the highest possible response rate, the survey was conducted using the Dillman Total Design Method, a high-performance survey design shown to substantially increase response rate due to greater efforts and time spent on methodological testing and fine-tuning (Dillman, 1978). As part of this design, members of the sample were contacted in advance of the survey with prior notification letters from SESRC and Rural Development; the questionnaire was pretested; trained interviewers were used for the survey;

and up to 10 attempts were made at different times of the day to contact potential respondents by telephone.

All interviews were conducted from SESRC's Public Opinion Laboratory using the Computer-Assisted Telephone Interviewing (CATI) system, a more efficient and less time-consuming method than more traditional "paper and pencil" interviews. The CATI system displays survey questions on a computer monitor from which the interviewer can read the question to the respondent and then enter the response directly into the CATI database for storage on the server computer. Telephone interviews began in July of 1998 and ended when the last of 3,027 interviews was completed at the end of October. The average interview length was 21.8 minutes.

Response rate[2]

The response rate is the ratio of the number of completed interviews to the total number of potential respondents who are deemed eligible to complete the interview.[3] The formula used to calculate the response rate is:

$$\frac{CM}{[(CM + PC) + RF + (\%eligible * UI) + \%eligible * UR]}$$

where:
  CM = number of completed interviews
  PC = number of partially completed interviews
  RF = number of refusals
  UI, UR = number unable to interview, unable to reach
  %eligible = proportion of UI, UR estimated to be eligible for interview

The response rate for the fielded sample was 70.3 percent (3,027/4,307). The response rate for Spanish language cases in the sample was 92.2 percent (197/230).

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[2] This section was drawn from Phillips and Dillman (1999).

[3] This rate is formally called the CASRO response rate, based on the convention established by the Council for American Survey Research Organizations.

Reliability of Estimates[4]

Throughout the survey implementation process, SESRC placed particular emphasis on procedures that would ensure as much accuracy as possible. In practice, this meant minimizing four sources of error: sampling, coverage, measurement, and non-response (Salant and Dillman, 1994). The sample was drawn from a complete list of Section 502 program borrowers taken from RHS administrative data and survey results are unlikely to be affected by coverage error. The questionnaire was reviewed extensively, pre-tested, and revised several times, and measurement error is not likely to be a significant problem. Potential sampling and nonresponse errors are discussed in more detail below.

Sampling error: Sampling error measures the extent to which a random sample of respondents may differ from the larger population from which it is drawn, because data are collected from a sample rather than the total population. It is the basis upon which tests of statistical significance are calculated. The formula for calculating the sampling error is:

$$SE = 2\sqrt{\frac{pq}{(n-1)}\left(\frac{N-n}{N}\right)}$$

where:
  SE = sampling error
  p = proportion of "yes" responses for a specific question (50%)
  q = proportion of "no" responses for a specific question (50%)
  n = sample size = number of completed interviews for a specific question
  N = population size for the survey

For this survey, completed interviews were obtained from 3,027 of the 58,230 Section 502 borrowers comprising the targeted population, yielding a sampling error of ± 1.8 percent on dichotomous (yes/no) variables, at the 95-percent confidence level. This means that for a yes/no question answered by all respon-

dents, the true population value will be within plus or minus 1.8 percent of the sample value in 95 out of 100 cases. The sampling errors on regional estimates are ± 3.6 percent (Midwest), ±5.3 percent (Northeast), ± 2.7 percent (South), and +3.9 percent (West). For estimates by race, sampling errors are ±2.1 percent (whites) and ±4.9 percent (blacks).

Nonresponse error: Nonresponse error can be a serious problem for surveys when two conditions are met: (1) a significant number of those who are surveyed do not respond, and (2) nonrespondents differ from respondents in ways that are important to the study. The magnitude and direction of non-response error can be assessed by comparing key characteristics of the population with those of survey respondents. Access to RHS administrative records on selected characteristics of all Section 502 borrowers whose loans closed during the study period allowed the examination of potential non-response error in greater detail than is possible in most surveys.

Appendix table A2 compares selected characteristics of the Section 502 borrower population with those of the full sample and of actual survey respondents. In terms of race, sex, and marital status, the population, sample, and respondents are very similar: the percentage distributions on all three variables are well within the margin of error for the survey. To the extent, then, that these characteristics are important predictors of borrowers' responses, non-response error for this survey seems to be small and suggests that the respondents are representative of the Section 502 borrower population as a whole.

Differences are somewhat larger, and just outside the margin of sampling error, for geographical region and year of loan closing. Borrowers from the South are slightly under-represented among respondents compared with the sample and the population, as are borrowers whose loans closed in 1994. Borrowers whose loans closed in 1996 are slightly over-represented among respondents. To the extent that geographic region and loan closing date are believed to be important determinants of borrowers' responses to the survey, these differences may provide evidence of a small potential non-response error.

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[4]This section was drawn from Phillips and Dillman (1999).

Appendix table A1—Final disposition statistics for fielded sample of Section 502 borrowers

	Number	Percent
All fielded cases	7,285	NA
Exempted respondents	2,856	100.0
Non-working numbers[1]	1,417	49.6
Ineligible[2]	1,287	45.1
Other[3]	27	0.9
Electronic device[4]	36	1.3
Business/government	36	1.3
Potential respondents	4,429	100.0
Completed interviews	3,027	68.3
Partial completes	26	0.6
Refusals	684	15.4
Unable to interview[5]	114	2.6
Unable to reach[6]	578	13.1

[1]Wrong, disconnected, unpublished, or no listing; assigned after checking with Directory Assistance.

[2]Borrower moved; or respondent said they never had a Rural Development loan, they refinanced the Rural Development loan, or their loan was not made during 1995-98.

[3]Deceased borrower or self-identified as a duplicate of another loan in the sample.

[4]FAX machine, cellular phone, or other non-residential telephone-line instrument.

[5]Hearing or language barrier, handicap that prevented telephone interviewing, respondent terminated interview, or borrower not available.

[6]Unanswered callbacks, answering machine, no answer, or busy.
Source: Phillips and Dillman (1999).

Appendix table A2—Selected characteristics of the Section 502 borrower population, sample, and survey respondents

Characteristic	Population		Full sample		Respondents	
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Race/ethnic group	58,216	100.0	9,496	100.0	3,027	100.0
Indian/Alaskan	664	1.1	124	1.3	41	1.4
Asian	548	0.9	93	1.0	24	0.8
Black	8,260	14.2	1,364	14.4	397	13.1
Hispanic	6,736	11.6	1,074	11.3	339	11.2
White	41,736	71.7	6,798	71.6	2,207	72.9
Other	29	0.1	5	0.1	3	0.1
Unknown	243	0.4	38	0.4	16	0.5
Sex	57,800	100.0	9,429	100.0	3,015	100.0
Female	25,702	44.5	4,199	44.5	1,356	45.0
Male	9,173	15.9	1,480	15.7	455	15.1
Couple	22,925	39.7	3,750	39.8	1,204	39.9
Marital status	57,688	100.0	9,409	100.0	3,012	100.0
Married	23,098	40.0	3,816	40.6	1,250	41.5
Separated	1,271	2.2	193	2.1	55	1.8
Unmarried	33,319	57.8	5,400	57.4	1,707	56.7
Geographic region	58,230	100.0	9,500	100.0	3,027	100.0
Midwest	14,198	24.4	2,255	23.7	747	24.7
Northeast	5,821	10.0	990	10.4	333	11.0
South	27,120	46.6	4,447	46.8	1,321	43.6
West	11,091	19.1	1,808	19.0	626	20.7
Year of loan closing	58,230	100.0	9,500	100.0	3,027	100.0
1994	6,745	11.6	1,129	11.9	174	5.8
1995	15,408	26.5	2,551	26.9	760	25.1
1996	19,219	33.0	3,119	32.8	1,194	39.4
1997	13,125	22.5	2,088	22.0	705	23.3
1998	3,733	6.4	613	6.5	194	6.4

Source: Phillips and Dillman (1999).