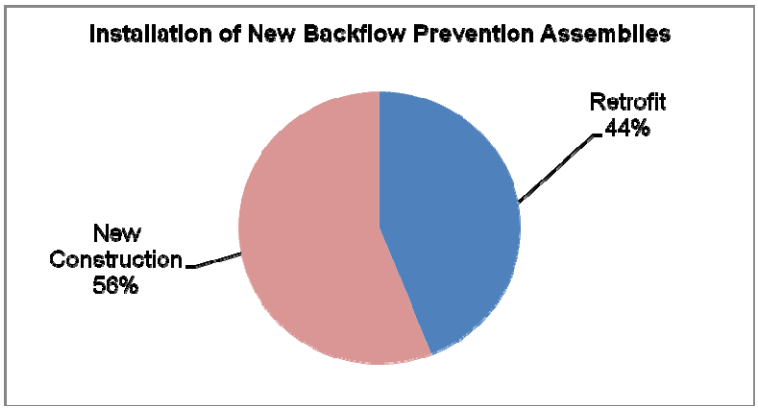
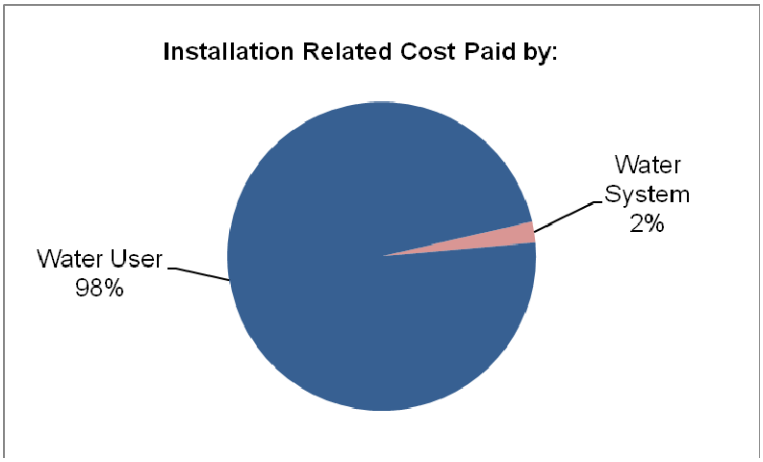
American Backflow Prevention Association
2000 Survey of Public Water System Cross-Connection Control Programs

In 1999, the American Backflow Prevention Association conducted a survey of water suppliers with existing cross connection control programs around the United States. In the 1999 ABPA Survey (ABPA 1999 Survey of State and Public Water System Cross-Connection Control Programs) over 400 questionnaires were sent out by U S Mail in the hope of retrieving data from existing cross connection control programs. The ABPA 1999 Survey is available on the ABPA web site at www.abpa.org. There were 135 surveys returned from 30 different states. Of the 135 returned surveys, 25 were from small water systems of less than 10,000 service connections, 103 were returned from large water systems with greater than 10,000 service connections and 7 did not identify how many service connections they have.

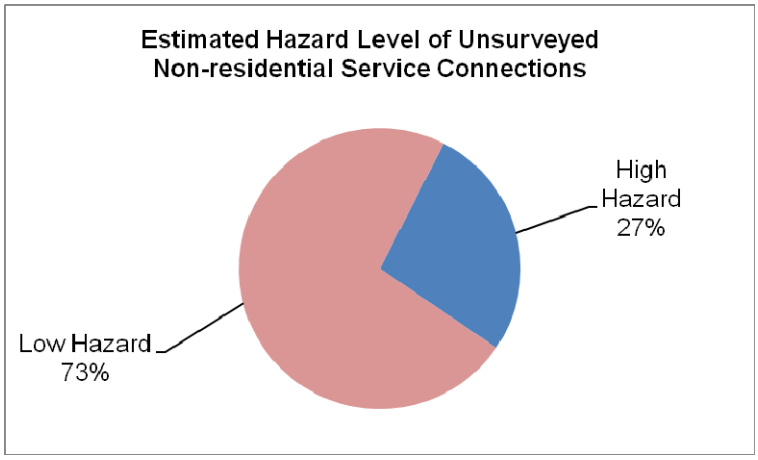
In 2000, ABPA sent a follow-up questionnaire by U S Mail to these same 135 respondents representing 30 states, from the 1999 ABPA Survey. The questionnaire asked eleven (11) follow-up questions to obtain additional data from existing cross-connection control programs. The questionnaire contained 11 questions; some of the questions had a blank line to write in the numerical answer to the question, while the remaining questions had a multiple choice selection of answers. In the 2000 follow-up survey 89 responses representing 29 different states were received. Of the 89 respondents, 63 were received from large water systems with more than 10,000 service connections. Twenty questionnaires were received from systems that reported less than 10,000 service connections while six did not report their number of service connections. The 2000 follow-up survey was designed to obtain data from existing cross connection control programs. Not all 89 respondents answered all questions in the questionnaire. No follow up was conducted with the respondents to determine why no answers were given to specific questions. To accurately present the numerical answers in this questionnaire, the total number of responses to each question was totaled and divided by the number of respondents to each specific question.

From the first question, the 85 respondents reported they have an average of 3,329 (219,700/66) service protection backflow prevention assemblies installed in their water system. The questionnaire next asked how many testable backflow prevention assemblies did their cross-connection control department require to be installed for service protection in an average year. The respondents reported that on average 265 new assemblies (19,804/75) were being installed each year in their water system. Of the 265 installed assemblies 149 (11,144/75) were installed for a new construction application. Forty (2,996/75) assemblies were installed at a major renovation project in their jurisdiction, and 76 (5,664/76) were installed because of the need to retrofit an existing facility. This means 56.2% (149/264) were installed on a new construction site, while 43.8% (116/265) were installed as a retrofit to an existing water user's facility. When an assembly is required to be installed, 97.8% (87/89) of the respondents require the water user to pay for all installation related costs, while 2.2% (2/89) of the respondents pay for the installation costs.





The next question asked how many non-residential water users' facilities have not had a cross-connection survey performed to evaluate the degree of hazard presented by the water usage on site. The respondents said that on average in their system, 1,058 (65,569/62) known facilities were in need of a cross-connection control survey. Of these 1,058 facilities 290 or 27.4% (290/1058) of these facilities were indicated as high hazard facilities. The remaining 768 facilities or 72.6% (768/1058) were indicated to be a low hazard facility.



The next round of questions had to do with the field testing of already installed backflow prevention assemblies. The first question asked when is a service protection backflow preventer required to be field tested. The respondents were asked to check all options that applied in their system. Respondents reported 97.8% (87/89) of their assemblies to be field tested annually, and 91.0% (81/89) of the respondents require their service protection assemblies to be field tested upon installation. 80.9% (72/89) of the installed service protection assemblies are field tested after being repaired. Respondents reported 74.2% (66/89) require service protection assemblies to be field tested when relocated.

The next question asked who performs the annual field testing of the installed service protection backflow prevention assemblies in their jurisdiction. Respondents reported that 84.3% (75/89) of annual field testing was done by private testers (i.e., backflow prevention assembly testers), while 39.3% (35/89) of the field testing was done by the respondents. Some water systems had both private testers and the respondents perform the field testing. The questionnaire went on to try to determine an average cost for field testing of a backflow prevention assembly performed by private testers. The mean average cost was determined to be $49.93 ($3,745/75) per field test. The low average cost was determined to be $40.71 ($3035/75) per field test, and the high average cost was determined to be $61.20 ($4590/75) per field test.

The average distribution system water pressure for all respondents was determined to be 69.3 PSI (5,822/84).

The last question asked each water purveyor how many times in a year do the following conditions cause a pressure reduction in their water distribution system. The average number of pressure reduction events per respondent per year was 176.5 events. (see table and chart below for details)

Reason for Pressure Reduction	Pressure Reductions Per Year	
	Average Number Per Respondent	Percentage
a. Fire Events	11.0 (655/60)	6.2% (11/176.5)
b. Elevation or System Gradient	8.9 (532/60)	5.0% (8.9/176.5)
c. Main Breaks	36.1 (2,168/60)	20.4% (36.1/176.5)
d. Service Line Breaks	29.5 (1,770/60)	16.7% (29.5/176.5)
e. Valve, Pump or Hydrant Maintenance	8.6 (513/60)	4.9% (8.6/176.5)
f. Routine System Flushing	65.5 (3,929/60)	37.1% (65.5/176.5)
g. Flushing Because of Sampling	6.1 (365/60)	3.5% (6.1/176.5)
h. Flushing Because Customer Complaint	7.4 (443/60)	4.2% (7.4/176.5)
i. Pipe Main Installation	3.6 (216/60)	2.0% (3.6/176.5)
Total	176.5 (10591/60)