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Summary Report Of The Survey Of Local Ground Water/Wellhead Protection Efforts In California

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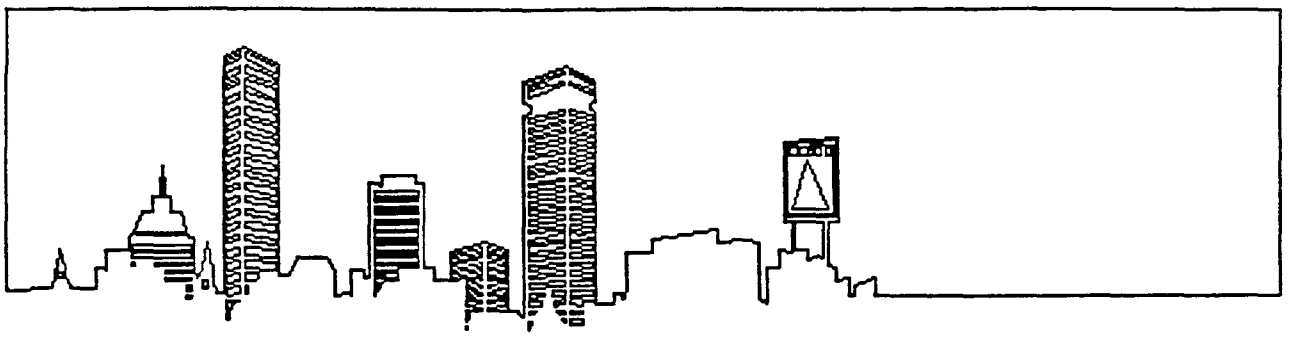
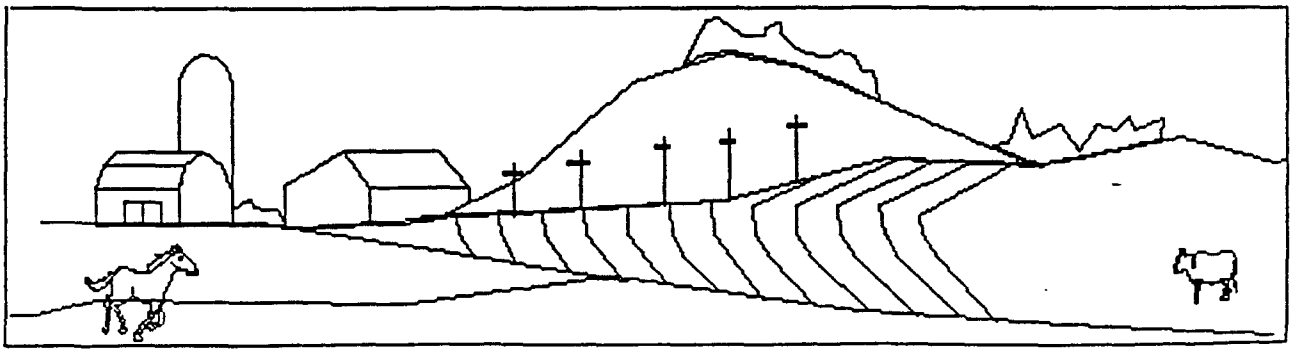


SUMMARY REPORT

SURVEY of LOCAL GROUND WATER/WELLHEAD PROTECTION EFFORTS in CALIFORNIA

February, 1992



SURVEY OF

LOCAL GROUND WATER/WELLHEAD PROTECTION EFFORTS IN CALIFORNIA

Summary Report

February, 1992

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NOTE TO THE READER:

This Summary Report of the Survey of Local Ground Water/Wellhead Protection Efforts in California is intended to provide a look at trends in ground water protection activities at the local level. Results of the survey will not be used other than to provide insight into ways that EPA Region 9 can be more effective in addressing the needs of local and state governments in their ground water protection efforts. This report will not affect policy, funding or other Agency decisions.

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Summary Report

SURVEY OF

LOCAL GROUND WATER/WELLHEAD PROTECTION* EFFORTS IN CALIFORNIA

EXECUTIVE SUMMARY

State and county well standards and regulations exist that protect drinking water supplies in California, but some aspects of ground water protection have not yet been addressed. The most important issue in ground water protection is to prevent degradation of ground water and drinking water resources. Many of the local governments require comprehensive measures that are presently unavailable to prevent ground water quality problems.

In order to effectively assist and promote ground water protection efforts, the Ground Water Protection Section of the Drinking Water and Ground Water Protection Branch of the U.S. EPA, Region 9 conducted a survey of existing protection activities and related problems at the local government levels. Through the information gathered from the survey, some general trends which may help to direct EPA efforts to provide guidance and other assistance to local governments became evident.

One of the most apparent trends recognized in the survey responses is the difference in reliance on ground water as the primary source of drinking water between rural areas, small cities and large urban/suburban areas. Citizens in rural areas and small cities were much more dependent on drinking water obtained from ground water (wells) than those in the larger urban and suburban areas.

Other trends evident in the survey such as the difference in potential and actual threats to ground water resources, types of contaminants reported, the need for technical and funding assistance, and the feasibility of implementing prevention measures to protect

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*Wellhead Protection, as used here refers to any programs used by localities which protect the area immediately adjacent to and surrounding a water well and which does not necessarily address the seven elements of a Wellhead Protection Program as defined by Section 1428 of the Federal Safe Drinking Water Act of 1974.

ground water, also differed for rural areas and small cities and towns as compared to large urban and suburban areas. These issues are discussed in further detail in this report and provide the basis for the recommendation that more effort is focused on local level ground water protection program development, and that assistance is especially targeted for rural areas and small cities.

BACKGROUND

A number of Federal statutes provide EPA with the authority to prevent and control sources of ground water contamination, as well as to clean up existing contamination. During the early 1980s, EPA recognized that these authorities to protect ground water were fragmented among many different statutes, and were largely undefined. As a result, in 1984 the Agency adopted a Ground Water Protection Strategy to articulate the problem and EPA's role in a national ground water protection program. Under this strategy, the Agency has focused its efforts on four major objectives:

* Building State capacity;
* Addressing sources of contamination;
* Establishing ground water policy direction and program consistency; and
* Coordinating EPA programs.

While this strategy was effective in creating momentum for States to develop and implement ground water programs, the passage of time and growing body of experience indicated that gaps remained in protection efforts across the country. It became clear that there was a need to assess our progress and adjust our approach to take into account recent changes in statutory authorities and our increased knowledge of the issue by promoting comprehensive protection on the State and local level.[1]

Since the adoption of the EPA's 1984 Ground-Water Protection Strategy, the Agency has been providing technical and financial assistance under the Clean Water Act to build State capacity to protect ground water in a comprehensive manner.

Over the last few years, States have made significant strides in developing and implementing ground water protection strategies. Yet, both States and the EPA recognize, that much remains to be done to ensure comprehensive protection of the nation's ground water resource. State ground water programs vary considerably from one state to another, and are often a patchwork of Federal, State and local source control efforts, focusing on individual sources of contamination rather than the resource as a whole. Source control programs tend to focus on sources that present significant risks on a national basis, but may not represent the most important threats to drinking water supplies (and therefore human health) at the local level.

In 1989, EPA established the Ground Water Task Force to review the Agency's

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[1]Excerpt from EPA Ground-Water Task Force Report, Executive Summary; July 1991.

ground water protection program and to develop concrete principles and objectives to ensure effective and consistent decision-making in all Agency decisions affecting ground water. As a result of the work of the recent Agency Task Force, EPA will take a more strategic approach to actively assisting States in comprehensively protecting their ground water resources. The Task Force identified the need for EPA to step up its efforts to coordinate more fully Agency programs and authorities at the EPA Regional and Headquarters levels, to help States build comprehensive, integrated programs that protect the ground water resource, to provide a framework for coordinating multiple Federal programs and activities at the State and local level, and to make optimum use of EPA grant authorities to promote Federal and State program coordination.[2]

In an effort to address the Agency's objective of **Building State Capacity** the Region 9 Ground Water Protection Section (GWPS) of the Drinking Water and Ground Water Protection Branch considered the important role of local agencies in augmenting State programs within this region. Through a special project, GWPS conducted a survey of local governments and other agencies in one state within Region 9 that have some authority to regulate various aspects of ground water quality or the activities that may affect ground water quality. California was selected for this initial pilot study.

The purpose of the survey was to determine what types of ground water protection activities exist at the local level, what potential problems may exist, and to identify local needs in the development of strategies to protect ground water supplies in order to more effectively provide assistance through information and programs to address those needs. Ultimately, it is hoped that strong and effective ground water protection programs could help to lessen the increasing burden on State resources.

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[2]Excerpt from **Protecting the Nation's Ground Water: EPA's Strategy for the 1990s**, Final Report of the EPA Ground Water Task Force; Federal/State Relationship in Ground Water Protection; 1991.

SURVEY PROCESS

The survey was sent to 593 local agencies in the state. Each of the 58 California counties and at least one representative city or town agency within each county were sent a survey. Included were county and city/town planning agencies, water districts or purveyors, and the county Health departments.

These representatives were selected from The California Planner's 1991 Book of Lists; EPA Region 9 Ground Water Protection Section and Underground Injection Control Section mailing lists; and California State Water Resource Control Board contacts.

Respondents to the survey included:

216 respondents with ground water sources:
- * 161 representing 157 cities/towns
- * 49 representing 44 counties
- * 6 water districts
- * 2 other (R.W.Q.C.B., military base)

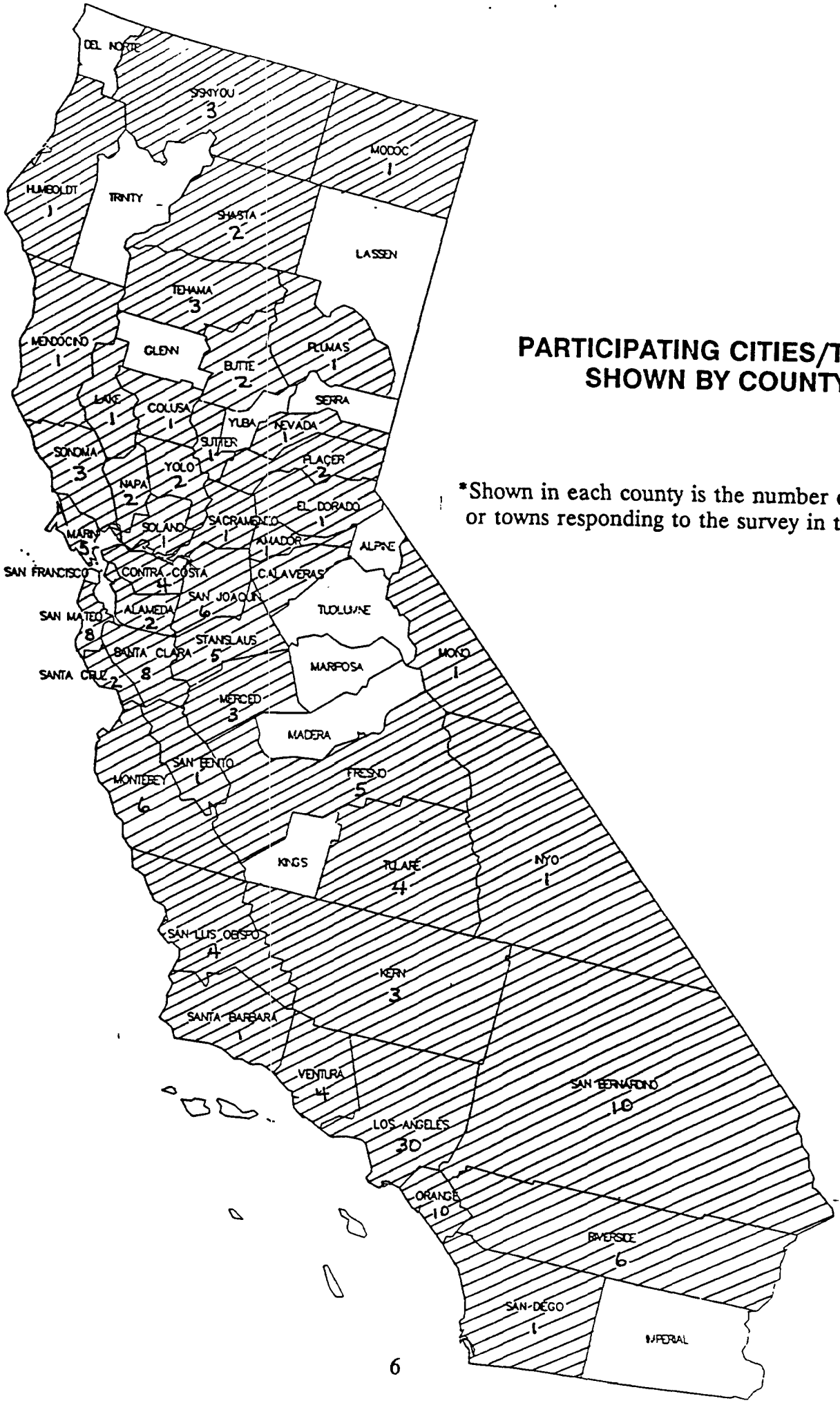
\+ 36 respondents without ground water sources

Total: 254

Response Rate: 43%

The respondents were given approximately 30 days to complete the survey.

During the survey response period, 27 respondents called the EPA for assistance in answering some of the survey questions.

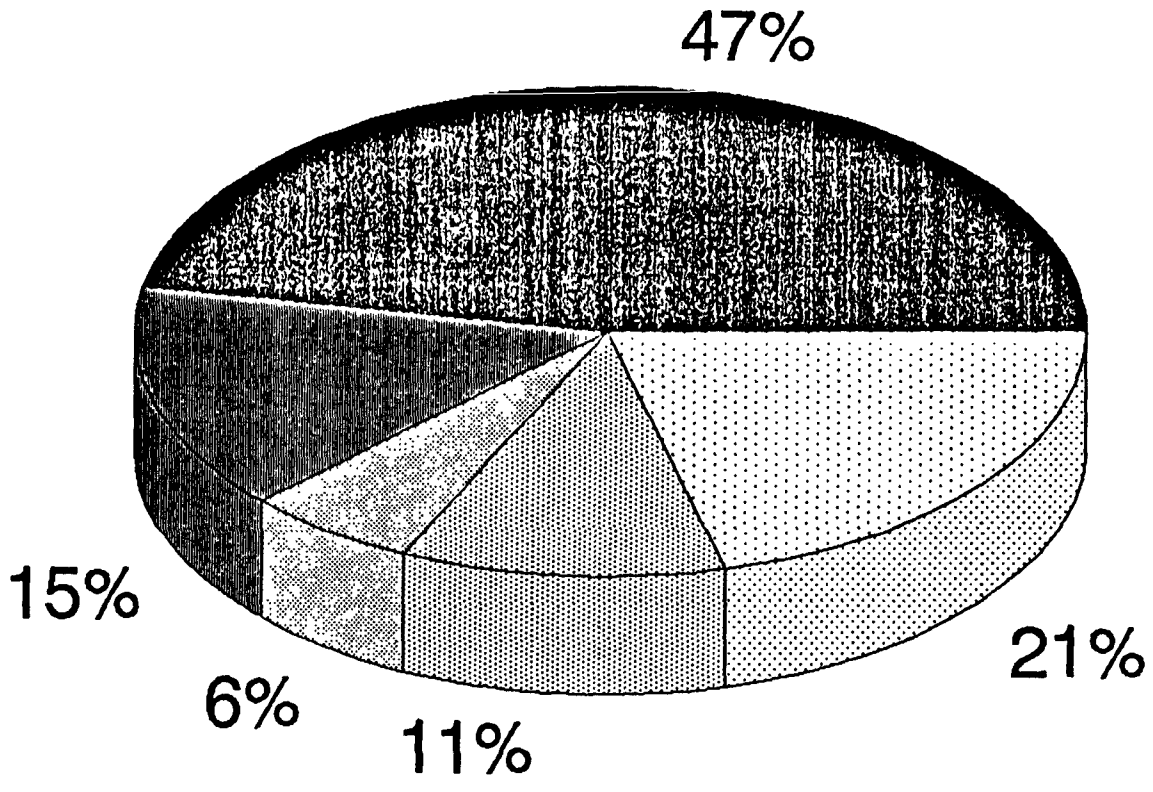


PARTICIPATING CITIES/TOWNS SHOWN BY COUNTY

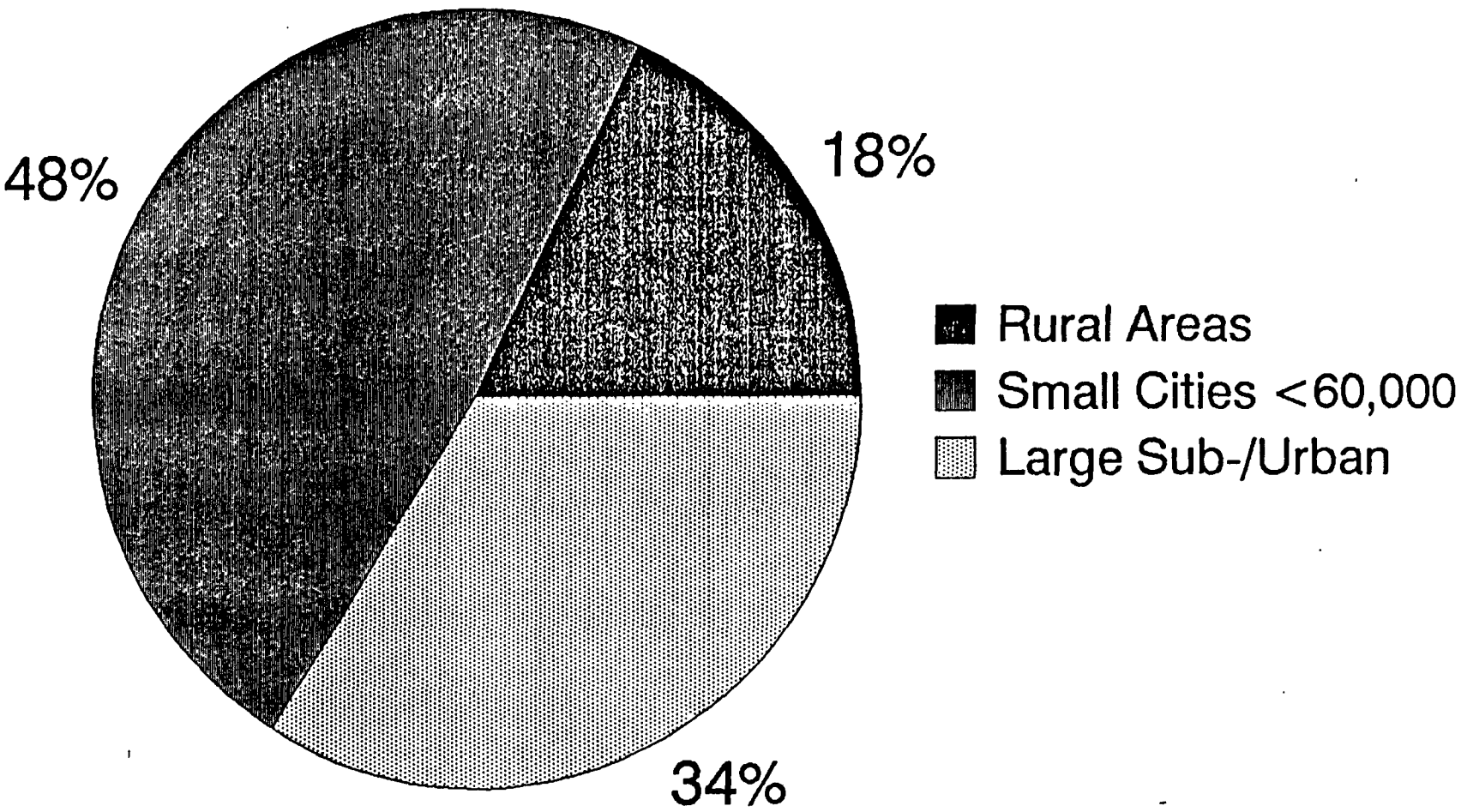
*Shown in each county is the number of different cities or towns responding to the survey in that county.

PARTICIPATING COUNTIES

Community Type/Size of County-Level Respondents



Community Type/Size of Local-Level Respondents



OVERVIEW OF SURVEY RESULTS

The most obvious trend in the survey responses are the differences which exist between large urban/suburban areas and rural areas/small cities. With virtually every issue, survey responses indicated or implied that there is a greater need for assistance in local ground water protection activities for rural areas and small cities.

1. Reliance on ground water resources.

The majority of respondents from smaller cities and rural communities were considerably more dependent on ground water for drinking water supplies than the larger urban and suburban areas. See Figure 5, page 11.

Overall, public and private wells supplied up to 90 percent of drinking water to rural areas and small cities. Large urban and suburban communities indicated that although public and/or private wells provided some drinking water, most of the population in these areas obtained drinking water supplied primarily by other sources.

2. Existing ground water contamination problems.

Reported incidents of contamination of ground water was more frequent in the large urban and suburban areas. The lowest frequency of reports of contamination problems occurred for small cities and towns, with rural areas falling in between. In every case, reports of contamination were more frequent by county level respondents than at the local level, however, in rural areas the difference between the frequency of local agency reports and county level reports were greatest, almost twice as much. See Figure 6, page 12.

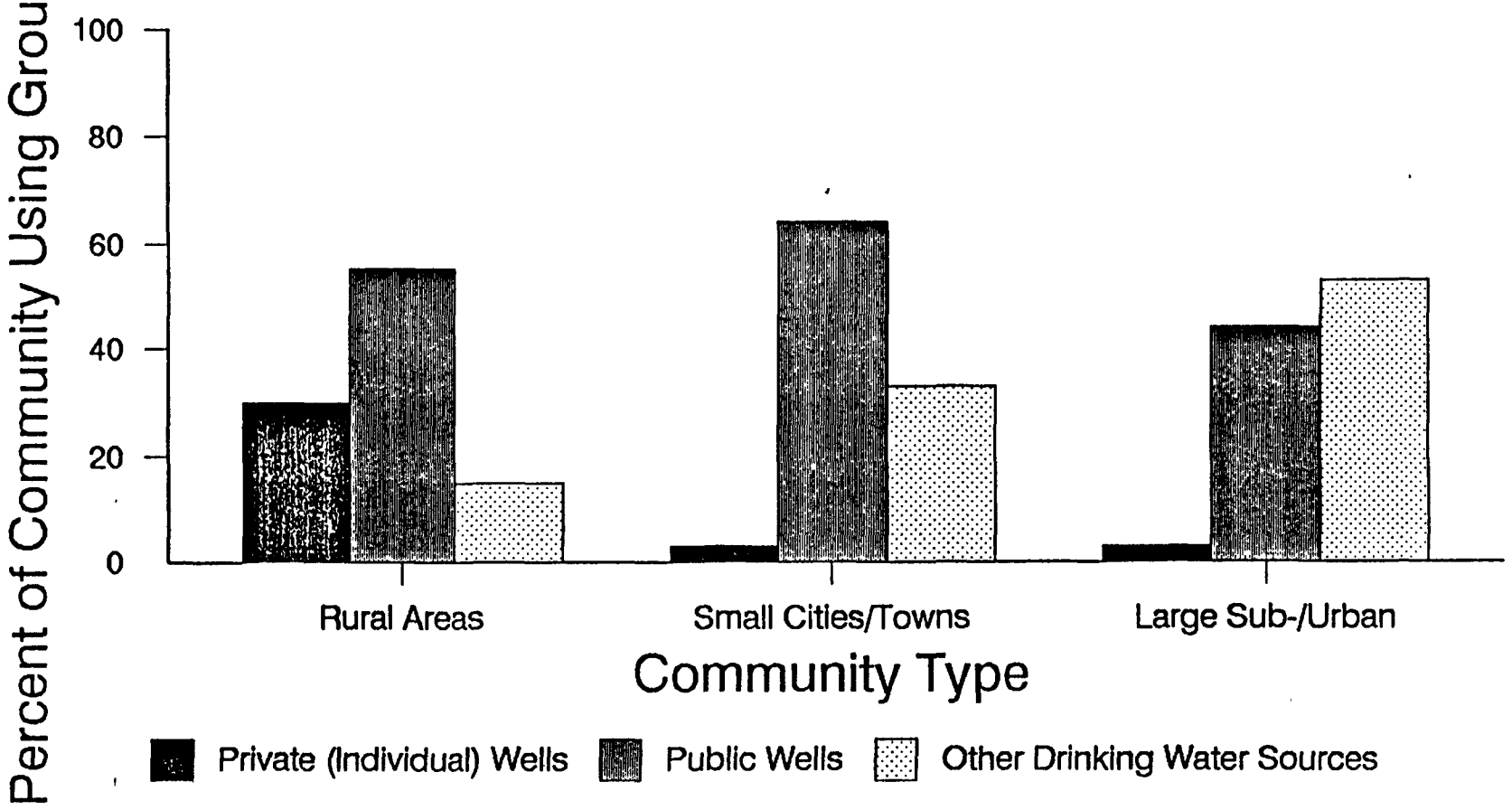
There are two important issues to be considered here. First of all, the resources available to local level agencies to determine contamination problems, and the feasibility of implementing prevention activities.

The greatest ground water and drinking water quality problems in rural areas and small cities and towns come from contamination by agricultural chemicals and from the use of septic tanks. The most commonly mentioned pollutants were DBCP, EDB, bacteria and nitrates. Ground water protection, especially wellhead protection programs could be very effective in preventing contamination of ground water sources in such cases. Large urban/suburban areas reported different problems with contamination, different contaminants were listed and different means are necessary for dealing with those sources.

3. Resources for ground water protection.

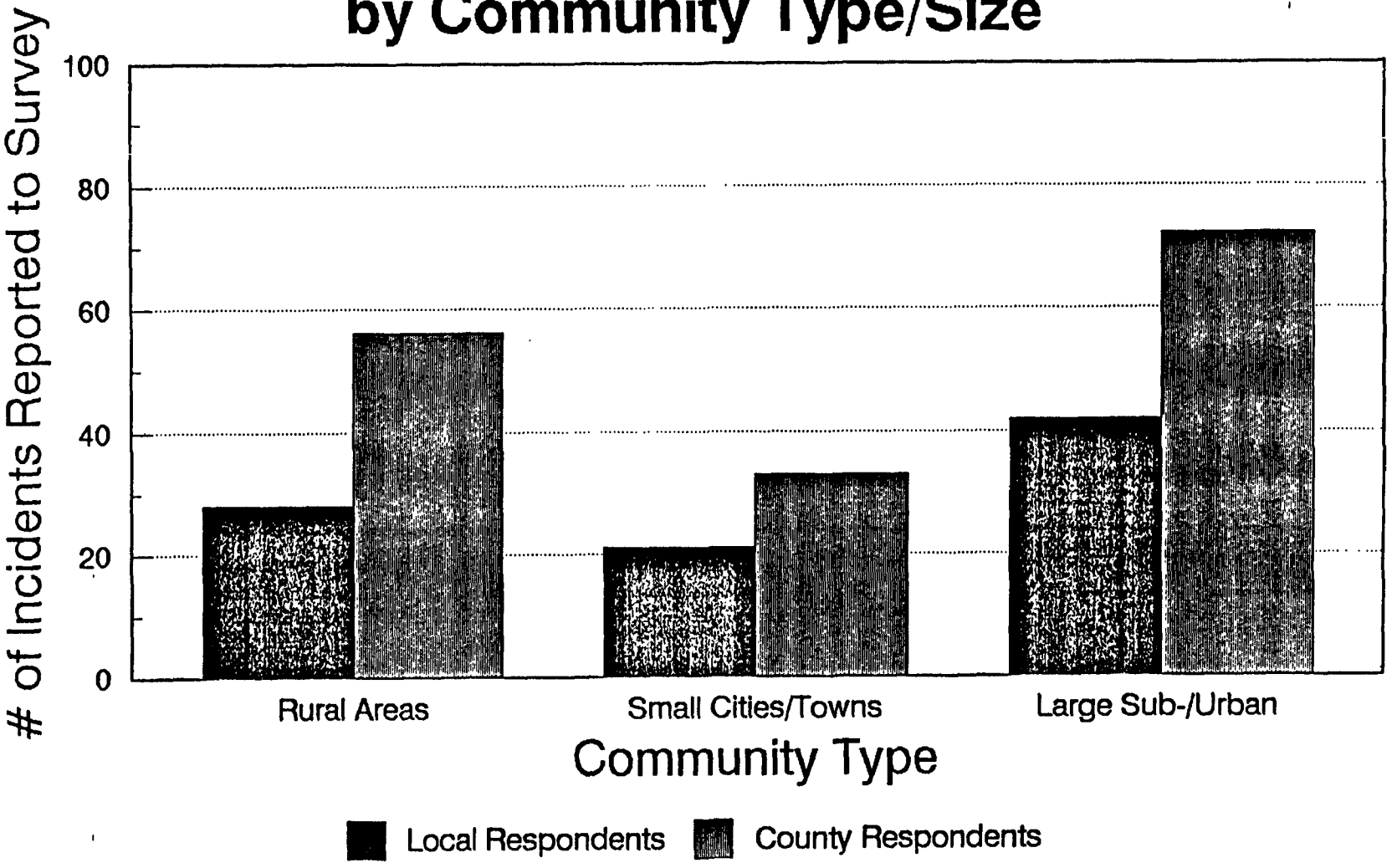
Large urban and suburban areas generally reported that sufficient programs and policies were in place which protect ground water resources and drinking water supplies, and that the necessary technical information and agencies and other resources for ground water protection were available. In contrast, many of the smaller communities, especially in rural

Reliance on Ground Water for Drinking Water by Community Type/Size



Includes Local- & County-Level Respondents

Reported Incidents of Ground Water Contamination by Community Type/Size



*Please refer to "Findings", p. 16 for further explanation of these figures.

areas, did not have local ground water protection programs and were dependent on county-level agencies for management and protection of their ground water and drinking water sources.

4. Prevention of ground water quality problems.

Based on responses to the survey concerning the need and desire to develop prevention and other ground water protection programs, and the frequency and kinds of reported contamination problems which already exist, small cities and rural areas are in most need for assistance in developing ground water protection and wellhead protection programs.

5. Interest in developing ground water protection programs.

Rural communities and the small cities and towns have special needs and problems concerning the protection of their ground water resources. Because these communities rely mainly on ground water (public and private water supply wells) for their drinking water supply, ground water protection was highlighted as a major concern for the health of the community members as well as to each community's economic and environmental stability. Almost all of these communities indicated a strong desire to develop local ground water protection programs which will address the unique conditions of their communities, and requested technical and other assistance.

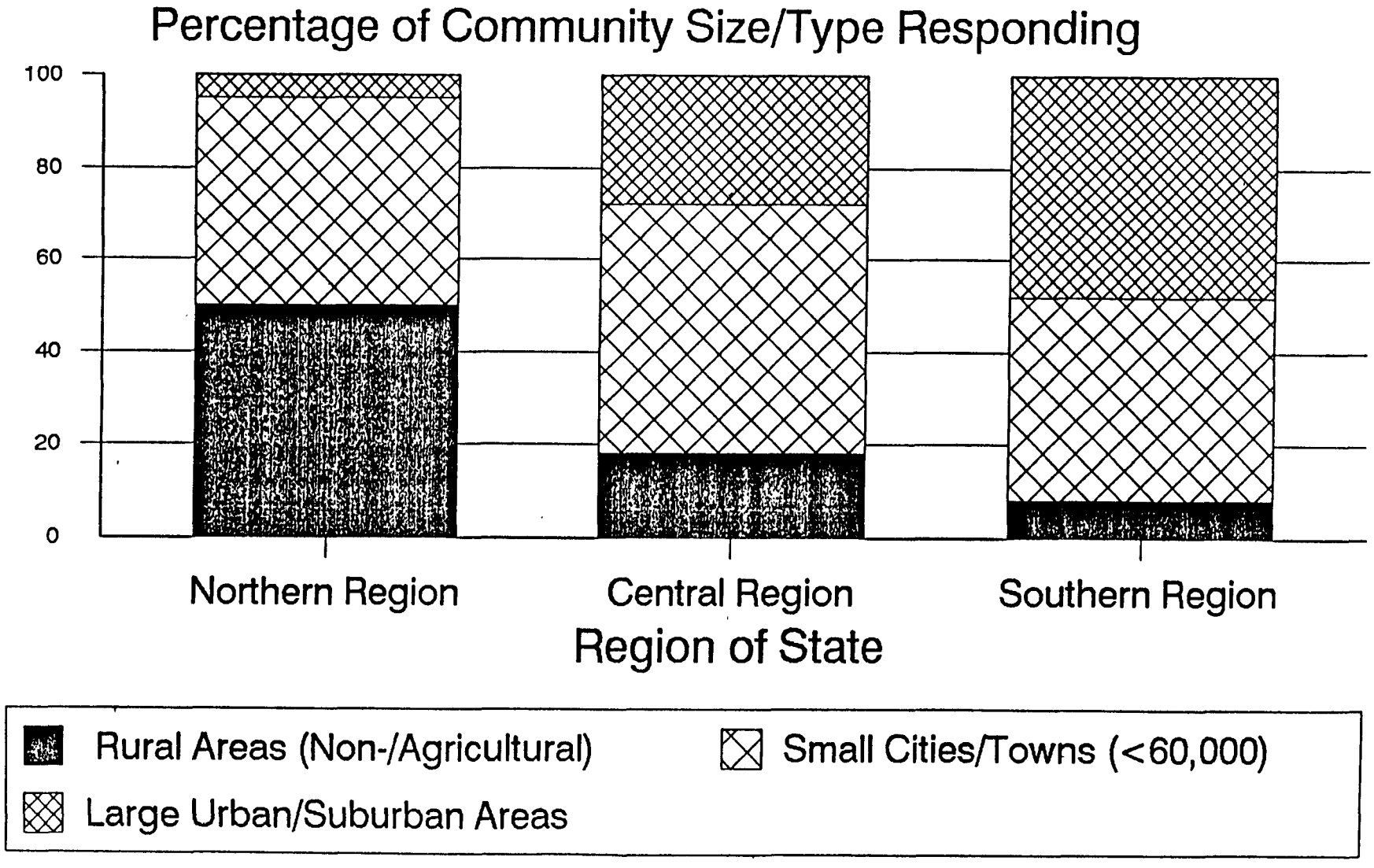
6. Funding and technical assistance.

Small cities and towns, and particularly rural communities identified the need for funding and technical information and assistance in developing ground water and wellhead protection programs. Almost all respondents from rural areas, and many from the small cities, had no local programs or policies in place (or that they were aware of) which provided comprehensive and preventive ground water protection measures. These areas also had little local ability (resources, expertise) to develop such programs.

Northern versus southern California.

There are no distinguishable differences in responses to the survey concerning ground water protection programs or problems which identify northern versus southern California respondents. Overwhelmingly, the differences that do exist correspond more with the type or size of the community. However, survey responses did reflect some regional differences in the types of communities existing (or responding). Northern California respondents were mostly of rural areas or small cities and towns. The respondents from the central areas of the state were predominantly from small urban areas, and respondents from southern California made up mostly from large urban and suburban areas. See Figure 7, page 14.

Breakdown of Responding Communities by Size/Type and by Regions of California



FINDINGS

The responses to the survey are generally grouped by the level of local government represented, city/town or county.

General Information about the Communities:

A large majority of all respondents indicated that public or private wells were a source of drinking water for at least some community members (85% - 98%). Two-thirds of the city/town respondents indicated that public wells were their primary source of drinking water. The percentage of public and private wells as primary drinking water sources was highest for smaller cities and rural areas, with many rural areas having a larger percentage of private wells as the primary source.

At the county level, respondents indicated use of private well supplies, however many indicated that private well usage occurred mostly in predominately rural counties, or rural areas within some counties. Overall, wells were not the primary source of drinking water supplies in the counties. This can probably be attributed to the fact that the population distribution is greater in the urban and suburban parts of the counties where drinking water is supplied through other sources.

Half to three-fourths of the all communities planned to build new drinking water wells at some future time.

Profile of Community Type Responding:

Most of the respondents were from small urban areas (less than 60 thousand people), 48%; followed by large urban areas, 20%; rural agricultural areas, 12%; and rural, non-agricultural areas, 6%.

Nearly half of the county respondents were from rural areas.

Drinking Water Sources:

Of the responses from cities and towns which indicated public or private wells as their main drinking water source, public water supply wells provided nearly 90% of the drinking water to the residents.

At the county level, public and private well use was about 50-50%, however, overall, wells were not the main supply of drinking water.

Contamination Problems:

Just over a third of the cities/towns indicated that their drinking water sources are or have experienced some contamination problems in the past, but over two thirds at the county level indicated that their drinking water sources had similar problems. Those respondents with contamination problems were more often from large urban and suburban areas, followed by rural communities.

The most commonly mentioned pollutants of drinking water sources in rural areas and small cities were DBCP, EDB, bacteria, and nitrates. Many of these areas also indicated agricultural practices in the areas and the use of septic tanks as the primary method of household sewage disposal.

In large urban and suburban areas, many other contaminants were often reported including TCE, PCE, various metals and minerals, and solvents. The sources of these contaminants were varied.

Ground Water Protection Activities:

At the city/town level, most respondents answered that a water district/purveyor, the city, or the regional water quality control board was the main agency responsible for ground water protection and management.

At the county level, most respondents answered that a county agency, usually the Health Department was the main agency responsible for ground water protection and management.

Many of the city/town level respondents seemed unclear on exactly which agencies dealt with ground water quality and management issues; even though they provided an answer they did not provide the name of the agency. Many of the respondents indicated that the EPA should consult the water purveyors to find out any information on ground water protection. This was true even with those respondents which were planning agencies for that jurisdiction.

Community Programs/Activities:

Household Hazardous Waste Collection

Most cities and towns answered that they did have such a program. (63%)

Approximately half of the counties indicated that such programs were available in their communities. (52%)

Ground Water Protection Program

Just over half of the cities and towns had no ground water protection programs in place nor planned. (52%)

Most county level respondents indicated that there were ground water protection programs in place or planned. (73%)

Of the city/town respondents who were aware of GWPPs or policies in their communities, most felt satisfied that the policies were sufficient to protect their ground water resources. (70%)

At the county-level, only 50% felt that their GWP policies were sufficient.

Wellhead Protection

At the county level, only 6% had some type of wellhead protection program, and 85% were interested in establishing a WHP to protect their ground water.

At the more local level, 40% of the communities indicated that they already had WHPPs, and 50% were interested in establishing a WHP program.

Water Well Standards

At the city/town level, 52% answered that they had local ordinances to enforce the water well standards required by the State.

A full 100% of the county-level respondents answered that the community did have ordinances in place to enforce the State requirements.

Chemigation/Agricultural Well Standards

Almost all of the city/town respondents answered "no" to having these standards. This figure may be tied in to the responses regarding community type: few of the respondents at this level indicated that their communities were agricultural.

At the county level, 65% of the respondents answered "yes" to having these standards. This is in line with the answers to the type of community: many counties indicated that agricultural areas were included in their jurisdiction.

Underground Injection Control

For both county and more local level respondents, the majority answered that there is some type of injection control program or policy for their community. (74% - county, 94% - city/town)

Nonpoint Source Pollution

Nearly three-fourths of all respondents indicated having some type of program to address nonpoint sources of pollution. Most of these programs dealt with stormwater drainage, and few dealt with agricultural or urban runoff.

Potential Ground Water Contamination Problems:

Of the potential threats to ground water which exist in communities, at all levels the most common answers were underground storage tanks and septic tanks, abandoned wells, light industry, and sewer treatment plants.

Less than half of all communities had contingency plans in place in the event of contamination of their drinking water wells. At the city/town level 48% had contingency plans, and at the county level only 32%.

One note--some of the respondents answered that their communities or cities had contingency plans, but descriptions of the plans indicated that many of the plans were not sufficient for providing alternative sources of drinking water.

EPA Assistance:

A small percentage of all respondents indicated that they had received some type of information or assistance from the EPA regarding ground water or wellhead protection. Almost all respondents indicated that they were interested in receiving more information from the EPA.

One of the most common reply to what kinds of assistance the EPA should provide was funding for local government programs. Many respondents indicated that they would like the EPA to provide publications with general and technical information and technical assistance on ground water and wellhead protection.

RECOMMENDATION

Rural communities and small cities and towns have special needs and problems concerning the protection of their ground water resources. Because these communities rely mainly on ground water (public and private water wells) for their drinking water supply, ground water protection is vital to the health of the community members as well as to each community's economic and environmental stability.

Most of these areas reported that they were dependent upon county-level agencies for protection of their drinking water resources, but want and need to develop local ground water protection programs which address the unique conditions of their communities.

The greatest threats to ground water and drinking water supplies in rural areas and smaller cities and towns, as indicated by survey responses, stem from contamination by agricultural chemicals and from septic tanks. The most commonly mentioned pollutants were DBCP, EDB, bacteria and nitrates. This seems to indicate that these communities need ground water protection programs which include broader areas than presently covered by existing well standards. Wellhead protection programs in particular, in addition to other local planning tools which protect specific geographic areas from certain types of activities, would be particularly effective in protecting ground water sources from contamination by these activities.

Other common threats to ground water and drinking water sources such as underground storage tanks and light and heavy industries, also pose risks to ground water supplies in rural communities and small cities or towns. This has been determined by survey responses which indicate that these areas have limited ability (technical and financial resources) to independently regulate and monitor such activities. Present efforts to protect their water supplies from these potential threats depend on policies at higher government levels.

Larger urban and suburban areas generally have sufficient programs and policies in place which protect their ground water resources. These areas also have more technical agencies and other resources available to address contamination problems which may occur.

Based on these findings from the survey responses, a priority activity should be to target ground water protection program and wellhead protection program technical assistance and funding to rural communities and small cities.

EXPLANATIONS OF SOME SURVEY RESPONSES

One probable reason for the two different observations between the city/town responses and those of counties regarding polluted drinking water sources may be the fact that county responses included more rural areas, thus including more private well use and less regulation of those wells. Many county-level respondents indicated that the occurrence of pollutants was probably higher, but could not be accounted for since many private wells are undocumented and have never been tested.

From this survey, it was also evident that what constitutes good ground water and wellhead protection programs is unclear or inconsistent between the different local governments, especially at the city/town level.

Many of the respondents, especially at the city/town level, were unfamiliar with the regulations and policies regarding ground water issues, or were not aware of the existence of those policies in their communities.

There were a few cases where more than one respondent answered items to the questionnaire and provided inconsistent answers. This indicates varying familiarity with the question topic by each respondent, or possibly misinformation on the part of one respondent.

As the questions became more technical, fewer respondents (especially at the city/town level) were able to answer those survey items.

Some respondents did not know which agencies were involved in the protection and management of ground water and drinking water sources, what the agencies' responsibilities were, or how the various agencies interacted.

SURVEY LIMITATIONS

The sponsors of this survey recognize that some items in the questionnaire may have posed problems for some respondents and may have led to somewhat inconsistent answers. Where this occurred, when possible, consideration was given to other answers to items on the questionnaire which were related to those items that were unclear. In no manner do answers to any of the survey questions negatively affect a respondent, or negatively influence any EPA decisions. All information obtained in the survey will be used to help focus efforts to improve ground water protection activities at the local levels.

FUTURE DIRECTIONS

This survey provides general information on what ground water and wellhead protection programs and policies exist at the local level and generally, where the greatest need for assistance is.

It is hoped that the results of this survey will be helpful in providing a basis for more involvement to protect ground water and develop wellhead protection programs since survey responses indicate a large interest at the local levels.