



Tapping Untapped Potential: The Role of Technical Assistance Providers in Building Financing, Implementation, and Management Capacity for Water Services

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Objectives of the study

The objective of the study is to prepare a practical document that can be used by an NGO, or a project planner interested in involving NGOs, or similar people/institutions in supporting small town managers and operators of water and sanitation systems. This study will draw on the US experience in technical assistance to identify the kinds of technical support that:

- (a) Communities' demand, and
- (b) NGOs typically provide to small communities.

The document will build on work done by the National Environmental Services Center for the RWSTG on management arrangements in the US, including the local government structure and the role of the National Drinking Water

Clearinghouse². In writing about the technical assistance (TA) side, the consultant will address from the TA perspective the tripartite relationship between federal loans and grants programs, the clearinghouse, and TA, including both immediate assistance with problems, training and development of long-term community management capacity.

Introduction

Rural communities face significant challenges in addressing water and wastewater concerns. Some of the problems for small water systems follow. Rural community water systems in the United States are more likely than larger municipal systems to have problems of compliance with Clean Water Act and Safe Drinking Water Act standards and regulations. These systems are less likely than larger systems to have a sufficient customer base to spread the cost of necessary repairs and necessary upgrades across consumers. Because of the small size, they are less likely to be able

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² See, for instance, Saxena, Sanjay. 2002. Community Water Systems Management: the US Model. A Presentation for IRC: International Water and Sanitation Centre, the Netherlands. <http://www.irc.nl/manage/manuals/cases/usacs.html>

to afford highly trained water and sanitation system operators. They often as well lack the social and institutional organization to apply for grants and loans that should be available to them through federal and state programs.

The US Department of Agriculture developed programs to provide technical assistance to rural communities in the early 1970s, as part of the “War on Poverty.” The government declared an initiative to vastly improve water, wastewater, and other basic infrastructure. Because of the complexity of managing water systems, a model was developed that provided communities with technical assistance providers (TAPs) who could work with communities to build competence for implementing and managing water and wastewater services, much as the cooperative agricultural extension operates for farmers.³

The concept of providing technical assistance to rural communities to develop water capacity emerged over 30 years ago with the establishment of the Virginia Water Demonstration Project. An African American community just outside the small city of Roanoke, Virginia had been systematically deprived of water service even though the Roanoke water lines came meters from the town. While the Roanoke City Council and

water board stalled in hooking up the community, residents of the community were suffering from living in sub-standard conditions. The now defunct US Office of Economic Opportunity (OEO) at the Department of Health, Education, and Welfare (HEW) contacted employees of the local Community Action Project (a public private program designed to help improve economic opportunities for low income communities)⁴ and water activists in the area to see if they could work with the community to help them build and run its own water system. With the help of funding from OEO, the project involved working with the community to organize a local non-profit entity (NGO) that could receive funding from the federal government to implement the necessary infrastructure themselves. They also carried out training and technical assistance to help the community understand the rules, regulations, and best practices of running a water system. The community successfully established a viable water system and has since leveraged that accomplishment to improve quality of life in the community through improvement of infrastructure.⁵ An operating assumption was that the technical assistance to help communities

³ For an overview of the cooperative agricultural extension program, see Board on Agriculture NASULGC. 1997. Strategic Directions of the Cooperative Extension System. Washington, DC. USDA. CSREES. <http://www.reeusda.gov/part/gpra/direct.htm>.

⁴ http://www.communityactionpartnership.com/about/about_partnership/fact_sheet.asp

⁵ Board of Directors: National Demonstration Water Project. 1977. National Demonstration Water Project: A Sense of Urgency. Washington, DC: Rural Community Assistance Program.

develop water and sanitation infrastructure would also help communities to develop the capacity for broader socio-economic development.⁶

The program was so successful in helping the community to put in a water system that the OEO and US Department of Agriculture (USDA) granted funding to establish National Water Demonstration Projects that replicated the process in sites around the US. Individual sites became so numerous that the Federal government asked them to incorporate into regional organizations to save on the administrative and management costs. The regional programs eventually incorporated to form the Rural Community Assistance Program, Inc. (RCAP).

The government also funded additional organizations to provide the services to assist a burgeoning number of rural water systems with the resources, knowledge, and skills to deliver safe and affordable water to rural communities. RCAP helped start the National Rural Water Association (NRWA), to provide more specific assistance to rural water system operators. Congress has also established centers designed to provide information such as the National Environmental Services Center (NESC) at West Virginia University, which provides small

communities with training and information to ensure better water and wastewater services. Other technology centers were established at universities around the US to provide research and development on technologies for small community water systems. The EPA established the Environmental Finance Centers (EFCN), located at universities around the US, to develop tools and trainings for community water systems to help them with financial management. This universe of organizations is designed to ensure that residents of the vast rural areas of the US have access to adequate amounts of good quality water services.⁷

Institutional arrangements:
Historical Context and Arrangements between the NGO, Community, Local Government, Federal Government, Private Sector and Other Actors

Since the days of the National Water Demonstration Project, the technical assistance infrastructure has grown tremendously. There are now two different organizations that provide technical assistance to community water systems: RCAP and NRWA.⁸ Additionally, not only do the Federal agencies, specifically the Environmental Protection Agency (EPA), provide training materials to communities on best practices on rules and regulations, but the National Environmental Training Center for

⁶ See Warner, Dennis and Jarir S. Dajani. 1975. *Water and Sewer Development in Rural America*. Lexington, Massachusetts: Lexington Books-DC Heath and Company.

⁷ For more information, see Saxena 2002.

⁸ For more information on these two institutions see <http://www.rcap.org>, for RCAP and <http://www.nrwa.org>, for NRWA.

Small Communities (NETCSC) and the National Drinking Water Clearinghouse (NDWC), both part of NESC at West Virginia University, produce training materials and demonstrations that aid small communities in water and wastewater management and delivery of services. In addition, university-based training institutes provide technical innovations and training materials for community water systems. Community water systems may additionally receive assistance in issues related to financing from the university-based EFCN (See Figure 1).⁹

This infrastructure of TA and training information is funded largely through various offices of the Federal government (usually as a portion of the low interest loan funds that exist to capitalize infrastructure implementation and improvement in water and wastewater). The NGOs officially compete for funding, though many of the base grants are guaranteed through the Congressional budget allocation process. A portion of the U.S. Environmental Protection Agency (EPA) and U.S. Department of Agriculture Rural Development (USDA-RD) funding are generally set aside by the U.S. Congress as “earmarks” to ensure that moneys go to special programs and organizations. Most of the small system TA and information funding

for ongoing programs falls into this category. However, as special issues arise, new programs are established, and the TA and information NGOs compete for grants to deliver these programs. For instance, RCAP, NRWA, NESC, and the other organizations listed above competed during 2002-2003 for funding to develop training materials and provide TA to small communities to improve water system security and disaster preparedness.

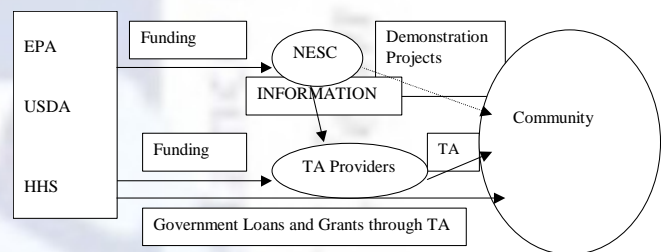


Figure 1: Institutional Model for Delivery of Technical Assistance

In short, the TA organization often enters communities as the intermediary institution between government agencies (Federal, State, Regional/County, and Local), information providers and trainers (NESC and EFCN), and communities around improving water and waste management and delivery. While government primacy agencies approach better water and waste management as an end in itself, as an NGO that works on community development, RCAP, inc. recognizes the potential for utilizing community capacity development around water infrastructure options to foster decision-making about community strategic planning, economic,

⁹ For more information on NESC see <http://www.nesc.wvu.edu>; for EFCN see <http://www.efcn.unm.edu>.

and entrepreneurial development. (See Case Study 1: Route 12 Corridor, NY.)¹⁰

Government often uses the TA provider and information providers to help communities achieve compliance with health, safety or capacity standards. The state government primacy (regulatory) agency is the institution responsible for upholding water quality and health standards. Community water systems have to adhere to drinking water standards codified in the US Safe Drinking Water Act of 1973, which was amended in 1986 and 1996 to provide for enforcement at the state/tribal levels. The state agency will often refer RCAP to villages or unincorporated communities that have compliance problems.

While there is some overlap in function, different government-funded TA providers and information providers carry out different functions in providing services to low-income small water systems and communities. Table 1 and Table 2, below, provide descriptions that help to distinguish between the different functions of these organizations. In theory RCAP and NRWA provide different services to communities. NRWA is more technically oriented, tending to act as circuit riders to work with water operators at the community level providing assistance on the operations and

maintenance aspects of work. RCAP tends to work more with communities on planning, financing, administrative management, and oversight. This should provide for collaboration at the community level. For instance, RCAP may help a community with reassessing and raising water rates to pay for additional treatment costs, but may ask the local RWA circuit rider to do a leak detection study to make sure that the community isn't losing money through undelivered treated water.

These institutions do compete for contracts with either Federal or State governments for projects outside their earmark. For instance, at the state level, RCAP and the state Rural Water Associations often compete for technical assistance contracts to help communities with implementation of state level implementation of environment, health, and sanitation laws. For instance, the Midwest affiliate of RCAP received state level grants to work on community assessments of source water protection in North Dakota, while NRWA won that contract in Iowa.¹¹

Alternatively, these institutions often collaborate on contracts. In the state of New York, for instance, Northeast RCAP and the New York Rural Water Association have a joint contract with the state to provide to TA to

¹⁰ See as well National Demonstration Water Project 1977; Warner and Dajani 1975; Bagi, Faqir. 2002. "Economic Impact of Water/Sewer Facilities on Rural and Urban Communities." *Rural America*, Vol. 17 (4): 44-49.

¹¹ See, Horsley and Witten, Inc. 2001. Summary of EPA Approved State Source Water Assessment and Protection Programs. Draft Document. Washington, DC: Office of Groundwater and Drinking Water: EPA.

communities. Northeast RCAP’s role is to help rural communities with organization, financial and administrative management and strategic planning. The role of New York RWA is to help with direct TA, such as working with small system operators on leak detection. In many

cases, particular Federal and State contracts are determined through the political process, where US Congressional or state legislative committees will specify programs intended for these institutions.

TABLE 1: TA Organizations That Serve Small Systems

Institution	Function—TA
NRWA	Located in Duncan, Oklahoma, NRWA is a membership organization of small community water systems throughout the US. NRWA has representation through affiliates in each state where they have field staff made up primarily of water engineers and system operators who work directly with small water system operators to improve operations and maintenance. They have contracts from the Federal government (USDA) to carry out a circuit rider program to trouble shoot water system problems through 30-minute visits. They also have also had Federal and state government contracts to work with small water systems on the development of source water assessment plans (SWAP) and on source water protection.
RCAP	The network has a central office in Washington, DC, but is made up of institutions in six regions of the US. RCAP works with rural communities and their water system operators helping to develop the capacity to improve water and sanitation access and management. TA providers help communities to organize to decide on and receive funding for installation of water, wastewater, or solid waste systems. TA providers also carry out management, operations, and administrative trainings and technical assistance to improve services, management, and planning.

TABLE 2: Information That Serve Small Systems

Institution	Function—Information
EFCN	Located at universities around the US with a rotating headquarters, EFCN institutions carry out research and pilot projects to help communities with financial and asset management of their water system. They have played a key role in helping develop models for financial and asset management and community consolidation to improve source water protection and cost savings through improved economies of scale.
NESC	Located at West Virginia University, NESC publishes magazines and articles on best practices and key issues for small water and sanitation systems. They carry out trainings that attempt to consolidate knowledge by other institutions (specifically those listed above) to improve water and sanitation services. They additionally manage a demonstration project for small wastewater management systems, and carry out pilot projects on small system water and wastewater projects to document new technologies and best management practices (BMP).

The Rural Community Assistance Program (RCAP) works directly with communities—either working initially with the local government or with “spark plugs.” Community leaders may be those that are officially elected, but may be motivated individuals or groups in a community. While RCAP field workers, by necessity, work with the community elected officials, they are trained to identify those in the community who are likely to motivate the community to make decisions about solutions to water and wastewater problems, organize, submit grant applications, field bids, oversee installation of infrastructure, and be sure that management is carried out.

Often RCAP’s role is to establish a local NGO that can apply for project financing, and help the community see the project through to completion. These NGOs may take several forms:¹²

- **Public Service District:** This entity is usually made up of elected representatives of the community or population served. It is often established through legislative or local government action. The district has implementation and local taxing authority and is primarily responsible for management of the water, waste-waster, energy and other services.
- **Public Utility District:** Effectively the same as a public service district, but may be established through a local extra-jurisdictional process. PUD’s are also often established to manage and provide services for an area that encompasses either part of one or more jurisdictions. The PUD is often made up of a representative board, but has the authority to impose tariffs and fines as well as distribute water and sanitation services.

¹² Saxena 2002.

- **Public Utility Board:** Elected from community members this entity has responsibility for oversight of the water system. This includes fiduciary responsibility, but not regulatory or implementation authority. Generally, the community public utility board (water board) has responsibility over a hired professional water and/or sanitation operator.
- **Stand-alone system/private entity:** This is a private, either for-profit, investor owned or not-for-profit utility district with a standard for-profit board. The utility district usually has either contracted with the community governing body, or is part of the services structure, as in the case of mobile home parks or homeowners associations. These are not necessarily democratic institutions but rather have a vendor-customer relationship with the community. These entities are more prevalent in very small water systems (of 500 or fewer connections).¹³
- **Conservation District:** Conservation districts were initially established to promote the value of conserving soil and water to farmers. Today's districts have evolved; their areas of interest and expertise involve almost every area of natural resource conservation imaginable. This includes water and sanitation. While these entities are specifically mandated to provide community residents with information on to help people and communities take care of the natural resources, they also occasionally oversee community or even county-wide water and sanitation utilities/services. Conservation districts tend to have one or two professional staff, but are generally run by elected community representatives.
- **Cooperative.** Community water system cooperatives are run by a governing board, but involve a membership payment from each of the customers and allow the customers to vote on major changes in the operating procedures. Often, cooperatives are formed through a community wide initiative to install water and sanitation system installation or expansion.

Increasingly, RCAP also assists the community to establish relationships with others in the region surrounding the community who are involved in water issues—both for goals such as source water protection and for regionalization to share cost across utilities and communities. These other communities or hamlets (both incorporated and unincorporated) often have the added benefit of providing water and wastewater to residents who live between the communities. This is particularly important for meeting objectives of improved sanitation and water quality.

Requests for assistance may come from communities directly or through referrals from private sector actors, state government, or national, state, or local offices of the Federal government. For instance, RCAP often works with communities that are referred by the state USDA Rural Development officer. USDA Rural Development has a low interest loan program to assist rural communities in water and wastewater management. There are certain organizational requirements that are necessary

¹³ EPA. 2002. Community Water System Survey 2000. Washington, DC: EPA Office of Water EPA 815-R-02-005B, <http://www.epa.gov/safewater>

Other NGOs may also ask TA organizations such as RCAP for assistance in working with communities. For instance, RCAP has collaborated with the Nature Conservancy in helping communities to install waste water systems that will simultaneously improve quality of life and conserve ecological integrity in the coastal areas of South Carolina.¹⁶

Likewise, RCAP has assisted communities organized by social justice organizations, like the Southwest Organizing Project (SWOP) of New Mexico and the Southwest Network for Environmental and Economic Justice (SNEEJ) to identify options in improving their water and wastewater system for this community.

***Institutional arrangements:
Within the NGO***

While all of these institutions are technically non-governmental in structure, their function is to help develop and extend the government agenda of helping to ensure safe, reliable, and affordable water services throughout the US and its territories.

TA provider organizations that serve small or low capacity water and sanitation systems are national in scope, but have a presence at the local level. RCAP, for instance, is made up of six regional institutions, with on the ground field representation in 52 states and US

territories. This allows RCAP to have a presence throughout all states, but also to be able to coordinate nationally to achieve a given agenda (See Table 3). For instance, EPA is able to use the national RCAP and NRWA administrative structures for training of trainers to work with small communities on implementation of new health and safety standards.

TA providers work directly with rural communities and tend to live in the area where they primarily work. The scope of work is determined by program directors in each region that coordinate with the national office and with state directors. The national office advises the program directors about reporting requirements for national funders as well as agreed upon objectives, outputs, and tasks. They constantly work with federal government offices to collaborate on key objectives (both within the scope of existing grants and to expand the pool of projects on which RCAP is working). The state directors coordinate both with federal level government representatives at the state level, for instance, with the state Rural Development Office, and with the various pertinent state agencies, such as the state department of environment or department of health.

¹⁶ RCAP has been working for less than a year with the Community Development Council of Seewee to Santee, South Carolina providing that community with alternatives for water and wastewater management.

Table 3: How Communities are referred to the TA Institution.

Contact Organization	Role in Working with Communities	Perceived Role for TA Institution
USDA State Rural Development	Has an allocated amount of low interest loans/grants to distribute to communities for water and sanitation infrastructure.	TA role is to organize communities to apply for loan/grant funding to support water and sanitation infrastructure.
State Primacy Agency— State Department of Health/Department of Environment	Interested in maintaining compliance with environmental and health regulations.	TA role is to work with communities to improve capacity and ensure compliance with environmental/health regulations.
Environmental Conservation NGOs	Interested in working with communities to protect natural resources.	TA role is to help communities to understand options for environmental infrastructure and resources for implementing those options.
Social Justice NGOs	Interested in empowering disadvantaged communities and improving quality of life.	TA role is to work with communities to help them access resources and understand options in infrastructure development to improve quality of life.



Figure 3: Map of RCAP Regions

Administrative, Planning, Technical and Other Functions

The RCAP network carries out multiple layers of the administrative process of reporting and tracking the work done. This is in part facilitated by the existence of a database that is designed to capture the work of RCAP field

staff and TA providers. The database allows the regions and the national office in Washington, DC to easily track the work at the field, state, and regional levels. The Federal Government funders require quarterly reports of activities carried out under their grants. Additionally, the regions report to funders at the regional level, and the state institutions report to state and local funders. Most funding is either yearly or based on a three year sub-agreement, which is renegotiated yearly based on an assessment of outputs delivered, and the changing needs and resources of the agency and RCAP.

Strategic planning for RCAP is carried out at several levels, since the organization is actually a partnership of multiple organizations. Each individual RCAP office is involved in its own planning process. The national network may then build on the regional planning to develop a nation-wide plan. The plan involves identifying key areas of work, gaps in communities or sectors served, and strategies for filling those gaps. While the network has tended to focus on water and waste infrastructure issues, for instance, the national plan has identified housing as key area for expanding the work of the network because of the obvious link between indoor plumbing and housing. Several of the regions currently have programs in community housing, but as of yet, RCAP has been unable to institutionalize this nationally.

Financing:

TA in the US is funded through multiple means:¹⁷

- First, as a percentage of the USDA RD Rural Utilities Service (RUS) loans and grants for community infrastructure;
- Second, through USDA RD RUS loans and grants to help communities to develop the institutional and infrastructural capacity in addressing solid waste issues;
- Third: through grants from US EPA to help communities to achieve compliance with Safe Drinking Water Act Rules and Regulations;

- Fourth: from US EPA to help communities to achieve compliance with Clean Water Act regulations and to upgrade capacity on wastewater and sanitation issues;
- Fifth: From the US Department of Health and Human Services (HHS) Office of Community Services (OCS) to help build community capacity for decision making, management and implementation capacity to improve quality of life through infrastructure development in low income rural communities.
- Sixth: Through grants at the state level to help communities with various aspects of water and wastewater management.
- Seventh: Through regional grants from Federal Agencies to provide TA to communities on issues ranging from water, to waste, to housing, to strategic planning.
- Eighth: Through regional grants from foundations to support RCAP, NRWA, EFCN, NDWC, or other TA or information provider organization pilot studies or activities at the community level.

RCAP's services to communities are free of charge, which eliminates conflict of interest regarding advice given. However, to receive this advice, communities need to meet certain standards in terms of low-income status and population. Communities that exceed those required (e.g. are more wealthy or populous than the requirements for free TA) occasionally contract directly with a regional RCAP office for service. RCAP's work in the community is also not limited by ability of the community to pay, thus, advice can be given through long-term interaction with the community.

¹⁷ See the web site of the USDA Rural Utilities Service: <http://www.usda.gov/rd/rus> xxx

It is important to note that the NRWA is a membership organization and provides TA and other services to member rural communities (often slightly larger and wealthier than communities RCAP works with) who pay membership dues. EPA and USDA contract with NRWA to provide free TA to smaller rural communities. While RCAP works with the community to build community level capacity, NRWA more typically works with water system operators and provides direct technical assistance.

Services provided by EFCN, NDWC, and the other TA providers are generally free of charge. These institutions often have cost recovery charges for training materials.

Drivers for the NGO TA model

The following actors could drive the decision to provide TA to a community depending on the particular circumstances of a case:

- Community
- Local government
- Funding agencies
- The NGO
- Other stakeholders

Communities often ask the TA Providers directly for assistance to help them address a particular problem. They may do this by contacting the national, regional, state, or local office of the TA provider. Communities are frequently concerned with addressing immediate

concerns—for instance, inadequate water supply, failing wastewater systems, problems with solid waste management, or a regulatory notice as a result of these problems. The challenge for the TA provider in this instance is to make sure that the real problem is addressed, identified, and resolved, and that this occasion be used as a striking moment to build better local organizational capacity at the community level to work on these issues in the future.

The local government may decide that it is in their interest to have TA providers assist the community as well. There are two reasons for this. First, it gives the local government an outside expert to provide advice and take pressure when that advice is unpopular—for instance when a rate increase is needed to keep a local utility solvent. The local government may also not feel they have the jurisdiction to deal with the community in question, as would often be the case with neighboring unincorporated low-income communities. TA providers, in this case can help the unincorporated community with organizing into an entity, such as a local NGO, that can receive funding to help fix the problem.

In both cases where the community and the local government have asked for support from TA providers, they likely see in technical aid the opportunity for help in finding resources to address particular issues, such as failing septic tanks or finding water sources. They are likely

as well to see working with the technical assistance provider as a way of forestalling regulations that may well be visited upon them if they do not resolve these issues.

The funding agencies drive the TA process in two ways: first, they often rely on the TA organizations to work with communities that they identify as potential recipients of government subsidized loans and grants. The USDA RUS RD officers at the state levels have targets for the amount of money that they are meant to distribute on an annual basis. The funding agency counts on TA providers to organize communities so they are capable and legally able to apply for and manage loans and grants. The other major funding agency for small water systems is the EPA, which passes low interest loans for through the states with the so-called “State Revolving Fund” (SRF) to finance water system improvements. EPA encourages regional and state agencies to refer small communities that have fallen out of compliance with health and environmental regulations and standards to the TA providers. The TA providers are called upon to work with the community to help bring the community into compliance with standards rather than having sanctions levied. Often the TA provider will help the community to access SRF or other EPA funds to come back into compliance with drinking water standards.

NGOs may drive the TA process through referring communities to the TA provider for specific advice on infrastructure development. For instance, in South Carolina, the Nature Conservancy referred RCAP to small community to help in the development of an alternative wastewater system that would simultaneously serve environmental conservation and community development goals. They may also organize the community to ask for assistance in water or wastewater implementation.

There are frequently other stakeholders that play a key role in this process, such as engineering firms. Local engineering firms often ask the community to request assistance from RCAP or NRWA to help in securing the funds for infrastructure development or improvements. RCAP, for instance, can assist the community in identifying government funding sources for which they may be eligible. The TA provider will then also work with the community to evaluate project needs and options.

Occasionally this has led to conflicts between private engineering firms and the TA provider, especially when the TA provider advises the community of more reasonable design or contract options not associated with the firm. Engineering firms are paid a percentage of the cost of the contract. A smaller contract means less money for the firm.

TA services demanded and provided:

TA providers work with communities on the basis of what the community requests and needs that are assessed on the visit to the community. For instance, a community may ask for assistance with administrative issues because the utility is losing money. The TA provider may suggest that the community carry out a leak detection to make sure that the utility is not having financial problems because of excessive water loss--an issue of construction and

maintenance. Likewise, RCAP TA providers frequently help communities that request assistance with system expansion. Often community water systems need to be expanded because of population growth or increased demand to support economic development. Before helping communities to raise the funding and hire the engineering to support this expansion, TA providers also help communities in planning to make sure that system expansion will meet the needs of the community.

Table 4: How TAPs Work with Communities on Construction (efficiency) Issues

Conditions for Working on Construction (efficiency) Issues	Manner of Working with Communities
1) When there is a need for system expansion	The TAP works with the community on assessment of need for the expansion, on improving whole system efficiency and operations (known as optimization), assessing construction options to expand the system, and helping the community to access funding or raise the resources, put the expansion project out for bid to engineering firms, assess the bids, and hire the firm.
2) Where there are capacity issues	The TAP works with the community to assess the reasons for the lack of water capacity to meet community needs. The TAP will then work to develop a solution—often digging a new well or developing another source of water that will boost capacity. This will require accessing government or local funds, hiring a well-digging or engineering firm, and overseeing construction.
3) When there are problems in complying with health and safety standards.	Often health and safety problems will necessitate building additional treatment facilities. For instance, high fluoride or arsenic levels will require installation of a reverse osmosis (RO) plant. The process is similar to the steps in the table cells above: providing the community information for a decision about an appropriate technology; development of proposal and background study to access government funding (loan/grant); and helping the community to request and assess proposals by engineering-construction firms and helping with construction oversight. (See example of Gila Bend, AZ, Case Study # 3)

TAPs also work with communities on service improvement (business planning) strategies. Communities often request these services in response to growth or concern about growth—for instance, in assessing whether they have the water service to support proposed business development. This kind of service may also be requested when a community loses an industry or business that was a major customer of the water system. TAPs can play a role in either case in helping the community and the water system to think through technical, administrative, regulatory, and financing options (See the case of Dearborn, MO, below, Case Study # 12.). TAPs work with communities and utilities to increase water sales and expand the system when there are significant parts of the community or neighboring communities that are not receiving service. This may be the case in water, as is exemplified through the case study of Castleton, Massachusetts (Case Study #13). It may also apply in wastewater service, as is exemplified in the case of Farmington, Maine (Case Study #14). The TA could also assist in expanding service and sales to help make a community system more viable, as in a case where a community has lost revenue, for instance from a closed business or abandoned houses.

The Alexandria Bay, NY Case Study (Case Study #1) demonstrates how water/wastewater technical assistance relates to participatory

community strategic planning and socio-economic development. The TAP may work with the community, using the need for water/wastewater infrastructure improvement to think through a participatory regional strategic plan. As in the case of Alexandria Bay (Case Study #1), the TAP can use water quality and health regulations to force discussions among leaders of formerly contentious small communities. These discussions may lead to mapping areas and laying out business and residential zones to direct economic and residential growth. These designations could then be codified through the wastewater and water system design, and in turn used to attract government economic development and private sector investment dollars.

A key part of what RCAP does is to help communities to access financing. In numerous case studies below, RCAP TAPs have worked with communities on accessing financing for infrastructure development. Key parts of this process are:

1. Determining what issues the community wants/needs to address;
2. Carrying out income and population surveys to determine eligibility for particular programs;

3. Researching particular funding options—such as the applicability of Community Development Block Grant (CDBG) funding for small cities, or Indian Health Service (HIS) funding for tribal communities (See Santa Domingo, Case Study #5);
4. Introducing the community to policy and political leaders to encourage flows of resources through that process (See Woodland Village, Case Study #11).
5. Helping the community to understand and fill out applications for various resources. Related to this is helping the community to understand and meet reporting requirements and deadlines related to the funding requirement.

The TA NGO plays a key role as a facilitator of partnerships and contracts. The TAP can play a key role in helping communities to develop intercommunity cooperative or reciprocal contracts (for purchasing equipment, sharing resources, providing emergency resources). The case studies of Castleton, MA (Case Study #13), Dearborn, MO (Case Study #12), and Mayes County, Oklahoma (Case Study #8) demonstrate that this can take several forms. Regionalization is increasingly seen as an option for communities to meet environmental, health and safety, capacity, and security and terrorism readiness requirements. Often, the TAP can play a key role in helping communities to

overcome longtime rivalries or other issues that impede such collaborations. Through the development of formal contracts, and establishing formal processes of interaction, these longtime rivalries may yield joint efforts at source water protection or economic development.

The TAP can play a key role in helping communities to advertise and assess contracting bids. Key components of this bid include:

1. Helping the community to develop the initial plans for the project.
2. The TAP in some cases will help (or facilitate) the preliminary and environmental engineering assessments/reports that are required to receive funding for the project. In some cases, RCAP will provide seed funding to support these activities through revolving loan funds run through the regional offices of RCAP.
3. The TAP may then help the community in actually designing the request inviting proposals for the project.
4. The TAP often will help the community to evaluate proposals to make sure that they are appropriate for what is needed in the community.
5. The TAP will often check in on construction from time to time to make sure that the engineer is staying on

schedule and following recommended standards.

TAPs can play a key role in facilitation of dispute resolution within the community. For example in the case of Food Tree, WI (Case Study #14), the RCAP TAP has been called upon to provide key information to help resolve legal problems among residents over pollution of the water supply. The TAP may also play a critical role between the community and outside people/groups/agencies. We have mentioned above the role of TAPs in forging connections with other communities in a given region. The case of Hopeville, Arizona (Case Study #6) demonstrates another critical role of TA providers. In this case, the TAP performed the role of liaison between the community and outside groups who wanted to make an offer on the community water system, and between the community and the Arizona Department of Natural Resources (DNR) and Department of Health (DEH), who were receiving pressure to crack down on violations of water standards. The relationship to the primacy agency is a critical part of RCAP's work.

Implementation

Above, we described the historical background of the TA model in the US. It comes out of a commitment on the part of the US government to provide support for all communities that want water and wastewater in the US, Virgin Islands,

and Puerto Rico. This includes support for Tribal (American Indian) and Aboriginal (Alaskan Native) communities. Many of the TA and information organizations that exist now are the result of a commitment implemented from the 1970s to improve water service for all in the US.

Currently, the TA model is dependent on several factors:

1. Continued funding from the Federal government to support activities. The Federal government has largely been responsible for funding the TA system to date, with some matching funding from state primacy agencies on an as needed basis. As almost all states are currently in funding crises, even as new regulatory requirements are demanding greater diligence in working with rural communities.
2. Continued funding in grants and loans for small water systems. While the federal government provides funding for the major TA programs, this expenditure could be in part justified as contributing to the extremely high loan repayment rate by small water systems in the U.S.
3. Continued interest in allowing communities to maintain autonomy over local water systems—since TA providers must ultimately have community partners to work with.

4. A continued mix of ownership and operations systems in the US. The TA model works because the installation of water and sanitation and delivery of those services in the US is carried out through a combination of public actors (local and regional government), non-governmental oversight bodies (community water boards or districts), and private sector actors (engineering firms, equipment suppliers, and occasionally for-profit private sector providers).

For small communities and for the TA providers who work in those communities, there are several key challenges to continuing to improve access to water service in small communities:

1. Many of the infrastructure systems installed through the first three quarters of the 20th Century will wear out in the next twenty years. In a time when the Government is less committed to investment in infrastructure and social services, this constitutes a significant burden on small systems.¹⁸
2. At the same time, as the health, safety, and environmental regulations have become more sophisticated, community water systems are faced with ever more stringent requirements for compliance

with these standards. Likewise, as state departments of environment and health are faced with shrinking resources, NGO TA providers are increasingly relied on to work with communities to bring them into compliance.

3. According to the 2000 US Census, rural residents of the US are currently on average less wealthy, have lower education attainment, have lower levels of skills, and live in worse housing stock than urban residents.
4. Many communities are facing pressures from urban sprawl. Others, in the Midwest, are facing problems of out-migration. These divergent trends may have the perverse effects in both places of causing water system pollution (through neglect or unplanned development) while driving up prices to fix the problem.
5. The problems of out-migration are often precipitated in part by economic flight of manufacturing and other blue-collar jobs from rural communities to other locations—often outside of the US.
6. In areas where there are industries, these are often low wage industries related to the agricultural sector, such as meat packing plants or agricultural product processing facilities. These types of businesses tend to attract migrant

¹⁸ See EPA. 2002. Infrastructure Gap Analysis for Drinking Water and Clean Water Systems. <http://www.epa.gov/safewater/gap/>.

laborers. Serving these populations is often difficult because of language and their tenuous relationship to the US government.

There are also significant regional differences. US based TA NGOs are decentralized as semi-autonomous state or regional entities. This is necessary because of the size and political system of the US. A more centralized reporting process might be more efficient in a smaller country with a more centralized government structure. RCAP, as a national program continues to grapple with differences in salaries paid by region. There are significant differences in the cost of living depending on the region and state (cost of living is far cheaper in Arkansas, for instance, than California). This carries over as well to eligibility requirements for communities in different parts of the US. Annex II of this report will include sample contracts and key provisions of contracts such as service contracts that underpin the model. i.e. the contractual arrangement that ties in the NGO support services:

- Community
- Local Government
- Federal Government
- Other Donors
- Other Agencies

Limitations

In terms of replicating this model in the context of developing countries, the US TA model has advantages and disadvantages. The advantage would be that community TA systems:

1. Could build on existing animation and extension systems that might be in place in the developing countries.
2. Would allow for flexibility since the TA system is implemented through NGOs.
3. Could be funded as a portion of grant and loan programs for small water systems.
4. TA providers play a role in linking communities with funding and other resources that should be available.
5. TA providers also play a key role in linking communities and water system operators to government, NGO, and private sector entities critical to water system development, building networks, which ultimately builds local capacity for water system management.

What are the main limitations of the model in serving small towns?

Funding for TA often is sector-based, and NGO TA providers have trouble finding resources to connect water and wastewater TA to broader community capacity and economic development issues—including integrating water utilities with other basic services to achieve economies of scope and scale.

Community politics may be the biggest hindrance to well working utilities—limiting what the TA provider can accomplish. Some TA is purely technical and can be accomplished through short period interactions—technology adjustments, leak detection. This gets the job done, but tends not build local capacity, as communities generally do not end up with someone who is capable of fixing the problem the next time it occurs.

More lasting TA involves building community capacity—this takes time, building local interest, support, and responsibility. Continual visits over multiple months or even years may be necessary—even after the initial crisis is past. This also takes money. It also will be a growing challenge to develop useful indicators of performance.

Table 5: How does the model rate in its effectiveness in providing specialist services?

	Specialist Services	Rating from zero to five (five is the highest rating)	Reasons
Financial	Financial management training	4	Financial management experts are on staff at RCAP and the Environmental Finance Center Network and have conducted trainings at the community level on issues ranging from general accounting procedures to accounting responsibilities of operators and community water boards.
	Business planning	3	There is some attention to business planning, but in so many cases the work with the community water system is about making them viable right now, not about planning for future growth. In the context of a municipal utility, business planning must involve planning at the larger community level—which RCAP employees are working with communities to do.
	Tariff setting	4	RCAP works on a regular basis to help communities and water system operators to determine rates that will provide the utility with adequate resources for operations, maintenance, and a reserve.

Financial	Customer relations	4	Customer relations are generally considered a local utility issue. However, both RCAP and NRWA provide advice and training to small water system operators on best-practices for customer relations, including handling complaints, communicating changes in service or rates and administration.
	Access to finance	4	A significant part of RCAP's work is to help small communities and water systems to have access to loans and grants. Additionally, EFCN is specifically given the mandate of helping address small community finance issues.
Technical	Technical training	4	Both RCAP and NRWA have grants from EPA to specifically provide technical training on safe drinking water and clean water (sanitation) rules and regulations, capacity development, and operations and maintenance. Additionally NESC carries out pilots and demonstrations of technology and management practices for water and sanitation in small systems. The other technology centers produce tools for technical training.
	Expansion planning	4	RCAP specifically works in small communities to assist with small system expansion planning.
	Problem solving	4	RCAP and NRWA specifically work with small communities on problem identification and problem solving. NRWA provides a circuit rider service. RCAP works to solve administrative problems as well.
	Efficiency improvement	4	RCAP and NRWA specifically work with small water systems to improve efficiency of service. Currently RCAP is working on a program to make service more efficient through water system optimization—that works with operators to look more systematically at operations.

Other	Procurement services	3	RCA P assists communities with procurement services—but tries through training to build local capacity for procurement of materials. Through regionalization, RCAP is working to make the process more efficient in communities where this is a viable option.
	Regulation	4	EPA provides training to NRWA and RCAP specifically to help small water systems comply with rules regulations.
	Construction management	3	USDA RUS has identified construction management as an area where they would like to improve capacity. Currently RCAP provides some assistance in construction management, and is working ??
	Community Management	4	RCAP works with the community leadership to help them organize and carry out oversight of water and wastewater systems. In cases where no board has existed, RCAP helps the community to establish a village, town, community, or neighborhood water board for oversight of the water/sanitation system. RCAP trains water/sanitation boards about their roles and responsibilities.
	Asset Management	3	RCAP and EFCN increasingly work with small water systems and communities to account for infrastructure, operations (chemicals), administrative, and other assets and to calculate and plan for their depreciation over time.

Table 6: Ranking Success Ingredients

Ingredient for success	Rating from zero to five (five is the highest rating)	Reasons
Financial and management autonomy	5	Because communities have financial and management autonomy, they are likely to turn to TAPs to assist in system management.
Competition	2	There is some competition among service providers, but most of the base funding comes through earmarks through the political process. Defacto, the bulk of the TA is carried out by two organizations-RCAP and NRWA, both of which have existing earmarks in the USDA and EPA budgets.
Demand responsiveness (including service to low income households)	4	The conditions of RCAP contracts mandate that RCAP should be working with low-income communities—which translates to low-income households.

Incentives for expansion	2	As above, the political process mitigates against significant incentives for expansion driving the process.
Professional support	5	There is a well developed community of support for TAPs, both through organizational trainings, and through professional organizations.
Regulation	5	a) The regulatory structure drives communities to consider the advice of TA providers; b) The cost for state primacy agencies of trying to force community compliance leads them to refer communities to TA providers.
Transparency and accountability	5	TA providers are required to report quarterly, and meet regularly with state level government officials. This assures that TA providers are working in conjunction with government conditions and agendas.

position to help. In addition to being featured by the New York State Association of Towns as a top case study in which federal and state agencies have worked together to provide co-funding, the Corridor project was highlighted at RCAP's 2001 national meeting in Washington, DC. Community leaders credit RCAP for bringing needed organization, expertise, and outreach, all of which were needed to get this project where it is today.

***Case Study 2:
Stonington, Maine—Watershed and
Wastewater Infrastructure Planning and
Development (Water and Wastewater)***

Stonington is an island community of 1,200 people 70 miles southeast of Bangor, Maine. It shares the island with the neighboring town of Deer Isle, and is connected to the mainland by one bridge and one causeway. The economy is largely based on marine fishing and seasonal residents/tourism. The public water supply is comprised of several wells located in one watershed shared by approximately 50 residences and serves primarily the downtown waterfront area. The drinking water supply system suffers from limited quantity and failing infrastructure.

RCAP began working with Stonington approximately five years ago on a watershed protection ordinance. Since then, RCAP has met with the Stonington Watershed Protection Ordinance committee regularly during this period. Last month the completed ordinance

passed easily at the town meeting, and central to the acceptance of this ordinance was a topographical map of the watershed delineating affected acreage produced by Northeast RCAP. RCAP's technical assistance has grown over time, and TA providers are now involved in helping the community to develop a comprehensive plan for the town. This includes wellhead protection (gates, fences, etc.), as well as water and wastewater system extension, repair, and upgrade. The comprehensive plan will integrate the watershed protection ordinance, the shore-lands protection ordinance, and community infrastructure with existing and planned housing and economic concerns. As part of the comprehensive water protection efforts, RCAP is assisting the community to develop a wastewater extension project to remediate an immediate public health threat of approximately fifty failing, aged septic systems. The TA Provider assisted the community to carry out an income survey to demonstrate appropriate need as part of a Community Development Block Grant (CDBG) application. If funding is approved through this source, the community will be able to begin the process of requesting bids from engineering firms to implement the expansion. Currently the community and TA provider are awaiting a funding decision. This project demonstrates the role of the TA provider in local organization and guidance on local governance, but in also

serving as a liaison to outside agencies and funding sources.

***Case Study 3:
Gila Bend, Arizona: Technical Assistance and
Infrastructure Planning (Water and
Wastewater)***

Gila Bend is a dusty community of about 1,747, located southwest of Phoenix. The population is about half Anglo, half Mexican/Hispanic. The town is served as a roadside stop-off when the Rte. 8 was the main road toward Mexico—and before that as a stop on the Santa Fe railroad line. The town served as a depot and refueling point. The town is now relatively low income, with a medium household income of \$17,820 and a low-income population of \$1,247, 71% of the total population, according to the 2000 Census.

RCAP's TA provider was initially referred to this community by the Arizona (AZ) Department of Environmental Quality (DEQ) and the AZ Office of Rural Development (RD). They wanted him to help the community address excessive floride contamination of the water supply. The TA provider helped the community to identify as a solution, plan, and raise funding (through a 75% grant and 25% loan) for the installation of a reverse osmosis (RO) facility to address the issue. The plant has now been installed and it is treating water for the community.

The TA provider has also served the community in several other critical ways. First, he has

provided technical guidance on planning expansion of the water and wastewater system. This has included discussions with town officials about the linkage between infrastructure development and community economic development. Water and sewer lines have been extended toward a new mobile home park, restaurant, and hotel south and west of town. They have also been extended toward a new coal-powered energy plant that will serve California—and will be located northeast of town. Residential in-fill is already taking place in that direction. The TA provider helped community to find funds that will let them extend their system to include adjunct 14 acres. He also served as an advisor to orient an interim and later replacement for the community's utility manager, who passed away unexpectedly several years ago. Among other services, he has helped the new utility manager and an assistant with training for upgrading operator status. The TA provider additionally advises the water/wastewater utility manager on management of the wastewater facility—including optimal sludge levels, solids circulation, and disposal of 'residual'. Through this integrated TA process, RCAP is assisting Gila Bend to improve water and sanitation and community expansion and economic development.

**Case Study 4:
Liberty Center, Iowa Stops Illegal
Wastewater Discharge**

RCAP recently completed almost two years of assistance in the Warren County, Iowa community of Liberty Center, a small-unincorporated town just south of Des Moines, the capitol of the state of Iowa. RCAP was asked to work with the community because illegal discharge of wastewater into a ditch and small stream resulted in a Notice of Violation issued by the Iowa Department of Natural Resources (IDNR), the state primacy agency.

The RCAP TA provider initially worked with the community to determine the scope of the problem and discuss options for addressing it. She then assisted the community in the coordination and analysis of two surveys: an income and interest survey. The results demonstrated that Liberty Center was sufficiently low-income community and had sufficiently strong interest in addressing their wastewater problem that the community was eligible for subsidized loan and grant funding from the government.

The TA provider worked to facilitate a process between the community representatives, the project engineer, and the USDA RD engineer to decide whether to use an onsite alternative technology or a force main leading to a nearby underutilized school lagoon. Discussions between the project engineer and USDA state engineer continued throughout the winter of

2002. In March, when all parties agreed to a regional approach utilizing the school lagoon, the Iowa Department of Economic Development awarded a \$72,000 grant to Liberty Center. The grant was followed by a proposal to USDA for a \$309,000 grant and \$132,000 loan.

The county intended to purchase the school lagoon, however a purchase price had to be negotiated between the county and the school district. The grant/loan funds included only \$10,000 for purchase of the lagoon, so any higher price would result in higher monthly payments by residents. With the TA provider negotiating these factors, the county eventually agreed to pay \$40,000 to the school district for the lagoon.

Evaluation of the cost of the lagoon is still subject to an assessor's appraisal to meet state requirements. The TA provider has worked facilitating discussions among the community, county, and Warren Water. Discussions continue about how maintenance of the system will be carried out. Warren Water has been represented at all meetings and could assume management and maintenance of the system. RCAP staff recently provided the county with sample maintenance agreements to use as a basis for negotiations with Warren Water. Because this regional approach to the town's wastewater problem appears to be highly successful, the steering committee plans to meet in the near future to use this approach to resolve

similar problems around the county. The role of the TA provider in this case has been not only to provide TA about technical and financial options—but to facilitate decision making and actions based on those decisions.

**Case Study 5:
Santa Domingo Pueblo (Water, Wastewater,
Solid Waste)¹⁹**

In 1999 the Santo Domingo Pueblo of New Mexico recognized an urgent need to replace the majority of their drinking water and wastewater systems. The Tribe decided to appoint a five-member Utility Commission to address the problems. In late 1999 RCAP field staff in Santa Fe, New Mexico were asked to help the newly formed Utility Commission to develop policies, procedures, operating guidelines, budgets, utility rates and staff, and raise funds for solid waste operations, water and wastewater improvements. During the past four years RCAP has helped the tribe with utility commission training, as well as raising funds for staff and developing a solid waste program. We also have helped to raise \$4.9 million from a combination of FY 2001-2002 funds from federal and state entities to rebuild the drinking water and wastewater systems

The state of New Mexico, through the New Mexico Finance Authority (NMFA), has given

¹⁹ The Santo Domingo Tribe is a federally recognized Indian nation of 4,611 people. All of its community is classified as low-income, with over 39 percent of the households living in poverty. One of 19 Pueblo tribes in New Mexico, Santo Domingo Tribe is considered the “center” of Pueblo culture in the state.

the tribe \$3.735 million for improvements to drinking water and wastewater systems, the largest grant to a tribe in the state’s history. RCAP has continued to provide technical assistance to the tribe to ensure that details of funding by NMFA, USDA (\$560,000), and Indian Health Service (\$600,000), as well as engineering, design, specifications, and contracting needs are completed according to funding agencies requirements. Technical assistance is now focused on helping to keep the Utility Commissioners, the new Tribal Administration, and the community, aware of the project's progress, and helping the tribe to respond to funders in a timely manner, regarding final engineering reports and other documents necessary for receipt of funds. RCAP also has been involved in helping the tribe to secure engineering services, and will be involved in the proposal and selection process for construction.

RCAP’s work with the Santo Domingo Tribe originated with solid waste issues. Before the Utility Department was created, RCAP wrote the tribe’s first USDA solid waste grant, funded in FY 2001 for \$106,000. This grant has funded solid waste program staff, outreach and education efforts. The solid waste program manager and the utility director were both hired in Spring, 2002 and since then have transformed the tribe’s utility department and operations.

They report that utility fee collections are on the

rise and service to tribal members has improved substantially.

In another arena, the Santo Domingo Tribe wanted to build a new health facility for its growing population since 1988. The Tribe turned to RCAP in May of 2001 with a separate fee-for-services contract, to help plan a new health facility. Within two months RCAP met with a new health facility planning committee to conduct a needs assessment, negotiated with Indian Health Service for service and lease agreements, prepared concept design drawings and cost estimates and prepared funding applications. This case demonstrates the role of TA providers in serving the community in multiple sectors over time. The TA plays a key role in helping the community to see the linkage among related environmental services, and in helping the community to make the case for to funding agencies for both infrastructure construction and management organization.

**Case Study 6:
Hopeville, Arizona: Community
Development Support and Advocacy**

Hopeville is an African American community of approximately 250 settled in 1981 after years of struggle by the community to receive a land grant outside of the flood plain, where the community was originally settled after being brought to Arizona from Texas to work the Cotton fields. The community is 92% low income.

The RCAP TA provider has assisted the community in a number of areas. First, he helped the community to upgrade its physical and administrative infrastructure of their water system. Hopeville had a well and water tower that serves the community, but the well was getting low and beginning to pump sand and other sediment, requiring that it be re-drilled or deepened; or a new well may need to be drilled. The tower also needed some improvements; while in pretty good shape, it began to have some problems with rust. Additionally, was no office to keep water system records. All files and records are kept in Reverend Harris' office in the church). For the community, these issues are related to the desire to upgrade the community infrastructure in general, including water, sanitation, and housing stock.

The TA provider helped the community with advice regarding the water system, facilitating work on housing improvements. He has worked with the community on operations and maintenance of the community water source and sewage system. This has included working with the community leaders to make them aware of regulations and requirements for water systems management, and has served as a liaison between the community and health and sanitation regulators. He has both assisted the community in developing plans to upgrade the administrative facilities of the water utility, and has helped the community bring water system

up to date—including procurement of replacements for out-dated material such as valves, meters, pumps. He helped the community raise money, contract for and implement painting and extending the water distribution line.

He also serves in advising the community on management decisions. This has been particularly important in recent years in helping the community to withstand pressure from the Sundance Development company, who wanted the community water system to supply development plans in greater the Phoenix areas. Sundance first approached the community about buying the water system (and source) and servicing the community with that water. The offer was extremely aggressive, and the TA provider assisted the community by counseling them that they did not have to sell their water system. Sundance then attempted to have the water system condemned for compliance problems. The TA provider used connections with the AZ DEQ to assure that the system would not be condemned. The water source has provided leveraging capital for community development, as the interest from Sundance Development demonstrated the potential for expansion given the water source in the area. The TA provider has worked with the community to write funding applications for a range of infrastructure and environmental

services improvements that will improve quality of life for this poor community.

This case study demonstrates the role of the TA provider in helping the community not only in securing financial resources and technical advice, but also in serving as a liaison to government and other institutions. This liaison provides political leverage that can neutralize local powerful actors who may seek to undermine community development initiatives.

***Case Study #7:
Iberville Parish, Water District #4, Louisiana***

This is a small, rural water system that serves the unincorporated areas in the north part of Iberville Parish. This system also sells water to the Village of Grosse Tete. The system has 2 wells. One is almost 20 years old and the other one is new. The new well came on line in February 2003. The community also has 3 elevated storage tanks. This system has a sampling plan that is about 10 years old. The old plan does not include the portion of the system that connects the new well to the original portion of the Water District. Therefore, the sampling plan must be updated and submitted to DHH for approval before the system can begin working on the D/DBP Monitoring Plan that is due on July 1, 2003. This system uses chlorine to disinfect their water. The system contacted RCAP to obtain assistance with the preparation of a new sampling plan, help with the preparation and submission of required reports,

and for operator training on Safe Drinking Water Act regulatory requirements. The TA provider is now in the process of advising the community on development of a new water sampling plan and helping the water system staff to prepare the reports. A critical role of the TA provider has been to brief system personnel on the changes in the SDWA health and safety regulations, specifically the “Decontaminant and Disinfection By-Product (D/DBP) rule, which will require water monitoring for chemical residues. This case study demonstrates the role of TA providers in helping small community water systems to stay in compliance with health and safety regulations. The case also demonstrates how, even when the TA provider is not sent to the community by the regulatory agency, knowledge of coming regulations can lead to community requests for TA assistance in complying with those regulations.

***Case Study #8:
Rural Water District #5, Mayes County,
Oklahoma***

This Rural Water District recently reorganized from a non-profit organization under Title 18 to a Rural Water District under Title 82, making it a publicly owned water utility. The system contacted the southern RCAP TA provider to assist as they apply to Oklahoma Water Resources Board for a loan to improve and upgrade their water system. The TA provider has assisted them in developing an updated set

of bylaws, in developing a revised set of rules and regulations, and in implementing other minor changes to their organizational structure necessary to secure financing. The water district purchases treated water and is strung out about 30 miles from one end of their system to the other. They have 6 storage tanks and one chlorination station. The major part of the system is located in Mayes County but they also serve parts of Rogers, Nowata and Craig Counties. The financing would allow the water system to upgrade connections and treatment options for the community. This case study demonstrates the role of the TA provider in both advising water systems on management options and infrastructure upgrades, and in matching administrative changes to financing requirements.

Case Study #9: Ellendale, Delaware

Ellendale, Delaware is a small hamlet on Routes 113 and 16 on a major route to Delaware beaches about halfway between Milford and Georgetown. Agriculture is the primary land use in the greater Ellendale area, while the Ellendale State Forest marks the area's northern, southern, and western boundaries. The region lies on the drainage divide for seven creeks, and is within Delaware's coastal plain. This land tends to be flatter and wetter than surrounding landscapes. Land in the Ellendale area also has poor soils and high seasonal groundwater levels.

Since Ellendale is an impoverished community with poor drinking water, the town had to make a tough decision; there was only enough money to create either a central sewer district or central water supply. The TA provider worked with First State Community Action Agency, Citizens of Ellendale, County, State and Federal officials who determined that a central sewer district would be more important since it would eliminate the continued ground pollution thereby improving the quality of ground water. The sewer project is soon to be completed and the cost per household is \$400.00 per year. Still, the residents continue to use their private wells of poor water quality.

There are 100 housing units in the town with an approximate population of 350. Two areas outside the incorporated area that would hook into a new water system should one be constructed are New Hope Road and New Market Village. The actual number of connections that would be required to serve these areas is unknown at this time. A large concern of all agencies involved in this project is the cost burden of a new water system (in addition to the sewer cost) per year to this low-to-moderate income community. First State Community Action Agency has advised that they would be interested in sharing the ownership and cost of the water system with a local private firm, Tidewater Utilities. However, the ownership of this nature would make the

cost of water much higher than if the Tidewater Utilities owned the system alone.

Another issue of concern is that some of the homes are beyond repair and cannot accept water hookups due to their age and other problems. Milford Affordable Housing, Inc., has shown an interest in purchasing land outside the incorporated area of Ellendale to build affordable housing for the residents of homes that are beyond repair. This would not only provide new housing to community resident but as well provide water service. Tidewater Utilities advised that they could put in place a portable water system with hook ups to serve up to 49 homes for this housing project. Above the 49th home a larger system would have to be installed due to fire-flow and pressure requirements.

The TA provider, USDA/RUS, Sussex County Housing Authority, Community Development Block Grant (CDBG) staff, First State Community Action Agency, the Office of Drinking Water, Tidewater Utilities, Milford Affordable Housing, Inc., members of the clergy in the Ellendale area and other entities have been and will continue attending meetings to put forth ideas to hopefully make this water project possible. The Ellendale water project is in the early stages of assessing the community needs and the interest of the above mentioned agencies.

This case study demonstrates the role of the TA provider in participating in a multi-stakeholder process to upgrade community water and wastewater facilities to meet community and other needs.

Case Study #10: Greenwood, FL

Greenwood is a beautiful little town located in Jackson County, Florida. Greenwood initiated planning a drinking water improvement project before the improvements became a dire issue, so that the optimal plan for Greenwood could be determined. During the planning process, the Florida Department of Environmental Protection (DEP) asked Greenwood to consider offering water service to the town of Bascom. Bascom is a small community of approximately 100 residents just northeast of Greenville. Like many of the communities in this area, Bascom has a problem with EDB²⁰ contamination of their wells. The Florida DEP has placed filtration systems on their wells, but this is a costly alternative for the state.

In a joint effort, the Southeast RCAP and Florida RWA TA providers have combined to

²⁰ Ethylene dibromide (EDB) is a colorless, heavy organic liquid mainly used in anti-knock gasoline mixtures, particularly in aviation fuel, and as a solvent for resins, gums, and waxes; in waterproofing preparations; in making dyes and drugs; and as a pesticide for grains and fruit. EPA has found EDB to potentially cause the following health effects for relatively short periods such as damage to the liver, stomach, and adrenal glands, along with significant reproductive system toxicity, particularly the testes. Lifetime exposure may include damage to the respiratory system, nervous system, liver, heart, and kidneys; cancer.

http://www.epa.gov/safewater/contaminants/dw_contamfs/ethylene.html

determine the feasibility of this project. The Florida Southeast RCAP office has conducted an informative community meeting regarding EDB contamination and the benefits on being on a community system. Southeast RCAP will also be providing income/interest survey materials and will conduct a door-to-door survey of Bascom and the surrounding region. Florida RWA has assisted the in calculating the engineering feasibility and design aspects of the potential project.

This case study demonstrates the role of TA providers in assisting in community water system planning. The case also demonstrates how different TA entities can collaborate in advising the community on different aspects of a given water initiative.

Case Study #11: Woodland Village, MD

The community of Woodland Village consists of 104 households in a 100% African-American subdivision on the outskirts of the Town of Indian Head. The majority of the homes are owner-occupied, but there seems to be a growing trend for these properties to move toward rental occupancy. The area was a military base constructed in the late 40's to early 50's with infrastructure of the same vintage, now needing replacement. While the rest of Indian Head has benefited over time from improvements in infrastructure, the Woodland Village community has felt passed over and left out. According to community spokesman,

Frances Simmons, they have been attempting to have their community needs become a priority of the Town for over twenty years.

The MD RCAP TA Provider has been working with the new Town Manager to conduct the income survey of the households in order to qualify the community for the maximum amount of funding for USDA, Maryland Department of Environment and CDBG funds. Preliminary review of the survey data in conjunction with a windshield survey of the community indicated that the community would qualify for maximum assistance from all agencies. Thanks in part to this information; Senator Barbara Mikulski announced a grant of \$1,800,000 to serve the community. However, to access those resources, the community will be required to find a match for a portion of the amount.

The Woodland Village water system is served by Well #5, which is part of the Indian Head water system. Total Indian Head water storage capacity is 300,000 gallons and can serve a population of approximately 3500. The TA provider has continued to help the community work with engineers on developing final engineering reports, which will address distribution, source water and capacity to serve Woodland Village. She will also assist the community in development of an application for CDBG and other funding options, based in part on results of the income and interest surveys.

The completion of this project will help raise community pride, stabilize the community, increase property values, lead to more community cohesion and enable property owners to undertake other improvements to their properties. The MD RCAP TAP will continue to facilitate funding applications and income surveys, agency meetings and more to assist this low-income community.

Case Study #12: Dearborn, MO Experiences Growth Needs

The town of Dearborn a quiet little community located in Northwest, Missouri. The community currently has 204 homes and a population of 529. While Northwest, Missouri is an agricultural area, Dearborn is facing the possibility of becoming larger, due to its location between two major cities, Kansas City and St. Joseph. Urban sprawl could have a huge impact on this community in the future. The majority of residents have been born and raised in the area and many commute to Kansas City for employment. The community is situated only two miles off of a major highway, which could lure businesses or other economic opportunities to this small town. The residents are concerned about the cost of fees for services and changes to their overall quality of life. Dearborn is in Platte County and currently receives its water from the local reservoir. The water system is aging and outdated and quality of water is poor. Dearborn will not be able to meet the upcoming regulations for surface water

systems. The community wants to be proactive and have a water system that will provide water service at a reasonable cost. They have agreements for connection to the Kansas City water system, but lack the funding to pay for the connection.

In June 2002, the Missouri Department of Natural Resources (DNR) contacted the Midwest RCAP to assist the community with determining if there are feasible funding options for water system improvements. Midwest RCAP is assisting the mayor and council with addressing feasibility issues, initial application procedures, and negotiations with Kansas City officials regarding the connection contract. If it is feasible to connect to the Kansas City system, Midwest RCAP will work with the community and funding agencies to help bring the project to completion.

This case demonstrates the role of TA provider in helping the community in planning and negotiations with larger entities: in this case the DNR and the city of Kansas City.

Case Study #13: Castleton, Massachusetts

Castleton has one existing water system, which serves the central village area including Castleton State College. Because this district only serves a portion of the total town, the Fire District is named Castleton Fire District # 1. A nearby region of the town has serious water quality and quantity issues. These residents decided to form another district, Castleton Fire

District # 3. There is a District # 2 which is not a water system and is not adjacent.

District #3 has successfully built a water system to serve its community and has connected to District # 1, utilizing the very high quality source of water, which District # 1 enjoys. District # 1's water supply in fact has the permitted capacity to serve many more residents. In another part of the town, near Lake Bomoseen, also nearby, Northeast RCAP is assisting residents to form what will probably be Castleton Fire District # 4. These residents, like those of district # 3 have quality and quantity issues and are very interested in having good water. Creating these new systems will rectify many water quality and quantity problems in both households and businesses.

Northeast RCAP is providing assistance to the future District #4 so that they educate their residents to support the formation of the new district (Castleton Fire District # 4) and build a new system, as District # 3 has done. In District # 3, billing and hookup issues continue to require attention. Northeast RCAP is providing guidance for creating a rate structure that will be acceptable to the residents and hopefully based upon their new meters. Northeast RCAP is also assisting the greater Town with planning and storm water discharge issues. This is very important to more fully protect the very valuable source wells used for all these systems.

Fortunately the community recognizes the value of their high quality and quantity source.

Northeast RCAP is working on the possible creation of an inter-municipal agreement (actually called an inter-local agreement in this case) between Fire District # 1 and Fire District # 3. It will be important over time to maintain a good relationship among the Fire Districts and the Town. Northeast RCAP staff is attempting to create a capacity allocation ordinance with that in mind.

The Castleton projects are truly taking on a regional identity. The community is very much interested in protecting its water resources while making them available to residents at an affordable cost. Because this diverse community serves year-round residents, businesses, commercial, agricultural, and lakeside residents and is located where ground water resources are not plentiful, Northeast RCAP anticipates work in this area beyond the creation of the District #4 and the water system.

This case study demonstrates the role of the TA provider in helping facilitate planning and intra-community agreements to expand water service.

Case Study #14: Farmington, Maine

The Farmington Hill Apartment Line Connection project involves three apartment complexes with individual wells, all of which have water quantity and water quality problems. Ninety-four percent of the residents qualify as very low income. The Farmington Water

District is willing to extend their line to hook up the apartments on a master meter. The three apartments also need to be interconnected to receive the water. RCAP assisted this community by:

- Conducting needs assessment
- Determining eligibility for loan(s)
- Preparing application for loan(s)
- Providing help with procurement of engineering / professional services (RFQ, RFP)
- Facilitating communication between community/system and primacy agency or other entities and utilities
- Conducting community informational meetings
- Preparing public information notices

RCAP has organized discussion and cooperation between the apartments, Village (water) Corporation, the town, and Maine Rural Water. RCAP assisted the groups by writing the CDBG planning grant application, and presenting it to the selectmen. The grant was submitted on March 7, and funding of \$10,000 was awarded April 9, 2003. RCAP will continue assistance with the RFQ process to select an engineering firm. Also, RCAP will ensure cooperation between entities so that the report can be used for infrastructure grant applications this coming September.

This case study demonstrates the role of the TA provider in not only helping communities to

develop a solution to a recognized problem, in this case through linking an apartment to existing water systems. The TA provider also plays a key role in helping the community to find funding to accomplish the project once the solution was identified and agreed to.

Case Study #14: Food Tree Project, WI

The Food Tree Project area is located in Wood County's Town of Rudolph. Food Tree is a convenience store at the edge of a residential area with 50 homes. The homes are on septic systems and each has its own drinking water well. Over half of the residents are estimated to be low-moderate income with the median household income at less than \$20,000/year.

Food Tree was a groundwater remediation site during the mid- 1990's; the WDNR closed the remediation project when the site appeared to be cleaned up. In 2001, however, residential wells became contaminated with benzene and MTBE, a component of unleaded gasoline. In January 2003, WDNR reported that bulk water being delivered to 3 homes (wells are capped off), and 4 are receiving bottled water for drinking. The plume appears to be moving towards additional homes. The residents have filed a lawsuit against the Food Tree Owner. WDNR has requested RCAP assistance to locate a solution to providing bulk water.

Through WDNR contacts, RCAP had been tracking the progress of the well contamination (gasoline) for two years. There are

approximately 20 homes in the immediate threat area, and there is a pending lawsuit between some homeowners (plaintiff) and Food Tree (defendant). RCAP was asked by the plaintiff's attorney and defendant's attorney to assist in looking for a permanent solution to the problem. During the second quarter RCAP talked with the plaintiff's and defendant's attorneys, and their engineering firms to determine the basis of the lawsuit, and discuss potential alternatives. RCAP also spoke with WDNR's water supply engineer to discuss the three main alternatives: connection to the nearby City of Wisconsin Rapids, drilling off-site wells for the entire 50-home area, or drilling off-site wells for the potentially-impacted homes. All solutions will be very costly.

An On-Site meeting was conducted by RCAP on 1/15/03 to meet with the Town of Rudolph's Chairperson and one Supervisor to discuss the history of the Food Tree area, and income levels. Based on requests with the Town Chair, Supervisor, and two Attorneys, RCAP conducted an income survey of the 16 residences in the pathway of the gasoline plume (Greenfield Avenue). RCAP determined the MHI to be \$29,500. RCAP sent the results to the law firms, with a letter explaining that the income survey only reflects incomes on Greenfield Avenue. Any solution covering a broader area would need to survey more residences.

The Judge is expected to make a ruling on the lawsuit in June--one of the attorneys anticipates that it will require that the defendant pay for engineering services to consider the alternatives. RCAP will be re-contacted after the judgment is made. This shows the role of the TA provider in providing key assessments to resolve community conflict regarding the water supply.

The logo for RCAP (Rural Community Assistance Partnership) features the acronym 'RCAP' in a large, bold, blue serif font. The letters are set against a light blue, stylized background that resembles a map of the United States. Below the acronym, the full name 'Rural Community Assistance Partnership' is written in a smaller, blue, sans-serif font. At the bottom of the logo, the tagline 'Improving the Quality of Life in Rural America' is written in a blue, italicized serif font.

RCAP
Rural Community Assistance Partnership
Improving the Quality of Life in Rural America