Several agencies interested in rural development pool their experience to accelerate a program to install water systems for Tennessee Valley farmers.

Combined Efforts Stimulate Development of Rural Water Systems

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FARM WATER supplies under pressure are practically nonexistent in many localities in the southeastern United States. In the Tennessee Valley, an estimated 25 percent of rural families had such water supplies in 1953.

Since that time an accelerated rural water system program has been developed in the Tennessee Valley, based on cooperation among the various agencies concerned with the health and welfare of rural people.

Cooperating have been State and county health departments, county and home demonstration agents, vocational agriculture groups, local power systems which retail electricity, and the Tennessee Valley Authority, a Federal agency with interests in many phases of regional development.

These agencies have combined their efforts in order to (*a*) improve rural sanitation and health; (*b*) encourage more farm people to have a safe, dependable water supply; and (*c*) improve rural living generally through the many improvements that running water under pressure makes possible.

The present cooperative program is based on ideas developed by the Mississippi State Board of Health through an experience in Winston County, Miss., and by the TVA in the Chestuee watershed area of eastern Tennessee.

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The Chestuee Experience

A low percentage of the 854 farms in the Chestuee area had pressure water systems when a program to inform the farm people about the advantages of safe and dependable water supplies was initiated. TVA agricultural and sanitary engineers, working with county agents in three counties and with health department sanitarians, called on farmers to discuss water supply, taking along demonstration electric pump equipment.

Then the county sanitarians and TVA agricultural engineers held four rural community water systems demonstrations on farms where water systems were actually being installed. Sanitarians planned the well location and the waste disposal system. Agricultural engineers assisted with technical data on pump size and other factors. Together they showed the farmers how to install a pressure water system which would assure an adequate safe supply of water.

Later, a 1954 survey showed that 250 farms, 30 percent of the total, had pressure water systems. Another 143 farm families said they wanted such systems soon. From the Chestuee experience, these two ideas were gained:

1. Cooperation among several groups interested in rural water supply, particularly health departments and local power systems, is the key to effective work in this field.

2. Personal calls on farmers are particularly successful in encouraging utilization of safe, adequate water supplies.

Winston County Experience

In the spring of 1954, the sanitarian of Winston County, Miss., with the aid of the Mississippi State Board of Health, conducted a rural sanitation survey in his county. The survey was aimed at obtaining general information about water supply, excreta disposal, and screening of doors and windows. The sanitarian used the Agricultural Stabilization Committee's mailing list and received 600 replies from 2,300 survey sheets sent out.

One of the questions asked was, "Do you wish the sanitation supervisor to visit your place to help you with your problems?" Three hundred seventy-five answered in the affirmative, and 380 visits were made. As a result, 112 wells were protected, 62 new pressure water systems were installed, and 102 septic tanks were installed or improved.

The Winston County survey was a success, but it proved to be too expensive for a county health department since no funds are budgeted for this type of survey in Mississippi county health departments. Too, the Agricultural Stabilization Committee's mailing list proved to be out of date.

Collective Effort in Mississippi

Early in 1954, the Mississippi State Board of Health and local health departments were developing plans for a more intensive approach to rural sanitation problems in Mississippi.

TVA's Electrical Development Branch, which works with local distributors of TVA-generated electricity, is interested in improving farm living through the improved use of electricity. TVA's Division of Health and Safety has a variety of interests directed toward the problem of rural sanitation. The rural electric power associations in northeastern Mississippi want to encourage more widespread use of pressure water systems, which in turn lead to the benefits of electric water heating, automatic home laundries, and other electrical conveniences. Other groups, including vocational agriculture teachers, extension service representatives, and the colleges and universities, are concerned with improved farm living, increased farm production, and farm sanitation. Pump dealers are natural allies in this field.

These groups joined in a program to improve rural sanitation and to encourage more use of electrically powered pressure water systems on farms. The program was built around the ideas developed in Winston County, Miss., and in the Chestuee area of eastern Tennessee, namely, (*a*) cooperation among all interested agencies, (*b*) personal calls and home visits to farmers, (*c*) the questionnaire survey, and (*d*) group demonstrations. Two main activities were included:

1. A postcard survey of rural people was conducted, followed by personal calls at the farms of those persons who requested such visits from the health department and the rural power association.

2. A series of 1-day workshops on pressure water systems and sanitation was carried out. The workshops were a cooperative effort of the county health departments, the Mississippi State Board of Health, local power associations, the vocational agriculture department of the State department of education, the extension service, and TVA.

The Survey

County sanitarians and local power associations worked out a postcard questionnaire with these questions:

1. Is your water supply from a dug, bored, driven, or drilled well or from a spring or cistern?

2. Do you get water from its source by a pitcher, handforce, or electric pump or by rope and bucket?

3. Is your well protected by a concrete slab?

Concrete is utilized in Monroe County, Miss., to protect well from surface water contamination.

If a spring is used, is it protected from surface drainage?

4. Do you own your farm? If not, whose farm do you live on?

5. Would you like someone who could give you information on these items of sanitation to visit your home?

Such a postcard questionnaire was sent out by seven power associations in northeastern Mississippi.

Of the 24,568 farm families which received these cards, 9,103, or about 37 percent, have thus far returned them. Of the families returning the cards, nearly half (4,254) have requested a visit from the health department and the power association. Home visits made total 3,480. Of these 1 out of 5 have installed pressure water systems, and 22 percent have protected their water supplies by sealing and concreting.

Now the idea has spread to rural electric systems in northern Alabama, where 2 surveys have been started, and in Tennessee, where 6 surveys are in process. These 8 surveys will reach 50,000 farm families.

To encourage rural people to return the survey cards, local pump dealers and other businessmen offered prizes. A drawing was held from the returned survey cards, this drawing often being made at a public gathering where representatives of the health department and the power association made brief talks on pressure water systems and rural sanitation. The survey cards, in addition to giving valuable information about water supply and sanitation conditions, have presented the health department and the power associations with an invitation to visit thousands of farm homes to discuss sanitation.

Calls are made first on those persons who actually indicate on the survey card that they want a visit. Next, other persons surveyed are contacted. The general pattern has been that the county sanitarian and the power association's agricultural engineer have made the first few farm visits together. Then they have divided the remaining calls. The sanitarian is especially qualified to give advice and answer questions about rural sanitation; the agricultural engineer is trained to handle inquiries about the selection and installation of pressure water systems. But in working together each of these specialists learns much about the other's work.

Water System Workshops

After the surveys were under way, it was decided that a series of water system workshops in various parts of northeastern Mississippi would be held to give detailed information on pressure water systems and sanitation to field workers from the several interested agencies. This was essentially a matter of "teaching the teachers," since those invited included county sanitarians, other local and State health officials, vocational agriculture teachers, teachers of veterans' classes, extension service workers, county agents, and power association personnel.

Those making talks included agricultural engineers from power associations and TVA, representatives of the health departments, the extension service, and the agricultural education department.

In addition to lectures, there were demonstrations to teach the agricultural and health workers as much as possible about running water on the farm. At each meeting there were trailers equipped with different types of electric pumps. The pumps had moving parts exposed so their operation could be easily explained. Other equipment included a telescoping tower which was used to demonstrate the effect of elevation on pump efficiency. By raising a pump

to the top of this tower, the lecturer was able, in effect, to put the audience at the bottom of a well.

Subjects covered were:

- Water-supply protection and sewage disposal.
- Fundamentals of water systems.
- Selection of pneumatic tanks.
- Types of air volume controls and their correct use.
- Plastic pipe and its correct application.
- Pump location, housing, and protection.
- Selecting the pump with the necessary capacity and calculating suction lift and discharge head.
- Planning the farmstead distribution system.

Demonstrations presented were:

- Effects on pump operation of increasing suction lift and discharge pressure and of elevation of the pump.
- Airlogging and waterlogging of pneumatic tanks.
- The submersible pump.
- Pipe friction in various kinds of pipe.
- Wiring and motor protection.

In addition, each person at each workshop received a folder with some 20 pieces of literature on pumping equipment and pump installation.

Fifteen of these intensive 1-day workshops were held in Mississippi, with more than 350 leaders attending. One meeting was held at Mississippi State College, another at a Future Farmers of America camp, and the remainder at vocational agriculture departments of high schools.

Results

Perhaps the main benefit of this coordinated activity has been the establishment of effective day-to-day working relationships among the various participating agencies. While all of these agencies have a common interest—improvement of rural living—each individual agency has specialized fields of interest which contribute to achieving this goal of better rural life. It is the concentration of all these specialized talents on one particular aspect of rural life—the problem of sanitation and the general benefits of pressure water systems—that seems to stand out as a major accomplishment.

It is too early to evaluate completely the effects of this activity on rural sanitation in northeastern Mississippi. This is obviously a long-range program, one which requires constant effort for a number of years. It requires followup calls and renewed activity each year. The program is not yet complete, and further results will be seen.

However, some facts are available, based on a study of 21 counties in northeastern Mississippi. This study, made from reports of sanitarians in these counties, shows the following results during the calendar year 1954.

1. Of all pressure water systems installed in the 21 counties in 1954, approximately 50 percent were installed in the 3 counties where the postcard survey was made on a countywide basis. Another 27 percent of the pressure water systems were installed in 5 other counties where the postcard survey was made in 10 to 25 percent of the county. In the remaining 13 counties, only 23 percent of the total pressure water systems were installed. Thus, more than three-fourths of the pressure water systems installed in these 21 counties in 1954 were in the 8 counties where the survey was made in all or part of the county; less than one-fourth of the pressure water systems were installed in the other 13 counties.

2. The statistics on installation of protected water supplies is even more impressive. In many cases, the sanitarian, who made a call to a farm after the postcard survey, found that improvements in the protection of farm water supply had already been made—in the interval between the farmer's mailing back the postcard and the visit of the sanitarian.

In the matter of protecting water supply, 55 percent of the improvements came in the 3 counties where complete countywide postcard surveys were made. Another 27 percent of improvements were in the 5 counties where surveys were made in part of the county. The remaining 13 counties produced only 18 percent of the improvements in protection of water supplies in 1954. Thus, the 8 counties where the survey was made in all or part of the county received 82 percent of the improvements in water supply protection, and the other 13 counties had only

18 percent. As a matter of fact, there were 59 percent more individual protected water supplies installed in just one of the completely surveyed counties than in all of the 13 non-surveyed counties combined.

These figures indicate clearly that concentrated efforts on improved sanitation and increased use of pressure water systems will show definite results when the talents of several cooperating groups are focused on this problem.

The spread of this approach to other areas was inevitable. Already several power systems in Tennessee and Alabama are working with local health officials and other groups on such a program. The Communicable Disease Center, Public Health Service, made a special request to have the water systems workshops program presented at two 1-day sessions near Atlanta, Ga. These workshops were enthusiastically received by those present.

More definite results will be available at a later date. Thus far, however, it seems certain that the program in northeastern Mississippi has done more to stir up interest in improved rural sanitation than any other approach to the problem.

1955 Water Supply Inventory

More than 52 million people in communities of 25,000 and over now depend on surface sources for their daily water supplies as compared with fewer than 40 million in 1948. The 1955 inventory of the Nation's water supplies also revealed that less than 1 percent of the population in such communities use untreated water.

The inventory was compiled by the Public Health Service Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio, from data provided by State and local health departments.

Water supply inventories, 1948 and 1955

Item	*1948*	*1955*
Number of communities with population of 25,000 and over with public water supply	422	570
Census population of these communities	[1] 53, 212, 143	[2] 63, 954, 905
Population served by these communities	61, 864, 210	82, 647, 716
Ownership		
Public:		
Number	335	435
Percent	79. 4	76. 3
Private:		
Number	58	98
Percent	16. 1	17. 2
Public and private:		
Number	13	2
Percent	3. 1	. 4
Unreported:		
Number	6	35
Percent	1. 4	6. 1
Supply source		
Ground:		
Number	91	129
Percent	21. 6	22. 6
Population served	6, 805, 670	11, 052, 764
Percent	11. 0	13. 4
Supply source—Con.	*1948*	*1955*
Surface:		
Number	276	339
Percent	65. 4	59. 5
Population served	39, 678, 185	52, 501, 026
Percent	64. 1	63. 5
Ground and surface:		
Number	55	102
Percent	13. 0	17. 9
Population served	15, 380, 355	19, 093, 962
Percent	24. 9	23. 1
Water status		
Treated:		
Number	392	548
Percent	92. 9	96. 1
Population served	52, 185, 360	81, 247, 494
Percent	84. 4	98. 3
Untreated:		
Number	12	14
Percent	2. 8	2. 5
Population served	682, 270	714, 844
Percent	1. 1	. 9
Treated and untreated:		
Number	18	8
Percent	4. 3	1. 4
Population served	8, 996, 580	685, 378
Percent	14. 5	. 8

[1] 1940 census. [2] 1950 census.