ENVIRONMENTAL HEALTH PROJECT

Activity Report 105

Operations and Maintenance Strategy for Community-Managed Rural Water Supply Systems in the Dominican Republic

Technical Assistance to Acueductos Rurales, Instituto Nacional de Aguas Potables y Alcantarillados, Santo Domingo, September 16–October 4, 2001

by

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Abbreviations

ASOCAR	community rural water supply association *(asociación comunitaria de acueductos rurales)*
EHP	Environmental Health Project
ENACAL-GAR	Nicaraguan Water Supply and Sewage Company—Rural Water Supply Management (Empresa Nicaragüense de Agua Potable y Alcantarillados—Gerencia de Acueductos Rurales)
INAPA	National Water Supply and Sewage Institute (Instituto Nacional de Aguas Potables y Alcantarillados)
INAPA/AR	Rural Water Supply (Acueductos Rurales), INAPA
INDRI	Dominican Institute of Water Resources (Instituto Dominicano de Recursos Hidráulicos)
MUDE	Dominican Women in Development, Inc. (Mujeres en Desarrollo Dominicana, Inc.)
NGO	nongovernmental organization
O&M	operations and maintenance
PROCOMUNIDAD	Fund for the Promotion of Community Initiatives (Fondo de Promoción a las Iniciativas Comunitarias)
RWSS	rural water supply and sanitation
SESPAS	State Secretariat of Public Health and Social Welfare (Secretaria de Estado de Salud Publica y Asistencia Social)
UNICEF	UN Children's Fund
USAID	U.S. Agency for International Development

Executive Summary

This report is the product of work carried out as part of technical assistance provided by the Environmental Health Project (EHP) to Acueductos Rurales (Rural Water Supply, or AR), a department of the Dominican Republic's Instituto Nacional de Aguas Potables y Alcantarillados (National Water Supply and Sewage Institute, or INAPA). The U.S. Agency for International Development (USAID) mission to the Dominican Republic provides financing for this technical assistance. The activity is designed to assist INAPA/AR in determining the most appropriate follow-up and monitoring strategy for the country in order to provide rural water supply and sanitation systems that are operated and maintained by communities with support and guidance that are beyond their capacities and that ensure the long-term sustainability of those systems. In addition, this strategy should be viable under INAPA/AR's current operational and resource constraints.

Key stakeholders participated in the analysis of possible solutions and in identifying priority issues to be addressed relating to institutional support for follow-up and monitoring. The analysis started with a review of recent experiences in the Dominican Republic and elsewhere in Latin America and the Caribbean. The final strategy that was developed for the Dominican context took account of four fundamental principles that were identified during the course of this analysis:

1. Community members are primarily responsible for day-to-day operations and maintenance (O&M) activities.

2. Communities must be strengthened and empowered to meet their responsibilities through the formation and development of a recognized structure.

3. In addition to an increased role for the community, there is also a need for some form of continuous, external institutional support in the long term to maintain project benefits over time.

4. INAPA/AR should play a role that goes beyond direct intervention to encompass monitoring of systems, coordination and facilitation of the activities of other key organizations, and provision of reliable information and advice for communities.

Development of this O&M strategy involved the consideration of key characteristics of the rural water supply and sanitation sector, including institutional trends and constraints. One of the main conclusions resulting from this process was that although it may be desirable to have a nationwide strategy, existing resource constraints and INAPA/AR's lack of a national presence make it virtually impossible to consider any kind of countrywide O&M strategy for the foreseeable future. In addition, a process of legal and institutional reform is under way in the Dominican Republic, which makes it difficult to anticipate the future organization of the rural sector. Therefore the strategy developed under this technical assistance activity has three main components:

1. A limited O&M pilot project to be established in two locations, covering about 30 systems, to be carried out in the next 12 months, as part of a lesson-learning approach

2. A series of key institutional activities designed to address some of the existing structural weaknesses relating to O&M

3. The design and establishment of a nationwide information system as a basis for monitoring RWS projects

The pilot project is designed to provide INAPA/AR with field experience in managing a systematic approach to supporting water supply systems, as well as in formalizing many of the procedures, monitoring systems, and training materials that will be required in the longer term. The institutional activities relating to O&M include the dissemination of strategies and norms, the clarification of certain key legal issues, the promotion of improved interinstitutional coordination at the central and the local levels, and the promotion of a more independent or distinctive public image for INAPA/AR. All of these activities, together with the start-up of a comprehensive information system, are designed to improve the institutional capacity of INAPA/AR to carry forward a comprehensive program of support to rural communities in the longer term.

1 Introduction

This document is the result of an advisory mission of the U.S. Agency for International Development (USAID) Environmental Health Project (EHP) undertaken to the Dominican Republic by a consultant and specialist in post-project institutional support mechanisms and operations and maintenance (O&M) for rural water supply systems. In the context of this assignment, the definition of O&M includes not only the technical tasks associated with maintaining a water supply system, but also the institutional framework necessary to support sustainable services after the construction of the system.

The report is presented in four chapters. The first gives a brief orientation to this activity within the broader framework of support being provided by EHP to Acueductos Rurales (Rural Water Supply, or AR), a department of the Instituto Nacional de Aguas Potables y Alcantarillados (National Water Supply and Sewage Institute, or INAPA). Chapter 2 presents an analysis of the rural sector and the institutional context of INAPA/AR's operations. This analysis includes the activities and interests of other stakeholders and their positions with regard to long-term O&M support. Chapter 3 presents the main body of the report, which includes the strategic framework for O&M and management models as well as a series of parallel activities that are important to the successful adoption of this model in the medium term. This report has been designed as a working document. As INAPA/AR and USAID take the O&M strategy forward, they can refer to the steps, activities, and responsibilities of key actors that are contained in the report. Chapter 4 presents a work plan for the implementation and monitoring of the strategy, and it also can be used as planning tool in the near term.

1.1. Technical Assistance to Acueductos Rurales

The technical assistance to INAPA/AR that is described in this report is one component of the support that EHP is making available to INAPA. The USAID mission to the Dominican Republic is providing financing for this technical assistance. This is designed to complement parallel funding for direct project implementation focusing on participatory approaches under the management of a number of nongovernmental organizations (NGOs). Both of these interventions should be finalized by the end of 2001.

The framework of technical assistance provided to INAPA/AR and the various inputs over the past three years are well documented in other EHP reports. The technical assistance package has three main objectives:

1. Develop and strengthen INAPA's institutional capability to implement its strategy of decentralizing rural water supply and sanitation (RWSS)

2. Incorporate lessons learned in the application of the total community participation model into INAPA's work practice and contracting

3. Help INAPA find the most appropriate follow-up and monitoring strategy for the O&M and sustainability of RWSS systems

The development of the community participation methodology has involved work on about eight new systems constructed by NGOs in a pilot project in the Hato Mayor region of the DR. The common theme of community participation and management has resulted in strong linkages between the implementation of projects and the concept of community management for long-term O&M (objectives 2 and 3 above).

1.2. Terms of Reference for Developing an Operations and Maintenance Strategy

The specific objective relating to O&M is to assist INAPA/AR in determining the most appropriate follow-up and monitoring strategy for the Dominican Republic in order to provide RWSS systems that are operated and maintained by communities with support and guidance that are beyond the communities' capacities and that ensure the long-term sustainability of those systems.

Experience in similar contexts in Central America indicates that although communities can take on the primary responsibilities for day-to-day O&M of systems, they normally require additional assistance in order to maintain the level of benefits achieved by the end of project implementation. Even when the level of training and community organization is very high during project implementation (as is the case in many RWSS projects in Nicaragua and El Salvador, for example), some form of external, institutional support and guidance is required over the long term. This is especially the case for smaller rural communities, which may lack the

Overall Purpose of EHP Technical Assistance to INAPA/AR

The EHP Scope of Work defines the purpose of the technical assistance to INAPA/AR as follows: "To continue institutional development assistance so that INAPA has the staff capacity within the INAPA/AR unit to carry out its desired new role as a normative body in collaboration with NGOs and other contracted entities committed to create sustainable water user associations using the total community participation model."

economies of scale and resource bases of larger communities. To reach this objective, EHP asked the consultant to carry out the following tasks:

- Collect lessons learned within local conditions in the Dominican Republic to determine the extent to which successful national-level support of O&M models exists and the acceptability of options used in similar countries

- Review and discuss EHP international experiences in O&M for INAPA/AR to be used in the replication of the community participation approach in the Dominican Republic

- Assist INAPA/AR in developing an O&M strategy, sustainability framework and policy that is realistic, given the department's financial realities

EHP asked the consultant to produce a report based on these activities, describing the best options for O&M and a strategy for INAPA/AR to use in its new role in ensuring sustainable services for communities in the long term.

1.3. Approach to the Development of an Operations and Maintenance Strategy

Collaborating closely with the EHP local consultant, the external consultant carried out extensive discussions with key stakeholders and visited several different community systems—both those implemented under the conventional approach and those implemented under the recently introduced community participation approach. The external consultant focused on INAPA/AR and USAID, but he also spoke with key institutions and organizations active in the sector, including the following:

- Beneficiary households and members of water associations

- NGO management and field staff

- Bilateral program staff

- Pan American Health Organization staff

- Community health workers

The Annex lists the external consultant's interviews and activities.

The consultants drafted a model for O&M and presented it for comment, modification, and validation at a working meeting with the main stakeholders in Santo Domingo at the end of the second week of the assignment. Participants in this meeting included a zonal representative and other key personnel from INAPA/AR, NGO staff involved in the Hato Mayor pilot project, the USAID project officer, and representatives from ENTRENA, that have been facilitating the Hato Mayor project.

2 Background and Context

2.1. Institutional Analysis of Acueductos Rurales and Its Constraints

AR is a department within INAPA, which is part of the State Secretariat for Public Health and Social Assistance (SESPAS) but which in fact operates as a separate entity and has the legally mandated authority for domestic and industrial water supply and wastewater treatment in the Dominican Republic. INAPA has a national-level jurisdiction, except for the two largest urban areas (Santo Domingo and Santiago) and a number of provincial towns, in which semiprivatized operating corporations have been established for service provision.

INAPA/AR has a largely centralized structure, with a majority of staff based in the main INAPA office in Santo Domingo. The department has a total staff of approximately 25, including support and administrative personnel, who are now divided into three main areas: (1) Technica, (2) Social Promotion and Community Work, and (3) Administration. All three areas work under the close supervision of the director. Weekly and monthly planning meetings are employed to arrange INAPA/AR field staff travel from Santo Domingo out into the provinces. However, the availability of sufficient transport is a constant problem and is a limiting factor for almost all field activities.

INAPA has divided the Dominican Republic into eight administrative zones. On the basis of previous technical assistance from EHP, INAPA/AR has made efforts to establish a zonal presence to improve its ability to respond to the needs of communities. To date, the department has established three zonal representatives, but the process has been delayed by the lack of resources and support necessary to maintain personnel in rural zones. None of the three zonal representatives has dedicated means of transport or offices, which also presents operational difficulties at the local level. Under its current mandate, INAPA/AR is responsible for the implementation of new systems, for the transfer of existing systems to community management, and for the provision of follow-up support. In addition, the department collaborates with many other agencies and bilateral programs in the development, design, and execution of systems (see Section 2.4). However, lack of resources constrains, INAPA/AR's involvement in some of these projects.

2.1.1. Coverage Levels and New Systems

The coverage level for rural water supply in the Dominican Republic stands at just under 50%, according to INAPA/AR officials. There are approximately 1,000 rural systems built by INAPA to date, including both larger, periurban systems, involving

multiple communities, and smaller, truly rural systems. The official policy states that INAPA/AR is responsible for systems in rural communities, defined as those with 2,000 inhabitants or less. INAPA/AR collaborates, to some degree, with the Operations department of INAPA, which has a nationwide presence through provincial and municipal offices.

INAPA reports that in addition to the work carried out by the state, approximately 1,500 systems have been constructed by NGO programs over the past 10 years or so. One of the key problems in developing a coherent strategy for O&M is that no consolidated database exists for the country that allows for an accurate and updated overview of the current situation.

The systems covered by INAPA/AR and most of the NGOs in the Dominican Republic are primarily rural, but they do include some larger systems that can serve up to 6,000 individuals, with the larger schemes serving multiple communities from the same water source. The technology used ranges from simple gravity-fed systems with individual household taps (or public tap stands where there is insufficient source water production) to more technically complicated piped systems with electromechanical pumps powered from the national electricity grid. In more remote areas, wind- or solar-powered systems are installed, but only in smaller communities; there are a few diesel-powered pump systems. The installation of hand-pumps is a solution used occasionally by INAPA/AR in smaller communities where there are no other feasible options, but they are not always viewed favorably by users who have fairly high expectations of household level service. Hand-pump systems are more common in NGO built systems.

The sector policy of decentralization (transfer of systems from the state to community management), which was established in 1997, has fundamental implications for any future O&M strategy, largely because this process will progressively increase the number of systems falling under the direct responsibility of INAPA/AR. To date, very few of the systems held by INAPA have been officially transferred to communities; the reported number varies between 20 to 25, with only five of these having legally established community rural water supply associations (ASOCARs). The director of INAPA/AR estimates that over the next several years, some 300 systems will be transferred to communities under the auspices of the department, although there are some doubts about whether or not certain communities are in agreement with such transfers.

In terms of new investments, it appears that, on average, there will be between 110 and 120 new rural water supply systems constructed per year by a combination of players, including INAPA/AR, NGOs, bilateral programs, and the Dominican government's social investment program, the Fund for the Promotion of Community Initiatives (PROCOMUNIDAD). The majority of these new projects will use a community participation management approach, which should, to a greater or lesser extent, result in the establishment of some form of capable and motivated organization within the communities for future O&M of the systems.

INAPA/AR is placing an increasing emphasis on integrated approaches to the provision of water supply, sanitation, and hygiene education for the rural sector, and this is beginning to be translated into programming, although many projects still concentrate only on the provision of potable water. In rural communities that have more periurban characteristics (higher population densities, paved streets, sidewalks, household-level water connections, high levels of consumption, and high levels of wastewater production), the maintenance of sanitation and wastewater disposal are normally the responsibility of INAPA/Operations.

2.1.2. Existing Operations and Maintenance Efforts

In terms of follow-up and O&M, at present there are a large number of systems earmarked for transfer to INAPA/AR. However, in practice, because of limited resources and lack of presence at the local level, INAPA/AR currently only provides backup assistance to around 20 communities in the provinces of Azua, Barahona, Elías Piña, Peravia, San Cristóbal, and San Juan.

INAPA/AR has established three zonal representatives, and they are broadly carrying out the tasks as defined in the recently completed policy document (Minier and Edwards 2001). Discussions with two of these representatives indicated that they are performing a largely facilitating role with respect to post-project support and O&M and that they serve as points of reference for communities that encounter problems. With their direct access to the central level and their local presence, the zonal representatives are able to act as links between the communities and other organizations—governmental and nongovernmental—as well as the private sector. Both of the representatives interviewed have very good working relations with the local INAPA/Operations staff. They draw upon these relationships in responding to specific (technical) problems, but it appears that they are based on personal contacts rather than any formalized agreements between the two departments. The INAPA/AR zonal representatives are able to intervene directly to assist with relatively simple technical problems as well as to resolve organizational problems or conflicts within communities.

The zonal representatives lack basic resources such as office space, computing and communications equipment to facilitate their work, and many of their successes can be attributed to personalities, innovation, and high levels of commitment. It also is apparent that there has not been much progress to date in formalizing the work of these representatives, in establishing regular patterns of assistance to communities, and in developing any kind of meaningful monitoring for systems that have been transferred to the communities. Lastly, it is apparent that the current approach to O&M is lacking in such areas as household-level sanitation, environmental sanitation, or maintaining health benefits through improved hygiene practices.

A post-construction procedures manual (Karp 2000) that was developed under a previous EHP technical assistance activity for use by NGOs was not in evidence and was not cited by any of the INAPA/AR staff, either at the central level or in the provinces. It is clear that current resource constraints, both at central level and in the

zones where INAPA/AR has a presence, are such that the department, even with continuing technical assistance, is not in a position to mount a national-level O&M strategy within the foreseeable future.

2.2. Community Participation Approach and Decentralization of Systems

Within INAPA/AR there is now a general acceptance of the integrated, community participation approach to implementation of RWSS projects. This change in philosophy is largely due to recognition of the shortcomings of the conventional "engineering" approach, but it also has been influenced by the efforts of USAID and technical assistance from EHP over the past several years. As outlined in Chapter 1, USAID has been funding a pilot project in Hato Mayor Province that has been instrumental in developing a model approach to community participation for INAPA/AR, which has adopted this "total community participation" approach for work in the rural sub-sector. The approach is designed to maximize the role and responsibilities assumed by communities in the planning, design, construction, and management of their water supply systems.

In addition to exposing INAPA/AR staff to participatory ways of working at an operational level, the pilot project is developing INAPA/AR's new role in the sector, with INAPA/AR taking on the role of regulator (for example, of technical design and construction standards) and facilitator, and NGOs are acting as the main implementing agencies.

Despite this conceptual shift, it is apparent that INAPA/AR is not in a position to implement the approach fully, or to manage or monitor other implementing agencies in doing the same type of work. INAPA/AR's Area of Social Promotion and Community Work is still in the process of defining important methodological tools and developing the procedures and materials that are fundamental to the application of a participatory approach. Despite these limitations, this fundamental shift in approach has positive implications for any O&M strategy in the long term in that it is designed to strengthen community structures and transfer knowledge and management skills during project implementation.

As mentioned above, the concept of decentralization, entailing the transfer of management responsibility for RWSS systems from INAPA to community organizations, is now widely accepted and is advertised politically as the way forward. At present, INAPA directly manages approximately 1,000 water supply and sanitation systems, of which only about 15% actually generate a viable income for the institution. Most of the smaller periurban and rural systems represent a net drain on state resources, incurring costs (principally the payment of maintenance staff and materials) without generating sufficient income.

Once management is transferred from INAPA to the community, the responsibility for providing long-term follow-up and support to the community also passes from

INAPA/Operations to INAPA/AR. The transfer process is designed to include a rehabilitation of the physical infrastructure as necessary and a full program of promotion and training with the community in order to establish a formal ASOCAR. The director of INAPA/AR estimates that the cost of carrying out such a transfer is approximately $1,000 per system, not including funds for physical rehabilitation. Although there is a strong desire to move forward with the transfer of large numbers of systems (up to approximately 300 over the next few years) and funds are being made available to start this process, it is uncertain as to whether adequate resources will be made available in the long-term to cover the increased case-load for O&M support on the part of INAPA/AR.

It is apparent that when viewed together, these two trends (INAPA/AR's adoption of a participatory approach to RWSS projects and the state's decentralization of system management), imply a much more prominent role for rural communities in the administration, management, and O&M of their water supply systems in the future.

2.3. Information Management and Monitoring

From an informal review of the systems available within INAPA/AR and other sections of INAPA, it is apparent that no global, centralized system of information exists as a database for the rural sector. Certain information does exist within the institution, including some fixed data and technical designs, but it is dispersed across different departments, and much of it either is not computerized or is recorded in a number of incompatible formats. Discussions with INAPA/AR staff revealed that after rural systems are constructed, no monitoring data are collected, recorded, or updated with respect to their condition, either from a technical or from an organizational perspective. At present, INAPA/AR does not have the computing equipment to handle data sets of any size; it depends on two computers, one of which is quite old and has a very limited hard drive. Most information about systems is recorded as reports and memos, using Microsoft Word. INAPA/AR also uses basic spreadsheets in Microsoft Excel, mainly for the presentation of budgets. The operating system is Microsoft Windows 95.

INAPA/AR also appears to lack data about systems constructed by the various donors and development agencies working in the Dominican Republic. The management of INAPA/AR does have some information about these systems, mainly derived from planning documents and agreements signed with donor agencies, but it is not consolidated or recorded in any comprehensive way. Most of the implementing agencies (including national and international NGOs, the Dominican government's social development program for rural and periurban areas [PROCOMUNIDAD], and bilateral programs) maintain internal databases, but they are small in scale, refer to localized interventions, and are held in isolation. To date, INAPA/AR has not been able to consolidate this information by demanding data from such agencies.

2.4. Other Implementing Agencies in the Rural Water Supply and Sanitation Sector

Staff from INAPA/AR estimate that there are more than 20 separate organizations, of various capacities, implementing RWSS in the Dominican Republic. The consultant interviewed a cross section of implementing agencies (eight in all), including national and international NGOs, PROCOMUNIDAD, and bilateral programs, such as Cooperación Española, the U.S. Peace Corps, and the Dominican Red Cross. All of these agencies have reasonably well-defined community approaches, and all carry out some social promotion and training activities during the implementation of RWSS projects, including components relating to post-project O&M. The concept of an integrated, community-based approach to RWSS projects has been well established within the NGO community in the Dominican Republic for quite some time. However, there appears to be a lack of consensus among many NGOs about the level of ongoing, post-construction support required to ensure that project benefits are maintained over the long term.

In all cases, the implementing agencies leave communities with structures responsible for managing and administering water supply and sanitation. Some of the agencies create completely new structures within the communities, whereas others build on existing community committees (PROCOMUNIDAD) or rely on their own existing networks (women's committees in the case of the national development organization Dominican Women in Development, Inc. [MUDE], and church networks in the case of some of the religious NGOs). In terms of the provision of post-project support to communities, most agencies indicate that they carry out follow-up activities, or they intend to do so, on a case-by-case basis. However, closer examination reveals that the level of follow-up is quite variable and extremely localized. Few, if any, of these agencies carry out systematic long-term monitoring of projects or of their impacts on the beneficiary communities. A minority of agencies openly admit that they do not have the resources or the funding stability to provide much in the way of backup to RWSS projects, and they consider that their work in establishing community committees will be enough to see the projects through in the future. There also are significant differences in opinion among NGOs about establishing linkages with INAPA/AR in order to ensure long-term follow-up for newly constructed systems. Some agencies actively encourage such institutional relations, whereas others still operate in almost total isolation from the government and view its involvement as a hindrance to project implementation.

In conclusion, there is wide variation among implementing agencies in terms of community capacity building and O&M strategies. It is unlikely that many organizations are in a position to provide systematic post-project follow-up without a reliable, long-term funding source dedicated to such activities. The majority of agencies try to prepare communities to manage and administer their own systems during implementation, but they do not share common approaches and standards in terms of training and institutional strengthening within the communities.

2.4.1. Municipal Government

The potential for a municipal government to play an active role in post-project support to community-managed RWSS is limited in the context of the Dominican Republic. Municipal governments have long been politically marginalized and do not have a favorable legal structure for exercise of authority or for creating a consistent revenue stream. As part of a comprehensive decentralization process, the previous administration initiated reforms to strengthen municipalities and reduce their dependence on a politicized system of revenue allocation. A significant milestone was achieved in 1997 with passage of a law ensuring municipal governments a fixed 4% of the national budget.

The current administration has continued the decentralization and reform process, including raising the municipal allocation to 5%, but legislation to enlarge the range of competencies of municipal governments and to increase management capacity at local levels has been bogged down in the Dominican Senate. At present, a disproportionate amount of the 5% budget allocation is spent on staff costs rather than capital investments. Management of municipal affairs remains in the hands of second-tier political leaders of the major parties instead of trained professional managers, and the legal authority for service provision is still ambiguous. In summary, municipal governments still have a long way to go before being in a position to take on delivery of additional local services, such as long-term support for community-managed rural water supply systems.

2.5. Legal and Institutional Reform Process

The water sector in the Dominican Republic is undergoing a major process of reform that will have far-reaching legal and institutional consequences in terms of water resource management, operation and administration of water supply systems, and regulation. At present the government is discussing a number of proposals within the framework of a project sponsored by the Inter-American Development Bank; the details of this process are already well documented (Abreu 1999).

This reform process presents ongoing uncertainty for the rural sector and, more specifically, for INAPA/AR in terms of how the state structure will be organized in the future. The reform process itself is clearly focused on the establishment of private-sector participation in potentially profitable urban markets. The Inter-American Development Bank is making available considerable financing, which is conditional upon passage of the reform package, whereby concessions will be established in order to reduce the central government's burden for running and maintaining large water supply systems. However, in common with similar reform processes in other countries in the region, there is a lack of detail and clarity about the situation in the rural sector.

Discussions with the legal adviser to the executive director of INAPA revealed that senior management shares these concerns about the future structure of the institution. It is not yet certain which part of the existing overall INAPA structure will be left

responsible for the rural sector. However, the current understanding appears to be that the state will retain the mandate for O&M and long-term support to rural communities. Whether this turns out to be the case or not, the continuing uncertainty caused by the reform process does makes it difficult to develop a long-term O&M strategy.

3 Acueductos Rurales Operations and Maintenance Strategy

3.1. Overview, Concepts, and Key Components

The EHP consultant collaborated closely with key staff from INAPA/AR in identifying possible solutions and in developing a proposed O&M strategy. He presented the conceptual basis and the key components of this strategy to a working group, which reviewed the draft, developed the ideas further, and set priorities for operationalizing the strategy. In developing the O&M strategy, the consultant took into consideration many of the factors and issues as presented in Chapter 2. Among the key considerations in this regard are the existing resource constraints and the lack of national presence, which make it virtually impossible for INAPA/AR to consider any kind of countrywide O&M strategy for the foreseeable future.

In light of these constraints, this O&M strategy is designed for the short to medium term and seeks to address some critical areas in preparation for a broader application in the future. Future expansion of O&M services beyond a limited pilot project will be conditional upon three factors:

1. Improvement in the situation within INAPA/AR in terms of logistical resources, transport facilities, and computing hardware

2. Further progress in the decentralization, or regionalization, of INAPA/AR to zonal offices

3. Clarification and finalization of the ongoing sector reform process

3.1.1. Conceptual Basis for the Operations and Maintenance Strategy

Underpinning this O&M strategy are four important principles upon which there is unanimous agreement among the main stakeholders currently engaged in the rural sector:

1. The community itself has the primary responsibility for operating and administering its water supply system, including the maintenance of the physical system, to ensure financial viability for recurrent costs and to maintain health benefits.

2. To be able to assume this responsibility, the community must be strengthened through the formation of a dedicated structure (ASOCARs) and must be

empowered to perform key tasks through adequate and appropriate training and knowledge transfer.

3. Even when a rural community is well trained and organized to operate and administer its systems, it still needs some form of external support and guidance over the long term; this is especially the case for smaller rural communities, which may lack the economies of scale and resource base of larger ones.

4. The future role of INAPA/AR for long-term support to a rural community is based on a number of important functions, which include active monitoring of system performance, coordination and facilitation of linkages between the community and key resource entities, and, where appropriate, direct interventions to resolve specific problems that the community itself cannot manage alone.

3.1.2. Overview of the Operations and Maintenance Strategy for Acueductos Rurales

It may be desirable to think in terms of a nationwide, comprehensive O&M strategy, but this is simply not feasible given the current state of affairs. The INAPA/AR director and her senior staff have recognized and accepted this reality. In spite of these constraints, there is much that can still be done in terms of O&M. Furthermore, as mentioned in Section 2.1, there is already considerable experience within INAPA/AR and willingness to formalize procedures and clarify roles and responsibilities. Most importantly, the proposed O&M strategy appears to be realistic in terms of the additional personnel and (limited) resource requirements that it will entail. The strategy consists of the following three main components, each of which is addressed in greater detail in subsequent sections:

1. **O&M pilot project:** a project to be executed in a limited number of municipalities in two focal locations over the next 12 months, covering about 30 systems and designed to include the full range of components that would be expected in a nationwide approach

2. **Institutional issues:** a series of activities and interventions that relate to the capacity of INAPA/AR to address O&M tasks at the community level; these activities are to be addressed in parallel with the pilot project and include the dissemination of strategies and norms, the clarification of certain key legal issues, the promotion of improved interinstitutional coordination at the central and local levels, and the promotion of a more independent or distinctive public image for INAPA/AR

3. **Information management system:** the design and establishment of a relatively simple database, which will allow INAPA/AR to begin the process of consolidating information relating to system construction and maintenance, including projects implemented by other agencies active in the sector

This strategy for O&M is largely geared to community-managed water supply systems, and it does not include a specific focus on household-level sanitation services (almost always latrines in the rural areas), which are the responsibility of individual families. However, insofar as the continued use and condition of household latrines affects public health within rural communities, the O&M pilot project does include a monitoring component for sanitation.

3.2. Operations and Maintenance Pilot Project

Taking into consideration the limited resources and current uncertainties in the sector, the rationale behind the O&M pilot project is to build up experience within INAPA/AR with a manageable number of communities, but to include as many components of a full O&M system as possible. Given current constraints, this is one of the few viable options, and it is designed to achieve the following:

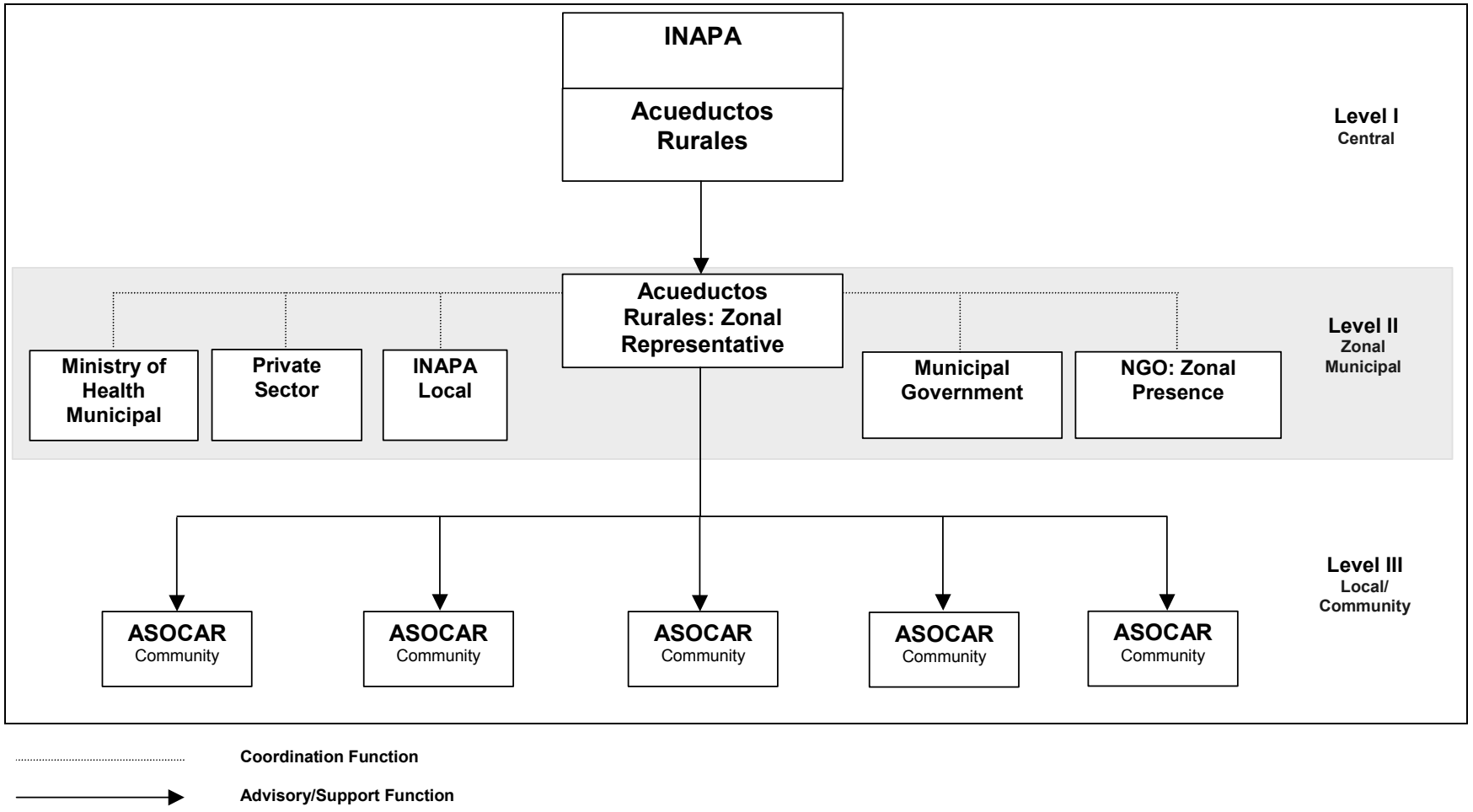
- Expose INAPA/AR management and staff to O&M issues generally and improve their understanding of the tasks and activities involved, through a process of learning by doing
- Formalize monitoring systems and schedules
- Formalize guidelines for community visits and activities, including technical assessments, sanitary inspections, audits of project accounts, and assessments of community management structures
- Develop a classification system to evaluate the status of projects
- Promote a greater focus on sanitation and health issues as integral components of an O&M system
- Ensure water quality monitoring in coordination with other agencies (most notably, SESPAS)
- Promote linkages with other agencies involved in O&M, including other state agencies, municipal government, the private sector, and NGOs operating at the local level
- Develop and finalize training materials and norms relating to O&M (possibly encapsulated in an O&M guideline document)

3.2.1. Management Model

The management model proposed for the pilot project is in keeping with the broader objective within INAPA/AR of decentralizing its presence to the provincial level, and it can be best described as a three-tier system (Roark, Hodgkin, and Wyatt 1993). Under this model, policy decisions, the establishment of norms, and strategic planning are all carried out at the central level. At the regional (or, in this case, zonal)

level, the same agency has a permanent presence and carries out a facilitating and monitoring function to ensure adequate follow-up to rural communities; it also carries out some direct O&M activities. The communities and ASOCARs form the third tier of the system, with direct responsibility for day-to-day O&M and system administration. Figure 1 presents this model in a schematic format.

Figure 1. Proposed Three-Tier Management Model for Pilot Project



3.2.2. Roles and Responsibilities

INAPA/AR's adoption of the O&M pilot project implies that some O&M-related roles and functions will become more formalized, or at least will be attributed to the various stakeholders operating at different levels. Many of these functions are already being carried out, but they will typically include those mentioned in the following boxes. More than one external institution or agency could perform some, if not many, of the same functions necessary to support the community. These are presented as generic examples and are not meant to be exhaustive lists:

Community Responsibilities

- Routine and preventative O&M, including chlorination
- Corrective O&M and system repairs
- Routine management tasks and organization of the community, including voting of new members of the board of directors *(junta directiva)* and decision making
- Continued health and behavior change motivation for individuals and households and organization of community activities
- Establishment of a tariff system, tariff collection, accounting, and annual reporting
- Regulation and control of new connections and system expansion
- Fund-raising events and buildup of a renovation fund
- Protection of the water source and watershed, as appropriate
- Environmental sanitation and solid waste management and drainage

INAPA/AR Zonal Responsibilities

- Regular monitoring visits and contacts with the community (frequency depending on condition of system)
- Advice to the ASOCAR, organizational support, and conflict resolution
- Assistance in calculating and establishing system tariffs and auditing of accounts
- Monitoring and information flow to the central level
- Technical advice and specialist services or provision of specialist tools
- Reliable and impartial advice on localizing spare parts or specialist services
- Acting as a network or link between the community and other institutions or agencies, especially municipal government, INAPA/Operations, SESPAS, and NGOs
- Development of coordination plans at the local level for support to communities
- Ongoing health motivation and interventions, at both the household and the community levels
- Facilitation of water quality testing (including feedback, where necessary, for corrective actions) in coordination with SESPAS
- Advice on technical and social aspects of system expansion
- Advice on regulation, standards, and legal issues
- Advice on fund-raising, leverage of funds, and procedures for loan applications

Responsibilities of Other Organizations at the Local Level

(Includes INAPA/Operations, the Ministry of Health, municipal government, NGOs, the private sector, and possibly others, depending on local context)

- Provision of spare parts and chlorine
- Provision of specialist tools
- Provision of specialist services for system repair or upgrading
- Provision of design services for system expansion
- Provision of legal advice and representation
- Water quality monitoring
- Ongoing health motivation and interventions, at both the household and the community levels
- Advice on fund-raising, leverage of funds, and procedures for loan applications
- Lobbying or channeling applications for funding for system expansion
- Provision of loans for system expansion

INAPA/AR Central-Level Responsibilities

- Establishment and dissemination of official policies relating to O&M
- Establishment and dissemination of norms and standards relating to O&M
- Management of a monitoring and information system, including corrective feedback to the local level
- Technical, logistical, and administrative support to INAPA/AR zonal staff
- Provision of specialist design services for system expansion
- Provision of specialist legal advice and representation
- Interinstitutional coordination at the central level with other agencies and line ministries as appropriate

3.2.3. Geographic Focus

The O&M pilot project is designed to be executed in two geographic zones and to cover approximately 30 systems (which may well imply a larger number of communities) in two to four municipalities in each zone. During the working meeting in Santo Domingo, zones 4 and 6 were identified for the pilot project:

1. **Zone 4 (Azua and San Juan Provinces),** where INAPA/AR already has an experienced representative, who will be able to contribute greatly to the process of formalizing procedures and coordination issues. In addition, Azua is one of the locations where the first batch of projects is scheduled to be transferred to community management under the decentralization process, early next year.

2. **Zone 6 (Hato Mayor and El Seibo Provinces),** where there is as yet no INAPA/AR zonal representative, but where the pilot project can build on the experience of the USAID-funded Hato Mayor project. In addition, El Seibo is a focus province for an upcoming four-year, multimillion-dollar program cofinanced by Cooperación Española, which has an institutional-strengthening component aimed at INAPA/AR.

INAPA/AR will determine the final selection of communities during the course of establishing the pilot project. However, there was clear agreement at the working meeting that in order to benefit from the learning experience, the O&M pilot project should aim to use the following criteria:

- Include all types of systems, regardless of technology choice or of whether they service single or multiple communities

- Select municipalities where all rural communities come under the responsibility of INAPA/AR, regardless of which organization originally constructed those systems (100% coverage)

3.2.4. Resource Requirements, Staffing, and Timescale

There are a number of existing monitoring and classification systems—most notably, from Bolivia, Honduras, and Nicaragua—that could be used as examples and modified to the Dominican context. Clearly, EHP can play an important role in providing access to these and other materials that would be useful as examples for the Dominican model (see Section 3.4.2).

Three members of the INAPA/AR staff could coordinate this O&M pilot project on a part-time basis: one based at the central level, one in zone 4, and one in zone 6. There is already an INAPA/AR representative in zones 2 and 4 (zone 2 is not part of the pilot area). Therefore there is an additional requirement for only one new deployment, to zone 6. Given the prospect of a major bilateral program in this geographic area, it is considered to be a realistic level of effort.

This O&M pilot project should last up to 12 months, by which time INAPA/AR management would have the relevant experience to review and evaluate the process, with a view to modifying the systems and procedures. If some or all of the constraints mentioned in Section 3.1 were to be addressed by this stage, INAPA/AR would be in a position to replicate this model in other zones. Trends in revenue allocation over the past several years indicate that these constraints will likely persist, but a practical strategy may be the demonstration of improved competence in O&M support for rural communities during the pilot period, thereby attracting further funding for this approach.

3.3. Institutional Issues Relating to Operations and Maintenance

The start-up of a specific O&M pilot project at the municipal level can be considered as a "learning by doing" exercise, but there are a number of strategic issues identified by the external consultant as being critical to the broader management of O&M within INAPA/AR. It is important that these be addressed in parallel with any operational pilot activity; they include (1) dissemination of the O&M strategy and related norms, (2) clarification of legal issues relating to O&M, (3) improvements in interinstitutional coordination, (4) follow-up to the sector reform process, and (5) promotion of a more distinct public image for INAPA/AR.

3.3.1. Dissemination of the Operations and Maintenance Strategy and Norms

Participants in the working meeting agreed that in order to establish the O&M pilot project and to engage with other potentially important stakeholders, INAPA/AR should make explicit efforts to publicize its new approach to O&M, including the presentation of norms and procedures (including technology selection, spare parts, and the formation of legally recognized community organizations). This process would also be important in firmly establishing INAPA/AR as the legally mandated agency for the rural sector within the community of international donors and NGOs.

It was further agreed that INAPA/AR should develop a plan to follow up with this process, at both the central and the local levels. This would entail preparing materials and arranging joint meetings in order to disseminate its approach; potential participants could include the following:

- **Central level:** NGO directors, monitoring and planning staff, and the head of RWSS programs; the heads of bilateral RWSS programs and other agencies, such as the Dominican Red Cross; water supply and sanitation program officers from UN agencies, such as the Pan American Health Organization and the UN Children's fund (UNICEF); PROCOMUNIDAD staff; representatives from SESPAS and the Dominican Institute of Water Resources (INDRI)

- **Zonal-provincial-municipal level:** NGO field supervisors, promoters, and technicians; bilateral program field staff; municipal government staff; local INAPA/Operations officials; SESPAS management staff

3.3.2. Clarification of Legal Issues Relating to Operations and Maintenance

Decentralization, involving transfer of management from the state to community management, is a real prospect for many rural systems that are currently maintained by INAPA/Operations staff. However, according to the current interpretation of the existing law and anticipated reform of the sector, this process does not transfer legal title to the physical infrastructure, but rather "grants" delegated authority *(administración delegada)* to run systems currently administered by INAPA/AR.

Under this arrangement, communities with delegated authority are empowered to administer and maintain their own systems as independent operators. This interpretation of the law is similar to the Costa Rican model, in which the legally mandated state agency for the rural sector retains the right to take back the administration of systems if they are found to be poorly operated and maintained. In practice, this rarely, if ever, transpires, largely because the state agency, Water Supply and Sewerage of Costa Rica (Acueductos y Alcantarillados de Costa Rica), does not have sufficient resources to administer such systems. Nonetheless, this situation has important implications in terms of which types of community-based organizations are able to receive such delegated authority to be able to administer and maintain their own water supply systems.

To prepare for these issues in the Dominican context, it would be provident for INAPA/AR to investigate the legal requirements for a community organization to receive such delegated authority. Is legal status *(personería jurídica)* a requirement for ASOCAR eligibility? If so, INAPA/AR should investigate the existing law (Law 520) governing the formation of ASOCARs and granting of legal status to determine whether the process can be accelerated and whether groups of small communities can form an umbrella, or federation, that relies on a single legal status. The INAPA legal adviser can provide support for these tasks.

Once these legal issues are clarified, it is important that INAPA/AR incorporate the information into its training and orientation work so that communities know exactly where they stand in relation to the ownership of their systems. INAPA/AR should transmit all of this information to NGOs operating in the country so that they can incorporate consistent messages and documentation into their own approaches to project implementation. The same information should also be supplied to donors in the sector so that they stipulate compliance as a condition of funding for NGOs and other implementing agencies.

3.3.3. Interinstitutional Coordination

Given that the zonal INAPA/AR representatives are expected to play a facilitating and coordinating role, as well as to make direct interventions to support communities,

INAPA/AR should explore the possibilities for improving the linkages with other agencies working in the rural sector. As with the dissemination of O&M norms, INAPA/AR can work to improve coordination at both the central and the local levels; in fact, given the hierarchical nature of most organizations, it would be necessary to start the process by meeting with key staff at the central level first.

Coordination could be useful with organizations such as SESPAS, INAPA/Operations (at the local level), NGOs with a field presence in the pilot project areas, and municipal governments. At present, the zonal representatives of INAPA/AR actively coordinate with these and similar organizations, but very often they do so with no formal agreements and on the basis of personal contacts. The advantages of a more formalized coordination in operational terms would include sharing of information and transport resources, the prioritization of needy communities, and making joint visits to reinforce health messages. It is also possible that if an NGO has a permanent presence in a particular geographic area, INAPA/AR could "subcontract" it to monitor systems and collect information on their current status. In the first instance, efforts to coordinate with agencies should be limited to the same geographic areas as the O&M pilot project. Progress in this initiative would be measurable by joint activities or signed memorandums of understanding between institutions.

3.3.4. Follow-up to the Sector Reform Process

As mentioned in Section 2.5, sector reform is ongoing and is entering a critical stage of negotiation under the auspices of a special commission on the environment and natural resources in the Dominican Senate. A new round of discussion of the preproject document should take place during a session timetabled for November 9 to 10, 2001. There are at least two competing and somewhat conflicting interpretations of the original project document as proposed with backing from the Inter-American Development Bank. It is not yet clear which way the commission will decide in making its final recommendations, but each option has different implications for how INAPA will be reformed as an institution and, by association, how this will affect the makeup and mandate of INAPA/AR.

Although INAPA/AR may not have enough political influence to have a direct bearing on this process of review and negotiation, it is imperative that the interests of the rural sector be properly addressed in the new law when it is finally approved. Therefore, the director of INAPA/AR should be proactive in engaging with senior management within INAPA as well as in using linkages with USAID to advocate on behalf of the interests of the rural sector and for clarification of the mandate and role of INAPA/AR in terms of long-term O&M support.

3.3.5. Promotion of a More Distinct Public Image for Acueductos Rurales

Many of the people interviewed by the consultant commented that when INAPA/AR is mentioned or when a vehicle from INAPA/AR arrives in a community, people automatically identify the department with the institute. This recognition is perfectly natural, because in fact INAPA/AR is very much integrated with its parent institution.

However, many people also perceive INAPA as a primarily urban and engineering-oriented institution that until recently has not shown much interest in, or capacity to work with, rural communities. Needless to say, some of the more vociferous comments of this nature were put forward by NGO staff. However, it was also clear that this view was held by some community members in rural areas. Perception will be a serious issue for INAPA/AR in taking forward a positive role in supporting communities through the proposed O&M strategy.

Participants in the working meeting discussed this issue, and they agreed that INAPA/AR should do more to present itself as an agency with a specific mandate and as one that is committed to meeting the needs of rural communities. With sector reform imminent, this is an opportune moment to promote INAPA/AR as the legally mandated agency for the rural sector and to disseminate this message within communities, municipal governments, NGOs, and the international donor community. Possible actions in this regard include the following:

- Production of promotional material (posters, flyers, handouts)
- Production of short radio jingles or messages
- Newspaper advertisements
- Creation of a simple World Wide Web site
- Design of a separate logo or use of the words "Acueductos Rurales" beneath the official INAPA logo
- Production of T-shirts and baseball hats with the INAPA/AR logo and simple O&M messages (for example: "¡El Agua Es La Vida: Cuide Su Sistema!" ["Water is Life: Take Care of Your System!"])

Some of these actions would require limited funding and an official green light from senior management within INAPA, whereas others could be done relatively cheaply.

3.4. National Information System for Rural Water Supply and Sanitation

To fulfill its mandate with regard to O&M support, it is imperative that INAPA/AR create a database covering the various systems that have been built by a range of agencies. Participants in the working meeting clearly identified this issue as a priority. Given the level of resources available to INAPA/AR at present, this database cannot be particularly sophisticated to start with, nor should it be. However, it should contain the basic fixed data about systems and communities and at least a minimal amount of variable data that would allow for a meaningful analysis of O&M-related problems.

By developing such a database, INAPA/AR would greatly improve its ability to understand the macro picture in terms of coverage levels, and it could start to

compare this information with data from other sources, including epidemiological surveillance results. This, in turn, would enable INAPA/AR to make better-informed decisions about resource allocation and, with time, would enable the department to coordinate the inputs of other players in the sector with far greater authority than it appears to enjoy at present.

3.4.1. Data Fields and Indicators

Participants in the working meeting agreed that the system should contain fixed data about systems (including community profile, executing agency, and construction date), which the heads of areas within INAPA/AR could decide upon. In addition, they agreed that variable, or updatable, information in four principal fields relating to O&M should be collected on a regular basis:

1. **Technical:** condition and functioning of physical infrastructure, including quality, quantity, and continuity of service

2. **Organizational:** functioning of the ASOCAR and level of community participation

3. **Administrative:** tariff collection, account balances, and levels of nonpayment

4. **Health:** incidence of diarrhea in children less than five years old, use of latrines, etc.

The EHP consultant stressed that in developing the details for evaluating these four areas, INAPA/AR should keep the monitoring process manageable by limiting the number and complexity of the indicators: no more than five direct or indirect indicators per area as a guideline. The evaluation of the health status of the community would rely, in part, on information made available by SESPAS, but the meeting participants concluded that this would be available by coordinating at the local level. The INAPA/AR staff were confident about their capacity to move forward with the identification of simple monitoring indicators.

3.4.2. Classification of Community Systems

Obviously, the raw data collected at the community level in the four categories mentioned above will require summarization and presentation in a form that is useful for analysis and for informing decisions about feedback and corrective interventions. It is also important to establish a relatively simple and objective system for evaluating the status of community water supply and sanitation systems so that INAPA/AR could train new zonal staff and so that an NGO with a strong presence in a particular area could use the system. The working meeting participants also agreed that INAPA/AR should develop a system of classification that would form the basis for recording the condition of water supply and sanitation systems at the global level (by municipality, province, or zone). Several such classification systems already exist in

Central America. Table 1 presents four classifications, or categories, ranging from A to D, and is adapted from the Honduran model (Trevett 2001).

Table 1. Example of a Classification System for Assessing Overall Water Supply and Sanitation System Status

Category	Description	Action
A	All technical components of the system are working well; the water supply is being chlorinated, and there is a continuous or regular service; the ASOCAR meets regularly and makes effective decisions; tariffs are adequate to cover costs and are collected regularly; efforts to motivate households in appropriate hygiene behavior, use of latrines, and handling of water are ongoing.	Motivate the ASOCAR and community members to continue the good work.
B	Technically, the system may or may not be functioning 100%; there are operational problems that can be resolved without major investment; the ASOCAR may or may not be functioning properly; levels of nonpayment are above a desirable level; hygiene education and health motivation work in the community is intermittent. With some effort from the INAPA/AR zonal representative and other external agencies, the system can be moved up to category A.	The INAPA/AR zonal representative works with the ASOCAR and the community to resolve minor problems in administration and O&M; other agencies may become involved to a limited extent.
C	Technically, the system may or may not be functioning 100%; there are operational problems, and there may be serious problems with the water supply (quantity, quality, or continuity); the ASOCAR may or may not be functioning properly; levels of nonpayment are above an acceptable level; hygiene education and health motivation work in the community has ceased. Moving the system up to category A could require certain capital investments that are still within the economic capacity of the community; considerable advice and assistance would be required from the INAPA/AR zonal representative and other external agencies in the local area.	The INAPA/AR zonal representative works with the ASOCAR and the community to resolve operational problems and organizational difficulties; motivate and advise on the necessary system improvements and costs in order for the community to raise the required capital.
D	The system is not functioning technically and may be abandoned completely; there are many problems, and the community is relying partially, or completely, on alternative, unsafe, and unreliable sources; there may be a major breakdown in the functioning of the ASOCAR and there may be conflicts among users; levels of nonpayment are very high; hygiene practices have returned to preproject levels, and there is a high sanitary risk from nonuse of latrines and poor environmental sanitation. Moving the system up to category A would require substantial capital investment, probably greater than the economic capacity of the community.	The INAPA/AR zonal representative needs to bring the case of the community to the attention of central office and needs to assist the community in locating potential sources of financing and external assistance to rehabilitate the system.

3.4.3. Key Steps for Implementing a National Information System

The overall objective of this technical assistance activity is to develop an information system with a truly national perspective, which includes every rural community and water supply and sanitation system, regardless of which institution or organization was responsible for its construction. However, this is a long-term objective, and it

will take many years to perfect such a comprehensive information system. Nonetheless, it is important that INAPA/AR not delay the start-up of such a system, even if it is a simple prototype that can be upgraded as resources become available and as information requirements become more sophisticated.

The rural water management unit of the Nicaraguan Water Supply and Sewage Company (ENACAL-GAR) has developed just such a system over the past five or six years. This system has a very sophisticated and powerful data manipulation capacity, which has proved extremely useful in terms of monitoring and planning at both the operational and the strategic levels. However, the development of this system took many tens of thousands of dollars of direct investment in hardware, software, and training, as well as generous levels of support from external agencies, which were prepared to invest in and commit to a very long-term process of institutional capacity building. The EHP consultant has provided the director of INAPA/AR with documentation of the ENACAL-GAR system to show examples of data collection and manipulation models.

The level of support for such a system in Nicaragua is not about to be replicated in the Dominican Republic in the near future. Therefore INAPA/AR must take a realistic approach to developing a modest but useful system over the next 12 months. Obviously, INAPA/AR will need to invest in adequate computing equipment and in developing a simple database, using off-the-shelf software (Microsoft Excel or Microsoft Access, for example), but this should be within INAPA/AR's budget, because it implies several thousands, rather than tens of thousands, of dollars.

To start building up a comprehensive database of all water supply and sanitation systems, this initiative will also rely on information generated by both INAPA/AR promoters and other agencies. The main steps in developing this system would be as follows:

1. Locate funding sources (either internally or from a donor agency) in order to cover the hardware, software, and training costs.

2. Design a simple database system, which can be manipulated by the data entry staff in INAPA/AR, and train such staff as necessary.

3. Finalize the definition of monitoring indicators and system classification for the variable data sets (as above).

4. Orient and train INAPA/AR zonal staff, social promoters, and engineering staff in procedures for data collection and reporting to the central level.

5. Establish a management system for periodic retrieval, analysis, and interpretation of data to inform management decisions and corrective actions at the project or community level.

6. Engage with all agencies active in the sector, and request that information be provided (in electronic form) according to the new format for all finalized

systems, regardless of current condition. This could be achieved by convening a short orientation session at the central level for NGOs and bilateral programs and following it up with periodic contacts by a designated INAPA/AR liaison staff member.

4 Work Plan for Implementation and Monitoring of Operations and Maintenance Strategy

The INAPA/AR director has agreed that this O&M strategy should be implemented over a period of 12 months in the first instance, after which an overall evaluation will be made to consider progress under the various components. To help the director and her senior staff organize and monitor the ongoing interventions to support O&M within INAPA/AR, the EHP consultant and INAPA/AR have developed a work plan, which identifies specific subactivities, indicative time frames, and relevant indicators of progress. This plan is presented below and relates directly to the three main components of the O&M strategy as presented in this report: (1) the O&M pilot project, (2) institutional issues, and (3) the information management system.

This plan is intended as a working tool, and the timeline is therefore open in order that the INAPA/AR team can set targets as it works through the planning process over the coming weeks. This plan could also be used as part of a funding application or to back up a funding request, in case INAPA/AR identifies a potential donor or funding source to support the implementation of its O&M strategy. Even with this type of plan in place, INAPA/AR should continue to receive some form of external follow-up and guidance over the coming 12 months to ensure adoption of the strategy. Permanent changes in working methodologies and the incorporation of new systems do not happen overnight; it often takes a long time to internalize such changes. Given the complexity of some of the tasks involved and the range of issues relating to O&M at all levels, it would be prudent to ensure that the process is properly managed, periodically assessed, and, if necessary, adjusted during the first 12 months.

	First-Year O&M Strategy												Management and Coordination: Key Persons or Organizations	Process Monitoring: Key Indicators of Progress	Useful Resources Documentation
Month:	1	2	3	4	5	6	7	8	9	10	11	12			
Year:	2001			2002											
Month:	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
1.0. O&M Pilot Project **1.1. Resource Mobilization and Planning** 1.1.1. Finalize selection of municipalities and communities in 2 focal areas 1.1.2. Deploy/hire second zonal representative (zone 6) 1.1.3. Provide additional equipment/office space to 2 zonal representatives													Director, Technical Area, Social Promotion and Community Work Area	List of communities finalized and known within INAPA/AR; new zonal representative in place in zone 6; logistical resources available	
1.2. Development of Procedures and Systems 1.2.1. Formalize follow-up system and frequency of visits 1.2.2. Formalize guidelines for visits, activities, and reporting procedures 1.2.3. Finalize formats for sanitary inspections, audit of accounts, etc. 1.2.4. Finalize community-level training materials for O&M													Technical Area, Social Promotion and Community Work Area, zonal representatives	Schedule and frequency of visits established; formats for monitoring visits designed and being used; training materials designed and being used	INAPA/AR post-construction manual Examples from ENACAL-GAR, Nicaragua
1.3. Implementation of Pilot Project 1.3.1. Start regular program of visits to communities in 2 pilot areas 1.3.2. Collect fixed and variable data from communities 1.3.3. Take part in coordinated support activities with other agencies													Technical Area, zonal representatives, local government, NGOs, INAPA/Operations, SESPAS	No. of visits carried out by zonal representative; current status of community water supply systems; participation of other organizations in joint activities	
1.4. Management and Monitoring of O&M Pilot Project 1.4.1. Carry out periodic review of progress in 2 pilot areas 1.4.2. Carry out review of all newly developed materials, systems, and procedures													Director, Technical Area, Social Promotion and Community Work Area	Monitoring visits to the field to check on prog??ress; inventory of all formats, systems, and materials produced	

	First-Year O&M Strategy												Management and Coordination: Key Persons or Organizations	Process Monitoring: Key Indicators of Progress	Useful Resources Documentation
Month:	1	2	3	4	5	6	7	8	9	10	11	12			
Year:	2001			2002											
Month:	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
2.0. Institutional Issues Relating to O&M															
2.1. Consolidation and Dissemination of O&M Strategy and Norms															
2.1.1. Consolidate and prepare new documentation and norms relating to O&M													Director, Technical Area, Social Promotion and Community Work Area	Summary of norms and strategy prepared; no. of orientation meetings held and general level of awareness about O&M strategy within sector	INAPA/AR norms (technical, legal, etc.); examples from EHP documentation
2.1.2. Convene sector meetings at central level for dissemination of strategy															
2.1.3. Convene sector meetings at local level for dissemination of strategy															
2.2. Clarification of Legal Issues Affecting O&M															
2.2.1. Commission an in-depth analysis of legal requirements for transfer													Director, INAPA legal adviser, consultant/legal company	Analytical report finalized, with interpretation of laws, no. of orientation meetings held, and general level of awareness about legal aspects within sector	Sector reform project, Inter-American Development Bank; sector analysis document, Pan American Health Organization
2.2.2. Commission an in-depth analysis of legal process of associations and *personería jurídica*															
2.2.3. Document results of investigation, and disseminate within sector															
2.3. Interinstitutional Coordination															
2.3.1. Bilateral meetings with key agencies at central level to discuss coordination													Director, Technical Area, Social Promotion Community Work Area, zonal representatives, SESPAS, etc.	No. of orientation/coordination meetings held at central and local levels; memorandums of understanding signed and joint activities undertaken in the field	
2.3.2. Bilateral and multilateral coordination meetings at local level (pilot area)															
2.3.3. Draw up memorandums of understanding or letters of agreement with key agencies															
2.4. Follow-up to Sector Reform Process															
2.4.1. Consult with INAPA: increased focus on rural sector in reform process													Director, INAPA legal adviser, USAID, etc.	No. of meetings held with Inter-American Development Bank/reform subcommittee Treatment of rural subsector in final reform process	Sector reform project, Inter-American Development Bank; other legal documents
2.4.2. Consult with USAID and others: lobbying of Inter-American Development Bank in reform process															

	First-Year O&M Strategy												Management and Coordination: Key Persons or Organizations	Process Monitoring: Key Indicators of Progress	Useful Resources Documentation
Month:	1	2	3	4	5	6	7	8	9	10	11	12			
Year:	2001			2002											
Month:	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
2.5. Promotion of Public Image 2.5.1. Seek approval from INAPA to promote unique image/logo 2.5.2. Design logo and promotional material/products 2.5.3. Disseminate materials/products within sector and general public													Director, Technical Area, Social Promotion and Community Work Area, design consultant/ company	Logo and promotional materials designed; promotional campaign realized; level of awareness about profile and role of INAPA/AR within sector and general public	Examples of promotional materials (EHP and EHP/Nicaragua)
3.0. National Information System for Rural Water Supply and Sanitation **3.1. Development of System Design, Data Fields and Indicators** 3.1.1. Finalize fixed and variable data requirements 3.1.2. Develop classification system and indicators													Technical Area, Social Promotion and Community Work Area, Information, zonal representatives	Fixed and variable data requirements defined; classification system finalized and disseminated within INAPA/AR	Examples from Honduran and Nicaraguan information systems
3.2. Procurement of Equipment and Staff Training 3.2.1. Identify funding sources for hardware, software, and training costs 3.2.2. Procure hardware and develop system design, using off-the-shelf software 3.2.3. Train data entry and field staff in collection, entry and manipulation of data													Director, Social Promotion and Community Work Area, Information, USAID, private companies	Funding made available for system; computer equipment installed and personnel trained	
3.3. Application and Management of System 3.3.1. Establish periodic review and analysis timetable for use of system 3.3.2. Introduce new system to sector players, and start collecting fixed data													Director, Information, NGOs/other agencies	Information reports produced by system; decisions made on basis of reports; new data received from NGOs, etc.	Examples from Honduran and Nicaraguan information systems

Annex: Consultant's Itinerary

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
17 EHP planning meeting and overview and background information Meeting with Amparo Minier, director of INAPA/AR	**18** Meeting with Kelva Perez, USAID Meeting with Carlos Ureña, Social Promotion and Community Work Area Meeting with Amparo Minier, director of INAPA/AR Meeting with Altua Roa, Dominican Red Cross	**19** Meeting with PROCOMUNIDAD (tbc) Meeting with Juana de la Rosa, Technical Area, INAPA	**20** Meeting with Abrahan Rivera, Vision Mundial Meeting with Adela Williams, MUDE	**21** Meeting with INAPA Field trip to San Cristóbal, INAPA/Peace Corps Miguel Leon	**26** Planning and preparation for working meeting
24 Meeting with ENTRENA (Federico Peña) Dominican Red Cross/Spanish Red Cross Meeting with Catholic Relief Services	**25** Meeting with Henry Hernandez, Pan American Health Organization Meeting with Ing. Leonardo Matos, Assesor Dirección Ejecutora Field trip to AR/INAPA, El Sombrero, including INAPA municipal office	**26** Planning and preparation for working meeting, preparation of venue and logistics Meeting with Cooperación Española	**27** Field trip: Catholic Relief Services, USAID, INAPA—Hato Mayor	**28** Working meeting to discuss O&M strategy: INAPA, USAID, ENTRENA, MUDE Meeting with Trinidad Zamora, Inter-American Development Bank representative	**29** Debriefing from working meeting and report preparation
1 Meeting with INAPA/AR director Preparation for USAID debriefing	**2** Debrief USAID mission	**3** Final report writing and debriefing with EHP local consultant	**4** Final debriefing with INAPA/AR team Depart for Miami (meeting with Inter-American Development Bank)	**5** Travel to United Kingdom	6 Finalize report

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