

**TOWARD IMPROVING THE EFFECTIVENESS OF  
PUBLIC INVOLVEMENT PROGRAMS IN  
ENVIRONMENTAL DECISION MAKING**

by

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B.S., Stanford University, 1988

Submitted to the Department of Civil and Environmental Engineering  
in Partial Fulfillment of the Requirements for the Degree of

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**ABSTRACT**

Because of the complexity of contemporary environmental problems, decision makers must have an appreciation of the multi-faceted dimension of the environmental field. They must possess knowledge not only of the sciences and technology, but also of the social considerations of a problem. Examples of social considerations are public perceptions and community structure. This thesis advocates and illustrates the importance of designing effective public involvement programs as a means to include the social factors in environmental decision making.

Before beginning a public involvement program, environmental professionals should understand the underlying reasons for doing so. Some reasons include the need to foster participatory democracy and political accountability. In addition, when the public is included in the environmental decision making process, there is increased likelihood that all information will be reviewed and evaluated carefully. This additional scrutiny will inevitably lead to more effective decisions.

In order to design an effective public involvement program, the environmental professional must utilize certain basic principles and techniques. These principles include creating opportunities for education and interaction, as well as understanding the social reality, opinions and viewpoints, of the particular community. Several public involvement program case studies are presented and critiqued in terms of their compliance with these basic principles.

Finally, the communities of Winchester and Woburn, Massachusetts provide a case study of the specific information that must be collected in the preliminary stage of a public involvement program. The case study outlines the government structure, existing environmental programs and problems, socioeconomic information, and lists of community leaders. This information is all essential in the design of an effective public involvement program.

When public involvement programs are well structured, the public is able to contribute to making environmental decisions which are technically feasible, fiscally sound, and satisfactory to all affected parties.

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## 1. Introduction

In the past few decades, the emergence of multi-faceted environmental problems in the United States and the world, has forced environmental decision making to become an interdisciplinary field. Americans now face a large array of environmental problems which are more complex and technical in nature than they were a generation ago. In the 1970s, the Environmental Protection Agency primarily implemented and enforced the *Clean Air Act*, *Clean Water Act*, and *National Environmental Policy Act*. These statutes minimized air and water pollution through end of the pipe control technologies and pretreatment systems. This technological approach was straightforward and implemented by engineers. Today's environmental problems are more complex due to many reasons: their global scale, the difficulty in identifying cause and effect, scientific uncertainties, inadequate technology, enormous costs, and the wide range of conceivable solutions. Examples of current environmental problems include: global warming, acid rain deposition, population growth, wetlands preservation and rehabilitation, hazardous waste treatment and disposal, and species extinction, as well as other forms of air, soil, water, and wildlife degradation.

Because of the complexity of contemporary environmental problems, environmental professionals must have an appreciation of the multi-faceted dimension of environmental issues. They must possess knowledge not only of the environmental sciences and technology, but also the social, economic, and political context of the problems. These considerations are as important as scientific and technical considerations in environmental decision making. They constrain the range of possible solutions in the same way that budgets, schedules, and technology do. This thesis advocates and illustrates the importance of designing effective public involvement programs as a means to include social factors in environmental decision making. It is beyond the scope of this thesis to illustrate the importance of economic factors and the

existing political structure; however, they are just as important as social considerations in the environmental field.

The necessary social factors can be addressed by including members of the public into the decision making process. Examples of social considerations are public perceptions, fears, community structure, among other things. In this case, the "public" is broadly defined to be those persons who have a vested interest in an environmental decision or course of management, but have no legitimate decision making authority. These persons include community residents, regulated businesses, community public officials, environmental advocacy groups, community leaders, among others. Public involvement refers to structured programs which actively solicit and incorporate public input about the environmental project at hand. Finally, the term environmental decision maker refers to government officials, professionals, academics, and others operating in the environmental field.

Chapter 2 illustrates the theoretical basis of public participation in environmental decision making. Although many environmental officials and professionals, must comply with federal and state statutes that mandate public comment periods and public hearings, they often do not understand the underlying reasons for doing so. Without this necessary understanding, the public programs are often perceived as time delays and annoyances. This negative perception will inevitably diminish the program's overall effectiveness. In order to improve public involvement programs, environmental decision makers should understand the theories behind them. There are five principal reasons for involving the public in environmental decision making: 1) The public wants to participate directly. American values have changed in the past generation due to greater affluence and security. This value change is demonstrated by desiring more involvement in determining the course of public policy. 2) The public will not support a political process that is not sensitive to their environmental

concerns. One mechanism to ensure political accountability is to directly solicit public input. 3) Shared decision making between the public and environmental decision makers fosters participatory democracy at the local level which in turn improves the democratic operation at the national level. 4) When the public is included in the environmental decision making process, there is increased likelihood that all information will be reviewed and evaluated carefully. This additional scrutiny will inevitably lead to more effective decisions. 5) The majority of federal environmental statutes explicitly mandate public participation. These mandates result from congressional legislation that was passed in response to public opinion and perceived needs.

Even when environmental professionals understand why they must involve the public, they may not know how to design and structure programs for a region or community. Therefore, Chapter 3 examines principles and techniques of thorough and effective public involvement programs. The basic principles presented include: 1) incorporating the public throughout the entire length of the project; 2) fostering equal power sharing and negotiation among all affected parties; 3) creating opportunities for education and interaction; and 4) understanding the social reality, opinions and viewpoints, of the particular community. In addition to these principles, Chapter 3 discusses specific techniques to be used in public involvement programs. Some of these techniques are: incorporating environmental advocacy groups, preparing adequate budget and plans, identifying stakeholders, conducting community surveys, among others.

Chapter 4 presents eight case studies of large environmental public involvement programs conducted throughout the United States. The illustrated case studies cover a range of environmental issues including: hazardous waste cleanups, hazardous waste facility siting, highway construction, forest service lands management, restructuring of an electric utility industry, and watershed management projects. Some of these case

studies illustrate effective techniques which lead to successful programs whereas others illustrate examples of programs that violated basic principles and failed.

Chapter 5 is an analysis of American public opinion on the environment. This information provides some examples of the national and regional perceptions of the social reality which must be understood when designing public involvement programs. Social reality includes understanding the opinions, viewpoints, and felt needs and wants of the community or region. For example, the New Environmental Paradigm, a world view that assumes Americans understand the intricate balance with nature, is thoroughly discussed as it is believed by some to be the dominant belief system in the United States. In contrast, the Mass Belief System hypothesis, espouses that most people's attitudes are narrowly focused and dependent upon immediate circumstances. Thus, those that accept the Mass Belief System advocate that public concern is best measured and understood at the regional level and not global level. The results of well known national surveys will be discussed to provide additional data in which to interpret and understand the social realities that must be incorporated into public involvement programs.

Chapter 6 summarizes the specific information which must be collected when beginning a public program by presenting a case study of a two communities. The two communities chosen were Winchester and Woburn, Massachusetts because they are within a watershed that has two federal Superfund sites and over one hundred state hazardous waste sites. Due to these hazardous waste problems, there are several environmental remediations and research projects being conducted in the area. The case study outlines the government structure, existing environmental programs and problems, socioeconomic information, and lists of community leaders. This information is all essential in the design of an effective public involvement program.

My motivation for this thesis is to present a framework for incorporating public involvement programs into environmental decision making. With this framework, technical specialists will then be able to understand and implement their own programs. Social science research is often not well regarded in technical circles or, at most, is thought of as little more than plain common sense. Consequently, many useful studies are disregarded by the scientific community. However, if social science programs are presented as standard environmental methodologies, they may be more often utilized by scientists designing solutions to environmental problems. One commentator noted:

“Engineers often appear to display a quiet certainty that their mission in the world is to introduce the order. . . For almost every engineering activity there is a standard method of proceeding and much of the legitimacy extended to the profession rests upon a tacit understanding of this.” (1)

Public involvement programs should be part of the standard method of proceeding in environmental decision making.

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## **2. Why Should The Public Be Involved in Environmental Decision Making?**

This chapter illustrates the theoretical basis for directly involving the public in environmental management. As stated in the introduction, the public is broadly defined to be anyone with an interest in an environmental decision. When environmental decision makers understand and accept the underlying arguments for public involvement programs, they may be more willing to utilize such programs and thereby improve the outcome of the environmental project. This chapter advocates that the public should be included due to the arguments of: societal value change, political accountability, participatory democracy, effective decision making, and statutory requirements. Furthermore, these arguments are more compelling than the counter arguments of: lack of societal equity, inadequate technical expertise, and increased project costs.

### **A. Arguments for Public Involvement**

#### *1. Societal Value Change*

The public wants to participate directly due to changing values. American values are different than the past generation due to greater affluence and security. At the individual level, this value change represents a shift away from narrow materialism to greater self and global awareness:

"Individuals maturing in a period of prosperity and security, feeling free to affirm values of self-expression, aesthetics, and affiliation, are argued to turn to the political world in ways that are different from their elders. . ." (1)

Many political and social theorists describe this change as "postmaterialism." As a result of this expanded world view, postmaterialists expect the right to have more say in determining the course of public policy; and the secure ability to express their views about political issues without fear of punishment. (2) Thus, many postmaterialist Americans want more public policy involvement than they

desired twenty five years ago. However, does this mean that contemporary Americans want to be more involved in environmental decision making?

Since one of the pressing political issues of the current decade is environmental protection, Americans want to be more involved in this arena. For example, in a recent New York Times/CBS news poll, the general public was asked whether or not they agreed with the following statement:

"Protecting the environment is so important that the requirements and standards cannot be too high, and continuing environmental improvements must be made regardless of the cost."

Eighty percent of the respondents agreed with this question. (3) Even though the respondents may not have understood the full implications of the question, and may not be willing to pay the costs themselves, the polls do indicate the importance of the environmental issue. (For a further discussion of public opinion polls and environmental concerns please see Chapter 5). Given this strong environmental concern, coupled with postmaterialistic values, the public wants the right to express their views and contribute to environmental decision making. Public participation programs allow Americans the opportunity to exercise the desired right of involvement.

## *2. Political Accountability*

Because the public has demonstrated tremendous interest in the environment, they will not support a political process that is not sensitive to their concerns. Elected and appointed officials must address these environmental concerns in order to remain accountable to their constituencies. One mechanism to ensure political accountability is to directly involve the public in the environmental management process. (4)

Government agencies and their subcontractors, acting in isolation, can create problems. For example, community-based groups monitoring hazardous waste issues in the 1990s, believe that there are ongoing problems with the government's toxic management programs. In a recent survey of these groups, 45 percent of the respondents claimed that government agencies had blocked

access to needed information, which lead the groups to infer that the government was hiding something. (5) This is a common public perception which leads to distrust. With the aim of improving credibility, New Jersey, a state with numerous environmental problems, publishes a public involvement manual for their Department of Environmental Protection agency employees. This manual repeatedly emphasizes cooperation and forthrightness. (6)

Since the government is often seen as not effectively addressing environmental issues, citizens may want to directly participate in the decision making process in order to redistribute the political balance. Although some will argue that "the public should understand it's own value preferences and elect public officials accordingly," (1) public officials are rarely elected or appointed on the basis of a particular environmental issue. Accountability comes from designing a process which allows participation not by judging political performance in the polling booth.

### *3. Participatory Democracy*

The shared environmental decision making between the public and regulatory agencies has the additional benefit of fostering participatory democracy at the local level. The increased access to government as a supplement to voting, is ". . . another means [for the public] to express their views, join policy debates, and influence the decisions which affect their lives."(4) In this sense, citizen participation should be encouraged to not only strengthen the environmental management sector but for the betterment of society as a whole. Classic democracy studies argue that:

"For the operation of a democratic polity at the national level, the necessary qualities in an individual can only be developed through the democratization of authority structures in all political systems."(7)

Participation at the grass-roots level, especially involving complex and multi-faceted projects such as hazardous waste remediations and other environmental endeavors, allows the public to hone their skills for other societal

decisions. In a similar vein, the National Toxics Campaign, a nonprofit environmental advocacy group, lobbies for public participation in order to create an environmental democracy: a democracy where the balance of power is shifted to give citizens control over what is produced and how it is produced. Their "Toxic Bill of Rights" includes the right to: knowledge, cleanup, compensation, law enforcement, participation, inspection, negotiation, pollution prevention, and freedom from chemical exposure. (8) Citizens ensure that these rights will be accepted and enforced by involving themselves into the decision making process.

#### *4. Mechanism for Effective Decision Making*

When the public is included in the environmental decision making process, there is increased likelihood that all information will be reviewed and evaluated carefully which will lead to more effective decisions and overall project management. Without public involvement, the information can be incomplete:

"When participation is avoided, the streamlining of review or analysis . . . reflects a 'sin of omission'. . . the quality of the information considered in the analysis will likely suffer nonetheless." (9)

The public suggestions and recommendations can help technical experts understand local attitudes and values in order to better manage the whole project. Rucklehaus, the Environmental Protection Agency administrator under Presidents Nixon and Reagan, once said that:

"The difficulty of converting scientific findings into political action is a function of the uncertainty of the science and the pain generated by the action." (3)

Public involvement programs enable the environmental decision makers to educate the public in order to explain the technical and scientific uncertainty. Everyone's concerns, including the public's pain, can then be incorporated into the final compromised solution.

Furthermore, the public is in the best position to discuss health and ecological risks of particular concern. This knowledge enables the regulatory agencies to develop more appropriate solutions to environmental problems. As the California Department of Health Services has published: "The community is the expert about possible routes of exposure and what they're most concerned about." (6) In the case of ecological studies, the community is in the best position to elucidate their valued ecological components--the species and areas that they want the risk assessor and decision makers to take into account in their analyses. (10) Thus, public involvement in the decision making process should lead to more effective decisions and outcomes.

#### 5. *Statutory Requirements*

Federal environmental statutes specifically mandate public participation. Environmental advocacy groups and others lobbied congress to include public participation as a legislated right in the design and implementation of these environmental statutes. These legal mandates force the regulatory agencies and their subcontractors to involve the public at some level. First, *The National Environmental Policy Act of 1969* requires that the Federal Council on Environmental Quality consult with citizen's advisory committees and with representatives of science, industry, agriculture, labor, conservation organizations, state and local governments, and other groups (section 4345 (1)). Likewise, section 1251 (e) of *The Clean Water Act* encourages and assists public participation in the development, revision, and enforcement of any regulation. Second, *The Clean Air Act* requires a reasonable period of public participation prior to the promulgation of any regulation (section 7607 (h)). Third, *The Resource Conservation and Recovery Act of 1984*, which regulates the entire cycle of toxic as well as solid waste, states in section 6974 (b)(1) that:

"Public participation in the development, revision, implementation, and enforcement of any regulation, guideline, information, or program under this chapter shall be provided for, encouraged, and assisted by the Administrator and the States."

These broad mandates are not well defined and not easy to implement; however, they are required by law.

The later acts also included public involvement requirements, but the involvement is more specified and easier to implement. For example, *The Comprehensive Environmental Response Compensation and Liability Act of 1980* (Superfund) requires public participation and education in the design of hazardous waste remediations (section 9617 (a)). The public may also solicit fifty thousand dollar grants to hire their own technical experts. These experts help the public better understand the proposed remediation plans (section 9617(e)). Furthermore, the public may participate in the enforcement process (section 9622 (d)(2)) and can file law suits against any party in violation of a standard or against the government for failure to act (section 9659). *The Emergency Planning and Community Right To Know Act of 1986* mandates public involvement in the design of emergency response plans (section 11003), and toxic chemical releases (section 11023). Section 11044 explicitly ensures public access to all the necessary toxics information. Thus, environmental decision makers are mandated to involve the public. These mandates result, however, from societal value changes and the other arguments put forth in the previous part of this chapter. These mandates are best carried out when the environmental decision makers understand why public involvement is important.

## **B. Arguments Against Public Involvement**

### *1. Lack of Societal Equity*

The average citizen is often insufficiently informed about how to convert his or her own values into public policy (1). Individual values do not necessarily represent community values nor national values. Because of this inadequacy, citizens may not be able to advocate the most equitable public policy for the community or nation. This is most evident in the complex field of hazardous waste cleanups and hazardous waste facility siting. With the exception of the few national organizations concerned with toxics management, the remaining

public is deeply and justifiably concerned about toxics in their own community, but lacks the broader perspective needed to comprehend the national problem. Because of this myopic vision, they often advocate procedures that are not equitable for society as a whole.

For example, Crystal City, Texas, the self-proclaimed spinach capital of America, is a town with an abandoned hazardous waste site from a defunct crop dusting business. The chemicals in drums and the soil include DDT, arsenic, toxaphene, among other toxics. A confrontation between civic leaders and the United States Environmental Protection Agency (EPA) drew national attention in the 1980s. The town was angry that the EPA was not cleaning up to the maximum extent feasible. The EPA chose to bury and cap the contaminated drums and soil and not remove them, since removal would have been a costly measure. The mayor of the town, however, wanted all the hazardous waste removed and stated: "We know what we want, we want a safe, healthy place for our children." (3) Unfortunately, the community advocated an expensive and therefore inequitable solution. This is a common problem, because "no viable democratic process exists to mesh the collective needs with those of individuals and localities." (11)

The state and national governments have broader perspectives about distributing the available resources equitably; however, some members of the public may not accept their decisions. They may argue for more expensive measures which will divert funds from the cleanup in other communities. As one commentator noted:

"There is danger that continuing promotion of public involvement in making these decisions will enshrine procedural democracy at the expense of social equity--in effect, citizen participation will gradually result in selectively exposing the least economically and politically advantaged publics to the most risks from hazardous waste." (3)

Because many of the economically disadvantaged Americans are persons of color, this social inequity is often termed environmental racism.

When allocating funds and other resources among hazardous waste sites, it is impossible to redistribute the risks equally. Thus, under any decision making model, it is inevitable that some individuals will have to accept risks on behalf of others. (11) Some sociologists, however, believe that public involvement actually fosters public acceptance. Based on environmental planning studies done in Texas, they concluded that when the community residents know their opinions are considered to be important, they are more conducive to change. (12) Public involvement programs may enable the residents to communicate with the environmental decision makers and together reach equitable solutions that would not be possible without communication and education.

## *2. Inadequate Technical Expertise*

It has been argued that it is not efficient to directly involve the public because they lack the technical expertise to make wise choices. In our government structure, the technical staff of regulatory agencies are required to represent the public. The regulators and other environmental professionals have the experience and training in the complex field of environmental management that the public lacks:

"The public is too often wrong-headed and/or too easily misled and should steer clear of direct involvement in those areas of the policy process that should be governed by experience and appropriate technocratic expertise." (1)

However, few commentators advocate that the public should be ignored. Programs which explain government and industry plans are acceptable, when direct public decision making may not be. Others advocate that public involvement should be, first and foremost, an educational endeavor to prepare for later decision making because "there is little hope for sound policy formulation in these programs until nationwide scientific literacy is actively practiced." (13) Although the public should have a role in environmental

management, that role should be commensurate with their ability to effectively contribute to the process.

### *3. Increased Project Costs*

Public participation will result in an increased number of players in the overall process, which inevitably leads to increased project costs. As Norman Vig, an editor of several environmental policy books, has noted:

"An unavoidable trade-off exists between the number of people involved in a decision and the costs-- in time, money, and organization--associated with making that decision." (11)

For example, in the last few years, the managers of the hazardous waste remediation program at the Massachusetts Military Reservation, Cape Cod, have increased their public participation program tremendously. They now have a staff of four to manage the program which includes: publishing and mailing bimonthly newsletters in the thousands; creating environmental displays for meetings and libraries; preparing radio and cable television shows; and creating committees with public representatives. (14) All of these projects require money which is taken out of the actual project expenses. Since this money comes from the federal government, public involvement translates to additional public expenditures. In addition to the increased direct expenditures, public involvement delays the process, which can be very costly in both money and effectiveness. Pierce et al. have commented that:

"Moreover, the nature of some issues facing contemporary societies is so pressing and complex that public officials cannot endure the inefficiencies of a fully democratic and deliberative policy process."  
(1)

Although public participation requires an initial outlay of resources, these expenses are often justifiable. If the public is not actively involved, projects are often later delayed in the courts or are cancelled all together. (4) Thus, the increased costs are many times recuperated.

### **C. Conclusions**

As with any social administrative program, there are positive and negative aspects. Public involvement programs are no exception to this. However, national environmental laws do require public participation in the design and implementation of environmental programs and regulations. As illustrated in this chapter, there are sound theoretical bases for these laws. Principally, public input can and should lead to more effective decision making. Environmental decision makers must design public involvement programs that maximize the pros and minimize the cons. The following chapter discusses the design of effective public involvement programs.

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### **3. How Should Public Involvement Programs be Designed?**

Even when environmental decision makers understand why they must involve the public, they may not know how to design and structure programs for maximum effectiveness. This chapter explains some of the principles of public involvement which should be adhered to in all programs regardless of the size of the environmental projects. This chapter then discusses specific techniques of public involvement programs. These techniques should be scaled so that they are commensurate with the impact and complexity of the environmental decisions. For example, a multi-million dollar hazardous waste cleanup should have a more elaborate public program than a project with minimal environmental impacts. The list of techniques is not meant to be exhaustive, but is intended to provide a starting basis for most public involvement programs.

#### **A. Basic Principles**

##### *1. Incorporate The Public Throughout The Environmental Project Cycle*

In order for public involvement programs to be effective, the public must be involved from the beginning to the end of the environmental project. Public participation should not be a token gesture of relaying information after a decision has been made, but should be integrated into the existing authority channels throughout the process. (1) For example, hearings that inform the public about a possible course of action do not solicit public input. They only convey information. Many times these hearings will lead to adverse reaction when community members realize that their opinions were not taken into consideration in the early planning stages. (2) Public interaction must be planned for and anticipated at every stage, from the initial scoping to strategy or plan development to implementation. (3) If the public has been involved throughout the process, the program is considered effective when "the public comment has been solicited in such a manner that

it has contributed to making a decision which is feasible, environmentally sound, and enjoys the support of a significant segment of the public." (4)

## *2. Foster Power Sharing and Negotiation*

Public participation programs should be designed to foster an environment of power sharing and negotiation among all affected parties.

Writing twenty years ago, the political scientist Sewell espoused:

"Participation is basically part of an evolutionary process of social change which aims at political and social egalitarianism. . . . Thus the ultimate aim of participation is 'community participatory design' where citizens, resource professionals, and politicians work together to resolve legitimate disagreements and fairly allocate resources." (5)

Based on extensive case analyses of the 1980s, Susskind and Elliot reached the same conclusion, but characterize that 'ultimate aim' as "coproductive - negotiation." Coproductive-negotiation leads to an equal power sharing between those with vested authority and those without it. (6) Likewise, Iacofano argues that one of the principle goals should be "public interest mediation and acceptability resulting from a process of compromise and negotiation which ensures that final plans reflect the values of competing interest groups." (7) Effective public involvement programs should seek to balance the competing interests and not create power hierarchies where one group or organization has the final say. Finally, Professor Wengent, a political scientist at Colorado State University, comments on the power sharing of environmental public participation. He believes that the needs have not changed much since the French Revolution of 1789, "controlling government, assuring sound and wise decisions, providing for due process, protecting minority views, establishing responsibility and responsiveness, seeking equity, and striving for the public interest." (8)

### *3. Create Opportunities for Education and Interaction*

Although the primary methods for structuring public participation are dependent upon the unique project circumstances, Wilkinson lists three functional categories of participation: educational/information, review/reaction, and interaction/dialogue. He comments that:

**"The trend in developing public participation programs should be toward a variety of mechanisms to perform each of the three functions and flexibility to meet the needs of a given situation."**

**(9)**

For the first category, education/information, it is the responsibility of those with the authority, the environmental decision makers, to provide opportunities for learning and information exchange. Opportunities for learning will increase the technical expertise of the public which will inevitably lead to more effective interaction and dialogue. Furthermore, information exchange among all the affected parties, leads to mutual education and gives the decision maker the added benefit of knowing the range of public attitudes and concerns. (7) For the second and third categories, the decision maker must encourage an ongoing two way dialogue. A thorough public involvement program has many mechanisms to create continuous communication channels. (10) Some of the specific mechanisms will be discussed in the next section.

### *4. Understand The Social Reality*

In order to better interact with a particular public group or community, the decision maker should understand the social reality that is created or maintained by the group members. To appreciate social reality, it is necessary to understand the opinions, viewpoints, felt needs and wants, and perceived benefits and costs of the citizens:

**"Prediction will be projection based on patterns which are identified in the analysis of the group's interests and salient concerns of its members. Prediction will usually be contingent**

and informal, judged on the basis of what can be thought of as the group's gestalt." (11)

Thus, an effective public involvement program should allow for data collection that helps to determine the views of the group. This data is normally sought by interviewing community members for their opinions versus analyzing factual community data such as public expenditures on environmental protection. The decision maker should include some sort of survey mechanism in the beginning stage of the public involvement program. Surveys include face to face interviews, small focus group discussions, telephone interviews, or written questionnaires. All of these methods help the decision maker better understand the varied community viewpoints. By determining the initial starting views of the community, the decision maker can then use that information to guide the development of the public involvement program.

#### *5. Accept The Difficulties*

Lastly, whoever designs a public involvement program should accept and plan for the inherent difficulties of the endeavor. Professor Wengent emphasizes these difficulties:

"The preacher says 'seek ye first the kingdom of God'; the responsible democrat says, 'seek ye first the public interest.' Neither is easy; with respect to both it is the seeking that makes the difference." (8).

Although there are some difficulties in formulating and implementing public participation programs, skills can be improved during the process which make the program better as it progresses. For example, based on eighteen months of observation in a large city environmental planning office, Forester concluded that:

"rationality is not an intuitive gift; it is a product of social and political discourse, of discussion and constructive comment and criticism offering interpretations and counter-interpretations that attempt to clarify the question." (1)

All the participants, the community members and the decision makers, can continue to improve their knowledge, bargaining skills, and communication abilities, among other skills, throughout the process of the involvement program.

## **B. Specific Techniques for Public Involvement**

### *1. Incorporate Environmental Advocacy Groups*

Kent Portney, Director of the Citizen Survey Program at Tufts University, postulates that there are four existing methods for incorporating public views into the decision making process. These methods are: voting for candidates, referenda questions, membership in public environmental interests groups, and direct participation. (12) The third method of incorporating environmental interest groups can be quite effective. Interest groups have the benefit of incorporating persons with similar views into a cohesive unit capable of effectuating change and contributing to the decisions in an organized manner. Furthermore, these groups, in theory, represent many people who do not choose to participate directly. As defined by one sociologist:

"The public interest group was defined as a group with goals that, when met, would result in benefits distributed to all citizens regardless of their participation (or lack thereof) in the political activity leading to the achievement of that goal." (13)

Pierce et al. strongly advocate incorporating interest groups into the participation process. Based on a study of environmental advocacy groups in Canada and the United States, they propose that "the key to much contemporary interest group activity is the communication of policy-relevant technical knowledge." (10) This transfer of technical knowledge then solves the post-industrial quandary: how to accommodate public involvement in complex scientific issues. The advocacy groups contribute to the educational aspect of public involvement programs by increasing mass knowledge. In

turn, this improves the mass policy making processes. Without the advocacy groups, Pierce et al. argue that one would have either: 1) decisions made by elite groups with voluntary or forced public abstention, or 2) the public acting on ignorance. (10) Therefore, involving environmental advocacy groups is one way to incorporate public values and opinions in a structured manner and thus, the environmental advocacy groups "should be vigorously pursued" throughout the involvement program. (2)

## *2. Inventory All Affected Parties*

It is very important to involve all relevant stakeholders in the public involvement program. Depending upon the scale of the project, the facilitators should inventory major area organizations, public bodies, recreational leaders, service leaders, concerned citizens, religious leaders, and other community leaders. In addition, it is important to establish communications with the affected residents and businesses. (2, 7, 14)

## *3. Define Program Staff and Budget*

As stated previously, it is important to plan a citizen involvement program in the beginning stages of any project or upcoming environmental decision. The program should have a dedicated staff and an adequate budget in proportion to the scope of the project. This can be as much as 10-15% of the total project costs. (7) Howell et al. strongly encourage using community development professionals where Iacofano stresses "high quality program leaders and facilitators." (7, 2)

## *4. Prepare Written Plan*

A public involvement program should have a written plan which specifies the goals and objectives of the program. (2) This plan should show "the relationships of public involvement program events, technical studies and public media for each stage in the decision making process." (7) Finally, "the outcome of a citizen involvement program should be a written report

which expresses the sense of the affected community." (2) This written report should reflect the final decisions that were made.

#### *5. Conduct A Community Survey*

Conduct a community survey "to obtain a representative indicator of how the public at large views the proposed action and any related issues and problems." (2) This initial community survey helps to establish the social reality: opinions and viewpoints. (11) The survey should be commensurate with the project. In some cases, that may involve a large mailing, or in other cases that may mean calling a handful of people on the telephone. This community survey provides a starting basis for planning the overall program.

#### *6. Provide Several Communication Channels*

An important part of any public involvement program is regular formal communications between the decision makers and the public. First, there can be indirect communications through the mass media such as newspapers, television, or radio. Based on a poll taken after a citizen involvement program for a proposed hydroelectric project in Washington State, 78% of survey respondents said they were exposed to the program through the newspaper, 10% through a television talk show, and 2% through a radio talk show. (2) The second type of communications is direct communication, such as mailings (brochures and newsletters), electronic mail, or common databases. (3) Third, the program can include the establishment of information centers, which can either be "formal centers, established exclusively to disseminate information or . . . informal areas where citizens normally gather, such as banks, barber shops, taverns, stores, etc." (2)

In addition to formal communications, effective programs also must encourage the informal communications between the decision makers and the public. As noted in planning studies:

"To the extent that formal rules may provide bewildering obstacles to the relatively unorganized and uninitiated public, the informal communications. . . are necessary to provide access and organizing opportunities. . ." (1)

Informal communications consist of phone calls to citizens, attending social events, and word of mouth in the neighborhood and workplace.

### *7. Prepare Meeting Structure*

Public Involvement programs should promote regular structured meetings between members of the public and decision makers. Iacofano has commented that: "simply putting people together in a meeting room to discuss an environmental problem is not "public involvement." (7) There should be established mechanisms for participant interaction and communication. Small informal review sessions "make possible compromises, concessions, and redesign without public attack." Large public forums tend to moderate demands as "the forum is symbolically public, and the range of participants can often discourage or embarrass exaggerated self-serving claims." (1) Howell et al. believe that the meetings should be centered on a citizen's committee or task force composed of:

"representatives of major voluntary associations in the area; representatives of all public bodies in the area; other interested public officials and community leaders who may have expertise or perspectives to contribute; representatives of major statewide or national organizations that are interested in the proposed action; and individual citizens to represent area residents not otherwise represented on the task force." (2)

It is crucial that these meetings "exhibit great attention to person-to-person details, such as providing name tags to participants, remembering people's names, personal phone calls to serve as meeting reminders, quick turnaround and delivery of meeting reports." (7)

#### **8. *Provide Technical Assistance***

Another technique to increase public participation is to provide technical assistance. Forester notes that:

"technical assistance may be paternal at its worst; it may stimulate participation, community organization, and political commitment, and community action at its best." (1)

Technical assistance should be able to balance the jargonese which is often an obstacle to efficient communications between members of the public and environmental professionals. (1) Furthermore, assistance provides project information which enables the participants to understand important technical issues and trade-offs among uncertainty. (7) The technical assistance should explain the necessary information through clear and easy to understand graphics and visual aids.

#### **9. *Understand The Local Government and Regulatory Structure***

Many times the environmental decision makers are from the private sector, or national or state regulatory agency. These decision makers do not necessarily understand the local regulations. Before beginning a public involvement program, it is crucial to understand the local zoning ordinances, wetlands bylaws, and other environmental regulations as well as the overall governmental structure of the community. The environmental decisions must fit withing the existing community structure. (15)

#### **10. *Inventory The Existing Environmental Programs***

Along with understanding the community regulatory structure, it is important to be aware of the existing environmental programs. This includes such things as recycling, cleanup days, environmental fairs, conservation protection programs, among other things. These existing programs may provide the structure for part of the public involvement program. For example, if the community already offers nature walks, it may be possible to combine these existing programs with other educational events.

### ***11. Collect Socioeconomic Data on The Community***

In order to understand the community and structure public events, it helps to understand the socioeconomic background of the area. This information is only a basic starting position and does not necessarily indicate the environmental values and opinions of the community.

### **C. Conclusion**

In order for a public involvement program to be effective, it is important to incorporate the basic principles into the planned activities and events. The principles of: incorporating the public throughout the environmental project, fostering power sharing and negotiation, creating opportunities for education and interaction, and understanding the social reality should be integrated into all environmental projects. The suggested techniques are also crucial to designing effective programs; however, they should be commensurate with the budget and complexity of the project.

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#### **4. Analyses of Environmental Public Involvement Programs**

This chapter presents eight case studies of environmental public involvement programs. In most cases, the analyses were written by social scientists who were critiquing the effectiveness of programs after they were completed. In one case, primary data was collected on a public involvement program that is currently in operation and used for the critique. Some of these case studies illustrate effective techniques which lead to successful programs whereas other programs violated basic principles and failed. Failure is defined to be the programs where the environmental projects were not completed or where the public indicated dissatisfaction.

##### **A. Case Studies**

###### *1. Hazardous Waste Cleanup, Woburn, Massachusetts*

Woburn is an industrial suburban community located 12 miles north of Boston. For additional information about the community please see Chapter 6. The community has a disease cluster that has been attributed to possible environmental contamination. In all, over 25 cases of childhood leukemia have been reported since 1964. This represents a rate which is four times the national average. In 1979, two of the municipal drinking water wells were closed due to elevated levels of toxic organic compounds. One month later, a few miles upstream at the 300 acre Industri-Plex site, the Environmental Protection Agency (EPA) found dangerous levels of lead, arsenic, and chromium. Presumably this toxic waste was left behind by chemical manufacturers and leather tanneries. The discovery of toxic chemical releases lead to the hypothesis that a causal connection between the industrial pollutants and health could be a possibility, but it would be difficult to establish scientifically with a high level of probability. (1, 2, 3)

Within Woburn there are several government agencies interacting on two fronts: 1) studying the causes of the public health problem and 2)

remediating the contaminated sites. To study the cause of the leukemia and other cancers, the Center for Disease Control, the Massachusetts Department of Public Health (MDPH), Harvard University, and The Massachusetts Institute of Technology (MIT) conducted epidemiological studies in the community throughout the 1980s and into the present. These studies involve(d) face-to-face interviews and a telephone survey of over 7,000 households. These studies were not public involvement programs, but public health studies. Nonetheless, the researchers interacted with community members and then presented their findings as part of public events. Meanwhile, the EPA and the Massachusetts Department of Environmental Protection (MDEP) are the lead agencies in the hazardous waste cleanups. Both the municipal wells and Industri-Plex are now federal Superfund sites and there are over 100 state listed hazardous waste sites in the greater area. (4) These agencies also interact with the public on issues concerning the cleanup process.

An unrelated study from The Center for Technology, Policy, and Industrial Development at MIT investigated the public/government agency interaction regarding the human health concerns in the 1980s (1). In response to the public health crisis, a citizen activist group formed in 1979 called For A Cleaner Environment (FACE). This group and other citizens demanded interaction with the government agencies and researchers. They complained that the MDPH did not incorporate community input into the design of their studies, and furthermore "publicly available studies were reported in a forum or manner insufficiently adapted to the needs and perceptions of the community." (1) Thus, the MDPH was accused of not understanding the social reality of the community. In addition, the Boston Globe reported at this time that the community residents considered MDPH to be an adversary. (5, 1)

In 1984, Harvard researchers released and explained their epidemiological study results at several community meetings. These presentations were considered to be successful:

**“Woburn residents felt that the Harvard researchers communicated well, used understandable terminology and fostered trust by their efforts to explain the results. This was particularly noted because people in the community had previously felt that their contributions to the research process had been neither encouraged nor appreciated and that they had been treated disdainfully by public agencies.” (1)**

**In 1985, the Woburn Advisory Panel was created to involve all interested parties in the ongoing health investigations. Reportedly, direct public involvement on the panel was low. Some community members felt that their participation was not encouraged. A Citizens Advisory Committee was later formed in 1987. This committee included people from FACE, Harvard, MIT, EPA, and other local and state agencies. This committee only met sporadically and “there is a sense that even if communication does take place, it is under duress and does not represent a sincere attempt to achieve a positive relationship.” (1) The MIT analysis concluded that the public involvement program on the part of the MDPH and other agencies was very poor:**

**“Citizens seem to feel that if more attention had been paid to their concerns at an earlier date, and if inter-agency warnings had been heeded, years of frustration, as well as lives, would have been saved.” (1)**

**Thus, one of the major causes of failure was that the public was not involved in the beginning stages of the environmental and health studies and that there was not adequate power sharing and negotiation.**

**The MIT study had several recommendations for improving the public involvement program. One such recommendation concerned the manner in which information was disseminated to the public:**

**“A community site-specific advisory committee, in collaboration with an agency on-site technical person, should have the opportunity to develop guidelines for the format and substance of the dissemination. The presentation of the study results to the community should be made jointly by both agency**

and community representatives after conferral, and in advance of public or press release." (1)

This recommendation stresses the importance of education and technical assistance to help community members interpret the findings.

The EPA is the lead agency for the federal environmental remediations and is thus in charge of the public involvement programs for the environmental concerns. Woburn has two federal Superfund sites with EPA oversight. The public involvement program began in 1985 at the Industri-Plex site when the EPA issued a fact sheet explaining the feasibility study for the site and describing the preferred remediation alternative. Following the release of the feasibility study, there was an informal public hearing and then a formal public comment period as required by federal statute. The EPA presumably responded to all the public comments, (6) but it is not known whether or not the comments influenced the chosen remediation alternative or whether the public was satisfied with their role. Also in the mid 1980s there were regular mailings, press releases, and public hearings.

In 1988, the EPA interviewed community members in order to evaluate the public involvement program. It is not known how many people were interviewed. Most of the community members were primarily concerned about public health although some urged better wetland protection at the site. Specific citizen suggestions included: greater technical assistance, monthly newsletters, a telephone hotline, small neighborhood meetings, avoid using acronyms, encouraging the participation of Woburn public officials at meetings, greater information about how the agencies interact, among other suggestions. (6)

In 1989, Ebasco Services prepared a new community relations plan for the Industri-Plex site under an EPA contract. (6) As part of this plan, the EPA issued new objectives for the community relations program which included: 1) Establish a sustained and flexible program for promoting communication between the community and the EPA. 2) Educate and inform the public about

all aspects of the cleanup. 3) Keep local officials informed of and involved in site activities. (6) Up until the early 1990s there were regular public meetings and factsheets; however, there does not seem to be much public involvement at the moment. The Woburn Public Library, although a site depository, has not received technical documents since 1992. FACE now consists of a handful of activists and its offices have closed and its grant money is gone. (14) Thus, at the current time, it appears as if the public involvement program has dwindled.

## *2. Hazardous Waste Disposal Siting, Minnesota*

In 1975, the EPA awarded a grant to the Minnesota Pollution Control Agency (MPCA) to develop a chemical-waste landfill for demonstration purposes. (7) An engineering subcontractor chose four sites based on ecological conditions of the area. These four sites were then presented to the MPCA and Minnesota Waste Control Commission (MWCC) at a public meeting. The public was only informed of the possible sites. As might be expected, public response to the proposal was negative. The MPCA held three more public meetings before deciding to postpone the project until public opinion could be examined. The MWCC then took the lead on implementing a public education and involvement program, which included informational brochures and slide shows. Despite this program, all the proposed sites were rejected by the local officials, residents, and nearby businesses. The principal reasons given were that the proposed facility did not conform to existing land use regulations, and that it would create a community hazard. This public participation program failed because the public was not involved in the initial stages and the local regulations were not considered. In the case analysis, the commentator noted:

**“The entire public input process was formed as an afterthought and consequently it had little chance to enhance citizen understanding or facilitate communication.” (7)**

If the public and local government had been involved from the beginning, it may have been possible to place the landfill in an area permitted by local regulations. However, siting hazardous wastes sites is extremely difficult due to public fear. Thus, a successful public involvement program is rare. Nonetheless, this one clearly failed because it did not solicit public input before choosing the four proposed sites.

### *3. Upstate New York Planned Interstate Highway*

In 1976, a group of anthropology students and their advisor spent eight weeks in Cobleskill, New York to determine the citizen's views of the best exit locations for a planned interstate highway. (8) The students were conscious of the social context of public involvement programs. They interviewed business people, local officials, educators, clergy, and others in responsible positions, as well as a small sample of local residents. The faculty advisor wrote:

"The researchers made an attempt to interview and re-interview 'key people'—those whose names came up most frequently as community 'movers', so that the study would have support among those who most affected the life of the community." (8)

The citizens were made aware of the research project through the local media and word of mouth. In the end, the social science research was not used to influence the final project decisions. The students didn't "analyze the local decision-making structures so that the information painstakingly gathered could really be used." (8) Thus, although the students solicited the values and opinions of the key people, they did not understand how the local government could use the information. Unfortunately, they did not foster an environment of negotiation and interchange among those with authority.

### *4. United States Forest Service Recreational Development Project, Colorado*

A 5,600 acre forest tract was slated to be developed into a four seasons resort in Eagle County, Colorado in 1976. (7) Although the developer

commissioned a socioeconomic impact statement, citizen input was not solicited and the community immediately divided into two factions. Since the community was polarized, county officials were unable to make a decision on the project. Community development specialists from the University of Colorado and the local community college stepped in and began an environmental conciliation procedure which integrated three approaches: 1) communication facilitation, 2) structuring the situation for consensus, and 3) judgment analysis. They began the procedure by forming a citizen study panel. The panel selection was accomplished through a community-wide survey and community value identification process. Thus, they identified all the possible affected parties and their associated values. Based on previous meetings, citizen's concerns were organized into five categories outlining possible future scenarios for the county. These future scenarios were then shown to survey respondents in interviews and a linear regression was used to find value clusters among the responses. A screening process was then used to select people from each value cluster to serve on the citizen panel. The facilitators created an environment of negotiation and compromise. Through structured communication, the citizen panel reached a final consensus on the development proposal. This citizen panel was selected in a manner to represent the range of values in the general public and thus was able to incorporate competing interests in a manner that allowed for review and reaction, negotiation, and compromise in order to reach the final solution. (7)

##### *5. New England Electric Utility Project*

The New England electric utility companies are in the process of restructuring the regional power industry due to changes in state and national laws. This restructuring will involve a change in fuel use and thereby a change in environmental concerns. As part of the restructuring process, there is a citizen advisory panel created by the utility companies and government regulators. There is no formal mechanism for determining

representation on this panel. Presently, the primary members are the Conservation Law Foundation of New England and Raytheon Corporation. (9) Due to this informal self selection process, the panel is not representative of the overall community values. No organized attempts were made to solicit representation of the various stakeholders and the wide range of public interests. Thus, the citizen advisory panel is biased and does not represent regional community leaders, other environmental advocacy groups, and consumers. It appears as if this public involvement program is a token gesture and not intended to incorporate the overall social reality of the public.

#### *6. United States Forest Service Management Program, New England*

The Forest Service sought public input on management objectives and policies for the Area Guide of northern New England in 1973. (10) This was a legitimate public involvement program, but several sociologists conducted it as an experiment. The participants were selected on the basis of self interest. They were then divided into three experimental groups. The first group of 280 people was asked to comment on the Area Guide after it had been written. The second group of 273 people was involved in the development of the guide from the onset, but from a minimal position without regular meetings. The third group of 134 people was divided into ten working groups which regularly met to discuss and develop Forest Service policies as well as the Area Guide. One year after the project ended, the participants were sent a brief survey and were asked to comment on ten finalized forest policies and the desirability of public involvement programs. The program participants strongly endorsed public participation; however, those most strongly endorsing it showed the least support for the Forest Service policies. Ironically, confidence in the policies was strongest among those who had had the least involvement with Forest Service staff (the first group). The third group that had ongoing contact with the Forest Service staff, least supported the policies. Thus, there was an inverse correlation between public involvement and public support. The case writers commented that "these

findings raise basic questions about the role and contribution of public involvement in complex policy decisions.” (11) It is difficult to understand what happened in this particular case and whether or not the public input actually lead to more effective policies.

#### *7. Susquehanna River Basin Study, New York*

In 1969, the U.S. Army Corps of Engineers and the Division of Water Resources for New York State sponsored a University of Michigan study to identify effective methods of communication and participation in regards to water management for the region. (12) In the beginning, effective communication was hypothesized to require the creation of opportunities, confidence and trust between citizens and agencies, and shared mutual perceptions about the planning process and the area’s major resource problems. These hypotheses are similar to the principles of fostering negotiation and understanding the social reality of the region.

A questionnaire was administered to the river basin staff members regarding their perceptions of the basin’s problems; attitudes and opinions about water resources planning in general; and the roles of local leaders and interest groups. A similar questionnaire was mailed to 300 people identified as water resource opinion leaders. These leaders were identified by a four step process: 1) published directories were used to identify office holders; 2) newspaper files were perused to determine who had taken active roles in water planning in the past; 3) those identified by the above two methods were asked to identify others and 4) information gathered in the course of the study was used to generate additional names. Thus, there was a systematic effort to incorporate all persons with conflicting interests. (10) Fourteen workshops were also held for local leaders and technical staff as well as nine public forums. The public forums had newspaper, television, and radio coverage. It appears that there was an adequate communication structure.

The case study measured the effectiveness of the participation program afterward by administering a survey to which 215 people responded. The

survey respondents said that the most effective means for distributing information was the newspaper. The respondents also commented upon the benefit of the large amount of information exchanged between members of the study team and those attending the forums. (10) Citizens felt that the direct discussions with the professionals were very educational. Thus, it appears that those involved with the program appreciated the opportunities for education and interaction. The program facilitators concluded:

“The need to consider the role of environmental education within a larger planning and decision making context is of utmost importance.” (12)

#### 8. *Okanagan Basin Study, British Columbia*

In 1969, the British Columbia government agreed to develop a comprehensive plan for natural resources management in the Okanagan Basin. (13) The plan addressed water quality and quantity, recreation and fishing issues to the year 2020. The program coordinators commented that:

“While studies in hydrology, limnology, economics and fisheries biology were launched immediately according to well tested techniques and approaches, the public involvement program floundered because of lack of practical precedent.” (13)

Eventually, the coordinators established the goals of the public involvement program. The goals were to educate the general public, and ensure that the recommendations represented the views of the areas residents. In the beginning, questionnaires were also sent to 384 randomly selected households. These questionnaires were to gauge public opinion and the wide range of views which constitute the social reality of the region.

The thrust of the public involvement program utilized a system of regionally based citizen task forces that incorporated major environmental and economic concerns as represented by four types of citizens: organized public groups, unorganized public groups, select special interest groups, and local politicians. (7) Specifically task force representatives included: students, service organizations, agriculturists, environmental advocacy groups,

chambers of commerce, industrialists, unions, motel and tourist associations, professional groups and religious groups. Only one representative of any one special interest group was allowed a seat on each of the task forces in order to prevent them from dominating the planning process. (10) In addition to the task forces, all the public media was used to inform the general public of the various plan options. This included news conferences, call in talk shows, television, radio, and newspaper coverage. Data bulletins were mailed to a large list and distributed through information centers such as libraries, banks, barber shops, and waiting rooms. There appears to be several means for effective communication.

An executive task force then summarized all the citizen recommendations and presented this document at eleven public forums to get additional responses. With knowledge of all of the recommendations and using several of them, government officials prepared the basin plan to address the concerns and values of the entire Okanogan community. (13) The program was determined a success by the case authors. A number of factors contributed to the success of this program, but the most important was determined to be the variety of avenues provided for public responses. Other factors were: competent coordinator and staff, efficient media, and clear technical presentations. (13, 10, 7)

## **B. Conclusion**

These case studies illustrated how several of the techniques discussed in the last chapter can be put into practice. Specifically, how community members and their respective interests are best inventoried and what communication channels can be utilized. The most successful programs were determined to be the Forest Service development project in Colorado, the Susquehanna River Basin study in New York, and the Okanogan Basin study in British Columbia. These were well structured programs with clear written goals, that sought to incorporate all the competing interests in a manner that allowed for effective negotiation and compromise. Furthermore, these

programs attempted to understand the social reality of the regions by administering questionnaires to the residents. In addition, these programs provided several avenues that allowed for public education and interaction. Some of these avenues were direct discussions with technical specialists, small forums, and information centers. Thus, these three public involvement programs adhered to the basic principles.

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## **5. Toward Understanding Public Opinion on The Environment**

A basic principle of public involvement programs is that the decision maker should understand the social reality, opinions and viewpoints, of the particular public group. It is not an easy task to formulate an accurate picture of the social reality; however, it can be characterized through several techniques such as small discussion groups, face to face interviews, and telephone and mail surveys. Several of the case studies in the previous chapter used surveys to understand the social reality of the community. Public opinion surveys are often efficient and manageable techniques used to help gauge the initial environmental perceptions.

In order to improve the effectiveness of public involvement programs, environmental decision makers should understand some public opinion findings. The existing findings will aid the decision makers in understanding national environmental views, as well as in developing their own social reality surveys. This chapter discusses the New Environmental Paradigm, which is an ecologically centered world view. In contrast, the Mass Belief System hypothesis, will also be illustrated. The latter does not accept an ecological world view, but espouses that most people's environmental attitudes are narrowly focused and dependent upon immediate circumstances. Finally, popular national public opinion surveys will be discussed. Environmental decision makers will often be exposed to these surveys through the media. It is important to be able to interpret and understand these surveys in the context of the national environmental social reality that they represent.

### **A. The New Environmental Paradigm**

What are American attitudes toward the environment and how are these attitudes determined? Social scientists often base their theories on public opinion surveys. For example, on the basis of a 1978 mail survey, Dunlap and Van Liere espoused that the dominant social paradigm in the United States and Western

world was in the process of being replaced by a new environmental paradigm. (1) A paradigm is a world view through which individuals or society interpret the meaning of the external world. This paradigm then creates the image of social reality that guides expectations in a society. One way that social scientists study the human-environment relationship is to use "traditional paradigms, theory, and concepts to link change in environmental attitudes, values, and behaviors to changes in the socio-cultural system." (2) The former dominant social paradigm is anthropocentric and includes the "assumption of human separateness from and domination over nature." (2) Those that subscribe to the former dominant social paradigm have "faith in science and technology to find solutions to ecological problems." (3) The latter paradigm has as its theme a world view where man is in an intricate balance with nature. (1)

#### *1. 1978 New Environmental Paradigm, Washington State*

In their 1978 article which first illustrated the New Environmental Paradigm (NEP), Dunlap and Van Liere collected the data from a mail survey sent to 1,233 randomly selected Washington state households. (1) Of the surveys sent out, 65.4 percent were returned. At the same time, they sent 542 surveys to members of a statewide environmental organization. 75.1 percent of those surveys were returned. Among the many social and environmental questions in the survey, twelve measured acceptance of the New Environmental Paradigm. These twelve questions asked people to agree or disagree with such concepts as: space ship earth, balance of nature, anthropocentrism, steady-state economy, limits to growth, and others. The sociologists then used the twelve items to construct a NEP scale which was proven to be a statistically valid measurement of environmental attitudes on the basis of predictiveness, content, and construct validity.

The results of the survey indicate "a remarkable degree of acceptance of the NEP – not only among environmentalists, which was expected, but among the general public as well." (1) For example, 95.6 percent of those surveyed

believed that humans must live in harmony with nature in order to survive.

Dunlap and Van Liere suggested future research:

"on the relationship of the NEP to other attitudes and actual behavior. . .we fear some may draw overly optimistic conclusions about the future of public commitment to environmental quality given the surprising degree of public endorsement of the NEP found in our study. . .we nonetheless must end by stressing what we believe to be the rather remarkable nature of our results. When we consider that just a few short years ago concepts such as "limits to growth" and "spaceship earth" were virtually unheard of, the degree to which they have gained acceptance among the public is extremely surprising." (1)

The NEP scale, with its corresponding survey questions, has been used on a few other occasions in the 1980s and 1990s.

## *2. NEP Scale, Iowa*

In 1982 Albrecht et al. performed a replicative study of the NEP scale in Iowa with two sample groups: farm operators and urban residents. (4) They found the NEP scale to be reliable and valid, but it was not unidimensional. By using a statistical methodology called principle factor analysis, they found three distinct factors within the NEP scale: balance of nature, limits to growth, and man over nature. Factor analysis is a procedure for estimating the correlations of a variety of variables with one or more presumed underlying factors that are common to all variables (5) The authors believe that these factors represent different groupings of attitudes towards the environment. Thus, although the survey respondents did not endorse the generalized NEP attitudinal scale; there was a demonstrated environmental concern. (4)

## *3. NEP Study, United States, England, and Germany*

Milbrath conducted a three nation study (United States, England, and Germany) in 1980 and 1982 in order to analyze environmental attitudes. (6) The twenty minute written questionnaire was sent to approximately 2,500 Americans. The Americans were divided into seven groups: general public,

environmentalists, labor leaders, appointed officials, elected officials, business leaders, and media gatekeepers. The study results were analyzed according to the responses of each of these groups. The response rates ranged from a high of 68 percent for the environmentalists to a low of 30 percent for the elected officials. The questionnaire was designed "to disclose the basic belief and value structures (paradigms) that lie beneath superficial attitudes." (6) Milbrath concluded that the majority of the people in the U.S. believe to some degree in both the Dominant Social Paradigm (DSP) and the NEP. He labelled those people in the middle, the environmental sympathesizers, whereas those that defend the DSP, the rearguard, and those that advocate an ecological way of life, the vanguard. His findings showed that there is a substantial movement away from the DSP toward the NEP and thus concur with the previous surveys. (6)

#### *4. 1984 NEP Scale and Environmental Knowledge, Kentucky*

In 1984, Arcury et al. conducted another survey to test the NEP scale in conjunction with environmental knowledge. (2) The authors performed a random digit dialing telephone survey on 441 individuals in Kentucky with a 69.7 percent response rate. They used as the independent variable the NEP scale, and as the dependent variable, knowledge about water issues relevant to Kentucky. Prior to conducting the survey, the authors hypothesized that the higher the individual's scores on the NEP scale the more knowledgeable the respondents would be about environmental problems. In addition, differences in the NEP score and knowledge would not be better explained by such characteristic factors as sex, education, or income. The results of the survey concluded that the strongest effects on environmental knowledge were income and education whereas the respondent's NEP score and sex have about equal explanatory strength. The factors which most strongly influenced the NEP score, and thereby ecological world view, were age and education. Thus, more educated community members tend to place environmental issues higher on their priority lists. The study also provides a partial validation of the theory "that as environmental world view changes, greater attempts will be made to know

and understand the limits of nature and the place of humans with these limits.”

(2) Thus, education and environmental issues are intricately interconnected.

#### 5. *1988 NEP, Toronto and Detroit*

In 1988 Pierce et al. conducted a mail survey of 1,300 random individuals in Toronto and Detroit, as part of a large political culture study. (7) After four mailings (initial survey and reminders), the Toronto group had a response rate of 69.9 percent and the Detroit group 69.1 percent. As part of the survey, the researchers included six questions relating to the NEP. Both Canadians and Americans scored high, with Canadians having a final score of 24.24 out of a possible high of 30 and Americans with 23.29. Furthermore, "nationality, postmaterial value type, and age cohort each demonstrate[d] independent effects on support for the NEP." (7) The authors concluded that:

"On the whole, support for the NEP is greater among Canadians than among Americans, greater among postmaterialists than among those with mixed or material values, and greater among younger cohorts than among older-age groups." (7)

Thus, younger people who have adapted to the postmaterial societal value changes are more accepting of ecological world views. Furthermore, as stated in the first chapter, those that have adapted postmaterial values are also more demanding of public involvement.

#### 6. *1994 NEP and Forests, Oregon*

Steel et al. in 1994 examined "the degree to which the public embraces differing values about federal forests nationally and regionally" by identifying the underlying philosophical values of both the national and Oregon publics. (8) The authors defined two orientations: biocentric, which "does not deny that human desires and human values are important but it places them in a larger, natural, or ecological context;" and anthropocentric in which human have "no ethical duties toward nature." (8) They concluded that "both the national and

Oregon publics tend to be more biocentric in orientation than anthropocentric.”  
(8) Thus, this recent survey supports the NEP at the state and national level.

### 7. 1995 NEP and Wildlife

An additional study in 1995 devised an attitudinal scale to measure attitudes toward wildlife. (9) This scale was divided into nine categories ranging from *Naturalistic*--those people who have a primary focus on an interest and affection for wildlife, to *Negativistic*--those people who have a primary orientation on avoidance of animals due to indifference, dislike, or fear. The results suggest that “American attitudes toward natural resources and wildlife have become less utilitarian, negativistic, and dominionistic during the past twenty years and, more generally, during the course of this century.” (9). Thus, this study confirms the worldviews of the NEP.

### B. Mass Belief Systems

In contrast to sociology literature, political science literature focuses on the concept of Mass Belief Systems. This concept is based on “the premise that different people may conceptualize the same issue in radically different ways.” (10) The sociology literature assumes that environmental attitudes are rooted in an ideology or philosophy that is more or less widely distributed throughout the public:

“The public’s environmental concerns are. . . rooted in a new awareness that the planet’s ecosystem is fragile and requires far-reaching protection.” (10)

This is exemplified by the NEP scale and other attitudinal scales. On the other hand, political science advocates:

“that only a very small number of people have sophisticated ideologies; that in most cases people’s attitudes are narrowly focused and depend largely on their immediate circumstances; and that, therefore, public opinion is composed of loose and shifting coalitions.” (10)

### **1. 1974 Mass Belief System, Wisconsin**

Buttel et al. conducted a mail survey in 32 small and medium sized Wisconsin communities. (5) The intent of the survey was to measure environmental concern and other things among the community elites. The community elites were determined on the basis of: 1) position and 2) reputation. Positional elites were appointed and elected officials whereas reputational elites were powerful and influential people in the community as identified by the positional elites.

The respondents were asked to rank a group of environmental questions on the basis of environmental urgency within their community. The study concluded that environmental concerns are diverse and that even those supportive of environmental reform are “not singular in their beliefs or commitments.” (5) There did not appear to be an underlying environmental belief or view.

### **2. 1989 Mass Belief System, Florida**

In order to examine the Mass Belief hypothesis as applied to environmental issues, deHaven-Smith conducted a telephone survey of Florida residents in the late 1980s. (10) The study focused on attitudes toward land use regulation to determine whether a narrow environmental issue is conceptualized by the mass public in many different ways. A second reason for focusing on attitudes to land use regulation is that:

“according to the beliefs systems literature, most people’s attitudes about the environment are rooted in their day-to-day experiences, not in abstract concerns about the planet’s, the nation’s, or even a state’s ecology.”(10)

The survey respondents were asked whether land use regulation should be strengthened, relaxed, or left about as it is. Respondents were then asked an open-ended question about why they took their position on land use regulation. The study concluded that:

**“attitudes toward land use regulations in southeast Florida appear to be grounded in diverse orientations. Some people are concerned about the quality of the built environment, some focus on the natural environment, others emphasize the politics of planning and zoning, and still others have little substantive content at all in their views. Moreover, people’s concerns appear to be rooted in the mundane conditions of everyday life rather than in abstract philosophical or ideological principles.” (10)**

The author goes on to conclude that the strong support for strict land use regulation and environmental protection is “probably best thought of as a coalition of many groups with very focused peeves rather than as a broad-based, unified, environmental movement.” (10) Furthermore, people seem to be much more concerned about water and air pollution and other local issues “than about rising sea levels, overpopulation, or the destruction of the Amazon rain forests.” (10) Thus, the author does not accept the NEP world view as the dominant way of thinking about the environment. This research also suggests that environmental decision makers should understand environmental concern at the local level. It appears as if the social reality of an environmental issue is best viewed from the local context.

Given that most public involvement programs focus on local environmental concerns, and not global policies, it makes sense that the characterization of the social reality focus on the same local issues. However, it is also possible to ask people their opinions about more complex global problems in order to elucidate their world views. Many forthcoming environmental regulations and their subsequent public involvement programs, will result from global concerns such as ozone depletion or global warming. In order to implement an effective public involvement program, the environmental decision makers should understand the community’s specific views as well as their world views as exemplified by the NEP.

### C. Environmental Concern in National Opinion Polls

Throughout the last two decades, several organizations conduct annual telephone surveys in order to determine public opinion on the environment. Environmental decision makers should understand how to interpret these polls in order to better design public involvement programs. For example, the Gallup poll asks the public questions on the environment and other pressing issues. Recently, the Gallup poll of May, 1992 indicated that only 11 percent of the respondents listed the environment as the most important problem facing the nation. (11) This result puts environmental protection at a fairly low priority for most Americans. However, the Gallup poll can be misleading according to deHaven-Smith.

“The Gallup question unfortunately presents a geographical frame of reference that is quite distance from respondents’ actual environmental concerns. If the question had referred to local government or to the respondents’ communities rather than to the country, the environment would have been cited much more frequently than it was. . . Because of this measurement bias, for two decades analysts have probably underestimated the extent to which the public is alarmed about environmental degradation. ” (10)

deHaven-Smith bases this conclusion on his Florida studies and on a 1989 telephone survey where 636 respondents were randomly selected from throughout the continental states. Six percent of the respondents said that the environment is the biggest problem facing the nation, but 18.8 percent said it was the biggest problem at the state level and 16.5 percent said it was the biggest problem at the local level. Thus, environmental concern was three times as important at the state and local level than at the national level.

Furthermore, other survey researchers comment that environmental issues never do that well in such ‘most important issue’ polls:

“The best mechanism to measure public support for environmental protection is from those polls which measure *strength* of public concern at any one time, and over long periods of time . . .” (11)

In 1980, the Council on Environmental Quality analyzed trends in public opinion polls. They found that the National Opinion Research Center poll which asked the public "whether the government is spending 'too little, too much, or about the right amount' on the environment," changed drastically between 1973 and 1980. In 1973, 60 percent of the respondents chose 'too little' whereas in 1980 only 48 percent chose 'too little'. (12) On the other hand, the Roper poll found virtually no change between 1973 and 1980. In 1973, 45 percent chose 'too little' and in 1980, 48 percent chose 'too little'. (12) Thus, it is difficult to determine which of these polls is more accurate. However, in the following decade the National Opinion Research Center polls found the percentage of respondents who believe that the nation spends 'too little' on improving and protecting the environment rose from 48 percent in 1980 to 71 percent in 1990. This large jump over the decade is a notable measurement of how the public perceives environmental concerns.

In addition, the *New York Times*/CBS News Poll which asks the question:

"Protecting the environment is so important that the requirements and standards cannot be too high, and continuing environmental improvements must be made regardless of cost."

In 1981, 45% of the respondents agreed with this question and 75% in 1990. (11)

Thus, public support for the environment is continuing and on the rise as seen by these national polls over the course of a decade. It is important that environmental decision makers analyze these brief national opinion polls in terms of the trends that they represent and not what is indicated in any given year. Finally, one commentator noted:

"It appears that environmental protection, like issues such as health care and education, has become one of the lasting concerns of the public." (12)

#### **D. Conclusion**

Environmental decision makers should determine the social reality of the community, state, or nation where a public involvement program will be conducted. Often times, public opinion surveys can be used to help define the social reality. Two of the prominent social reality theories were presented in this chapter: the New Environmental Paradigm and the Mass Belief System hypothesis. Although these two theories offer different interpretations about environmental concern, they can be incorporated into the design of survey questions and into the characterization of social reality.

Finally, two of the surveys presented here specifically asked the public their views on direct participation. First, the Pierce et al. study in the United States and Canada examined attitudes towards public participation and the results indicate that both nationalities ranked public participation very high. (7) Second, in Milbrath's three nation study he asked the respondents to rank their preference for:

"a society which is willing to put up with some delay in order to let more people have a say in the big decisions vs. a society which is willing to let a few people make the big decisions in order to get things done more quickly." (6)

All of the groups surveyed indicated a strong preference for delaying with the exception of the business leaders. Another question in Milbrath's survey asked if the respondents wanted:

"a society with many chances for citizens to take part in political decisions vs. a society with few chances for citizens to take part in political decisions." (6)

Overwhelming percentages favored citizens taking part in decisions with 55 percent or more in the most extreme categories. Thus, these polls further indicate that the public does want to be directly involved in environmental decision making.

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## **6. Case Study of Preliminary Public Involvement Program Data**

This chapter demonstrates the background information that must be collected before beginning an effective public involvement program. The two communities chosen for this case study are Winchester and Woburn, Massachusetts. These communities are within a watershed that has two federal Superfund sites and over 100 state listed hazardous waste sites. Due to these hazardous waste problems, there are numerous environmental remediations and research projects being conducted in the area.

For instance, since 1987 The Massachusetts Institute of Technology (MIT) faculty and students in the areas of hydrology, analytical chemistry, toxicology, environmental engineering, and chemical engineering have been conducting research in the area as part of the Superfund Basic Research Program. Their research work consists of: historical surveys of contaminant sources, chemical fate and transport studies, toxicology studies, groundwater modeling, among other endeavors. Please see Appendix A for a complete list of MIT Aberjona publications.

The Aberjona watershed is the area of the MIT researchers studies. This watershed is a natural boundary and in reality it is a sub-basin of the Mystic River watershed and not independently identified on most area maps. The Aberjona watershed is 25 square miles and predominantly lies within the borders of Woburn and Winchester although it incorporates parts of seven other communities. It is hydrologically composed of the Aberjona River, Horn Pond Brook, Horn Pond, Wedge Pond, and Mystic Lakes along with several other small ponds and tributaries. The environmental concerns in the area are actually present at the watershed level as most of the contaminants were transported by surface and groundwater throughout the watershed. Some of the environmental contaminants in the lakes and river sediments include: arsenic, lead, mercury, chromium, cadmium, and several toxic organic compounds. (1) At some level, all of these contaminants are toxic to humans and wildlife.

The City of Woburn, as shown in Chapter 4, has had public involvement programs in past years. However, these programs were site specific and concentrated on the community in which the individual hazardous waste site was located. An effective public involvement program should address the full scope of the environmental concerns of the area. In this case, the environmental contaminants and their resulting problems exist at the watershed level. Thus, the environmental decision maker must incorporate the communities of the watershed into the public program.

This chapter illustrates the preliminary data which must be collected in order to design a public involvement program for the two principal communities of the watershed. The information includes: demographics, economic development, local government structure and local environmental regulations, environmental programs, resources, and as well as perceived environmental problems and needs. In addition, included are lists of the community leaders. The community leaders are the elected and appointed public officials as well as those people who affect and influence the decisions within the community. As illustrated in the case studies, it is very important to have the support and input of community leaders for public involvement programs. The community leaders included are: presidents of service and hobby organizations, recreational leaders, and religious leaders. Furthermore, included are lists of the local and regional environmental advocacy groups which are also important parties in environmental decision making. Concerted efforts should be made to involve the environmental advocacy groups.

A successful public involvement program should be well planned with a clear set of goals and written structure. Before beginning a program, there is a lot of preliminary research that should be undertaken to understand the existing structure and makeup of the community. This chapter elucidates the full scope of the essential information needed to design an effective public involvement program.

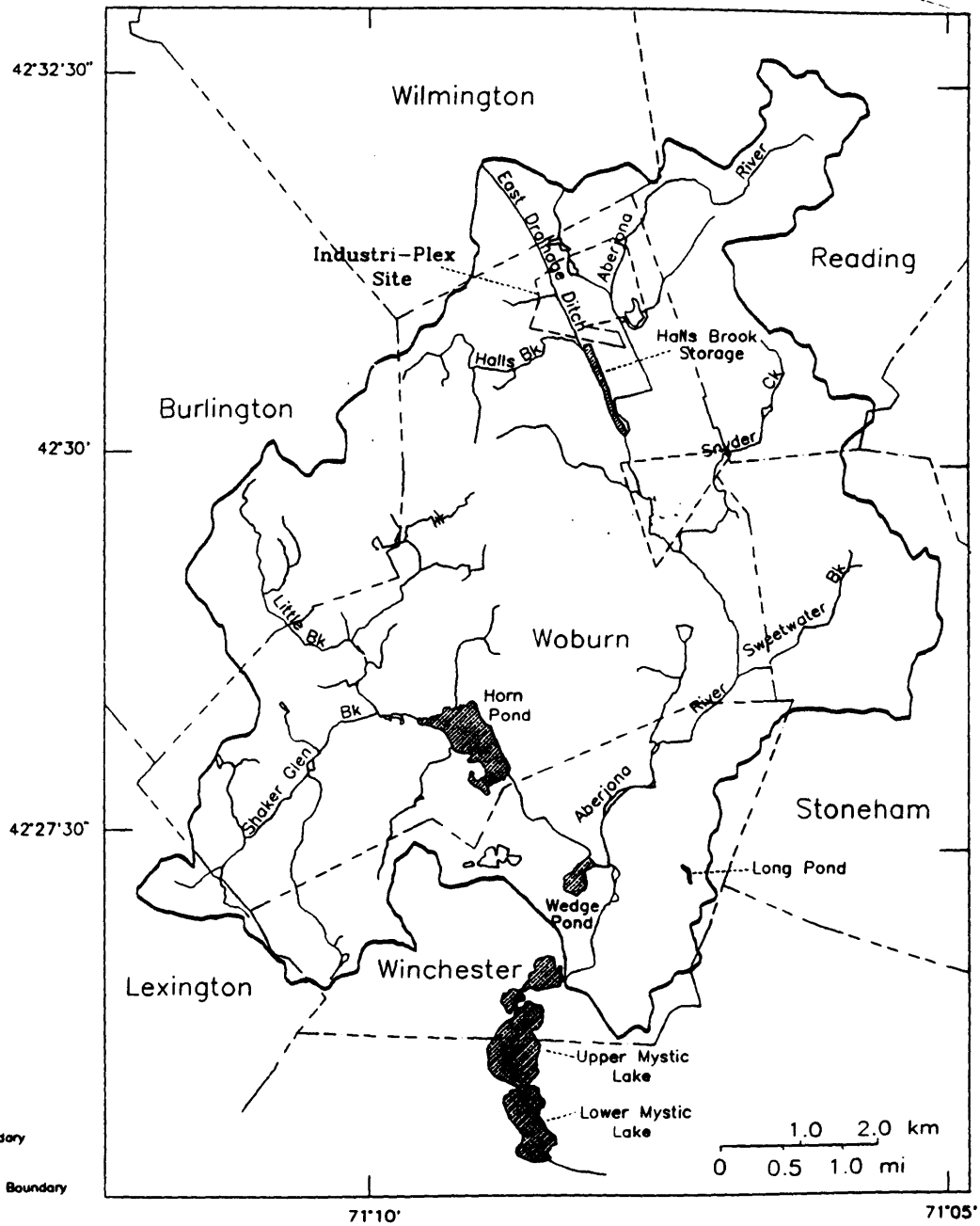
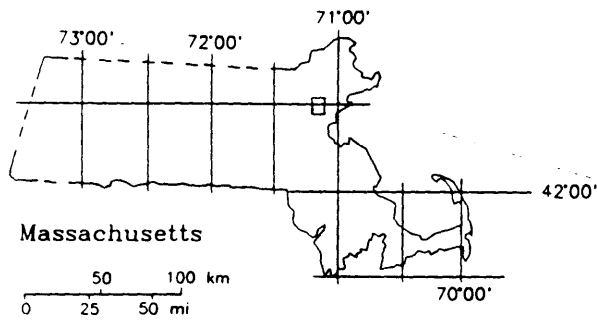


Figure 1. Aberjona watershed.

## **Section 1: Winchester, Massachusetts.**

Winchester is an affluent residential community located 8 miles north of Boston. It is a relatively small community with a total land area of 6.04 square miles. It was incorporated as a town in 1850.

### **A. Demographics**

#### **1. Population**

According to the 1990 census, the total population is 20,267 with an average density of 3,355 people per square mile. The age breakdown is as follows:

under 5	6.2%
5-14	12.0%
15-44	43.0%
45-64	23.3%
65 and over	15.4%

Approximately 40% of the residents are over 45 years, and the percentage of residents who are over 65 is dramatically increasing. (2)

#### **2. Race and Ethnicity**

The races are: 95.4% white, 2.6% Asian or Pacific Islander, and black, Native American, and Hispanic are each less than 1% of the total population. (2)

#### **3. Household Composition**

The household composition is typical of Boston suburban communities. 63.8% are married families and 24.7% are non-family households (roommates and the like). The balance is made up of single male and female family households. (2)

#### **4. Income**

On the basis of median household income and per capita income, Winchester is the 13th wealthiest community in the Commonwealth. The median household income is \$65,994 and 47% of the households average

over \$75,000 per year. Only 2.6% of the town population lives below state determined poverty levels. The majority of the residents (4,902) are employed in the service sector followed by 1,722 residents in wholesale and retail sector, and 1,157 in finance. 90 residents are employed in agriculture. (2)

## **B. Economic Development**

### **1. Employers**

As stated, Winchester is predominantly a residential town; however, there are some businesses. The three largest employers are: the Winchester Hospital with 1,000 employees, Winchester Convalescent Home with 500 employees, and Mahoney Farms with 300 employees (1993 town data). Businesses which may significantly impact the environment, include 10 gasoline stations. The remainder of the businesses are retail and eating establishments. (2)

### **2. Transportation**

Since Winchester is a bedroom suburb, the majority of the residents commute to work. In 1990, 76.1 percent drive alone to work with only 7.8 percent carpooling and a meager 8.9 percent using public transportation. Winchester is fortunate enough to have two commuter rail stations with direct service to Lowell and Boston in addition to three bus lines which connect to the rapid subway systems. The low rate of public transportation use is an environmental concern. (2)

## **C. Town Government**

### **1. Personnel**

Winchester has a representative town meeting with town meeting members chosen on the basis of neighborhoods. There is a salaried town manager and volunteer Board of Selectman who are responsible for day to day operations. Winchester's other elected town officers and committees include: School Committee (5), Board of Assessors (3), Board of Health (3), Moderator (1), Planning Board (5), Winchester Housing Authority (7), State

Appointee, and Northeast Regional Vocational School District Representative. The appointed town officers are the Town Manager, Town Counsel, Superintendent of Schools, High School Principal, Town Clerk, Treasurer, Town Engineer, Building Commissioner, Fire Chief, Police Chief, Public Works Director, Recreation Director, Workers' Compensation Director, Health Director, Council on Aging Administrator, and Conservation Administrator in addition to the staffs of these officers. (3) Please see Appendix B for a complete list of town officials.

## 2. *Environmental Governmental Bodies*

- Board of Health

The Board of Health is an independent government agency that is involved in environmental issues. One particular concern in 1994 was an odor originating from a business outside the town limits. The Board was able to convince the State Department of Environmental Protection to take corrective action against the business. The Board also monitors the remediation of the hazardous waste cleanups in the town. In addition, the Board was awarded a state grant to buy composting bins for Winchester residents and they completed an educational program on composting. (3)

- Conservation Commission

The Conservation Commission has a part-time administrator who works mornings and seven members who are appointed for three year terms by the Selectman. The commission members meet biweekly and primarily implement and enforce the Wetlands Bylaw, Chapter 13, Code of Winchester By-Laws. The focus of their work is to protect water quality through watershed and lake management. The commission also organizes Aberjona River Days, manages conservation land and has partial oversight authority with the Board of Health in issues concerning hazardous waste cleanups in the town. In addition, the commission participates in site plan reviews of non-wetland projects to address possible environmental impacts. (4, 5, 3)

- Waste Study Committee

This eleven member committee in 1994 provided information on: traffic flow at the transfer station, plastics recycling, trash and recyclable statistics, household hazardous waste collection day, home composting kits, and educational articles in the town newspapers. (3)

### 3. *Budget*

In 1993 the total town budget was \$35,566,000 with 2% of that dedicated for culture and recreation. Between 1990 and 1993 the town did not receive any state grants for conservation programs or water pollution control projects. (2)

### 4. *Environmental Ordinances*

- Winchester Zoning By-Law, as amended June 14, 1993

The Winchester Zoning By-Law is enforced by the planning commission and requires review of most development projects. The town is divided into twelve zoning districts; the majority of which are residential (single family, multiple family, among others). There are two special districts which are environmentally significant. One district is called the *Conservancy-Institutional District*. It is a district that is primarily intended for conservational, institutional, and educational uses. The by-law states:

“In addition, the districts are specifically intended for the preservation and maintenance of the ground water table for the protection of public health and safety, persons and property against the hazards of flood water inundation; for the protection of the community against the costs which may be incurred when unsuitable development occurs in swamps, along water courses, or in areas subject to floods; and for the conservation of natural conditions, wildlife, and open spaces for the education, recreation, and general welfare of the public.”

The other district of environmental significance is the *Flood Plain District*. This district overlays all other districts and ensures that all construction is accomplished in accordance with the special requirements of flood plains.

Every structure, establishment, and use must be in certain (if any) districts in the community. For example, retail stores are only allowed in one

district. Because parks and playgrounds along with wildlife preserves, conservation areas, and agriculture uses are automatically permitted in all districts, this community clearly values recreation and open space. Thus, these environmental amenities are valued and desired throughout the community.

In an effort to preserve open space in residential areas, Winchester has adopted the zoning amendments of cluster residential housing and planned residential districts. These residential districts allow homes or apartments to be built on smaller lots than normally permitted with the added requirement that the housing developer set aside common open space. For example, 25 percent of the land must be set aside as common open space. The common open space is then managed by a homeowners association or the conservation commission. This zoning amendment is designed to preserve public open space in the community while allowing for new home and apartment construction.

The complete land use breakdown is as follows: (2)

<u>Classification</u>	<u>Acres</u>	<u>Percent</u>
Residential	2,466	60.4
Commercial	89	2.2
Industrial	60	1.5
Agriculture	119	0.5
Urban open land	245	6.0
Transportation	10	0.2
Recreation	174	4.3
Water	165	4.0
Other	857	21.0

All but 10% of the land has already been developed. (5)

• Winchester Wetlands By-Law

The Winchester Wetlands By-Law is designed to protect wetlands, related water resources, and adjoining land by reviewing and controlling activities which may adversely effect wetland values. The wetland values are determined to be: water supplies, groundwater, flood control, erosion

control, fisheries, recreation, wildlife habitat, and aesthetics. A partial list of adverse effects include contamination, dredging, alterations, and work in 'poorly drained soils.' The Conservation Commission reviews all plans and issues permits if the project satisfies environmental performance standards. The law officially states in Section 3:

"Except as permitted by the commission or as provided in this by-law no person shall remove, fill, dredge, alter, or build upon or within one hundred feet of any freshwater wetland, wet meadow, bog, or swamp; within one hundred feet of any bank; upon or within one hundred feet of any lake, river, pond, stream; upon any land under said waters; upon any land subject to flooding or inundation by groundwater or surface water; or within the foregoing areas in such a way as to detract from visual access to the Aberjona River, Horn Pond Brook, Winter Pond, Wedge Pond, Judkins Pond, Mill Pond, Smith Pond or Mystic Lake."

This last sentence which refers to visual access is actually stricter than the Commonwealth's Wetlands Statute and indicates the importance of preserving the aesthetic beauty and visibility of the river, ponds, and lakes.

## **D. Community Organizations**

### **1. *Environmental Groups***

For a more extensive list of national, regional, and local environmental groups and their addresses please see Appendix C. Regional and local groups that have Winchester residents as members or may perform studies and programs in the area include: Appalachian Mountain Club, Nature Conservancy, New England Rivers Center, New England Wildflower Society, Sierra Club New England Chapter, Trout Unlimited, Massachusetts Association of Conservation Commissions, Massachusetts Audubon Society, Conservation Law Foundation of New England, and Trustees of Reservations. Other local groups include: Habitat Institute for the Environment, Mystic River Watershed Association, Audubon Ipswich River

Wildlife Sanctuary, Audubon Property Managers for Eastern Sanctuaries, For A Cleaner Environment, and Friends of the Fells.

## ***2. Service or Hobby Organizations***

A variety of clubs exist in Winchester including: Christopher Columbus Club, Church Women United, Community School Association, Daughters of The American Revolution, Democratic Town Committee, Elks, En Ka Society, Fortnightly Women's Club of Winchester, Friends of Art, Friends of Music, Knights of Columbus, League of Women Voters, Lions Club, Mystic Valley Smith College Club, The Multicultural Network, Sons of Italy, Sister City Organization, VFW Aberjona Post, Winchester Art Association, Winchester College Club, Winchester Concert Series, Drama Workshop, Historical Society, Interface Housing Corporation, Music Club, Music Society, Newcomers Club, Republican Town Committee, Rotary Club, Winton Club, Women's Republican Club, Ambrose School Parent Teacher Association (PTA), Lincoln School PTA, Lynch School PTA, McCall Middle School PTA, Muraco School PTA, St. Mary's PTA, Winchester High PTA, and Vinson-Owen PTA.

## ***3. Recreation Clubs***

Winchester's primary recreational clubs include: North Shore Cyclists, Badminton Club, Tennis Association, Sachem Youth Baseball and Softball, Boat Club, Swim Club, Country Club, Garden Club, Estates Garden Club, Home and Garden Club, Soccer Club, Sports Foundation, and Winchester Trails Club.

## ***4. Religious Organizations***

Winchester has ten churches within the town and a few others outside the town limits which cater to Winchester residents. Churches include: First Baptist Church, Faith Fellowship Ministries, First Church of Christ, First Congregational Church, Second Congregational Church, Parish of the Epiphany, Temple Shir Tikvah, Crawford Memorial Methodist Church, Immaculate Conception Church, St. Eulalia's Church, St. Mary's Church, and Winchester Unitarian Church.

For addresses of all of the above clubs please see appendix C.

## **E. Environmental Resources**

### **1. Conservation Lands**

- **Middlesex Fells Reservation**

On the eastern edge of the town is a 2,600 acre forested reserve of which 300 acres lie within Winchester. It is managed by the Metropolitan District Commission. (5) Wildflowers include wood anemone, trillium, jack-in-the-pulpit (6) Mammal species include raccoon, woodchuck, muskrat, skunk, and rabbit and an occasional fox (5).

- **Town Forest**

This is a heavily wooded 28 acre area which is used for wildlife viewing and hiking. It has much of the same wildlife as the Fells. (6)

- **Sucker Brook**

This is 9.5 acres of swamp, brook, and woodland. Vegetation includes clethra, high bush blueberries, ferns, skunk cabbage, and red maples. (6)

- **Mount Pisgah**

This is 11.4 acres of wooded, hilly land. Flowers include Solomon's seal and partridge berry as well as many other field flowers (6).

- **Glen Green**

This is a 1.3 acre wetland in a very built up area. Plants include: horsetails, cattails, tussock sedge, sensitive fern, jewelweed, buttercups, and purple loosestrife. In addition, there are ground willows, sumacs, milkweed, goldenrod, asters, and blackberry. Tree species include willows, aspens, birches, and silver and sugar maples. (6)

- **Horn Pond Brook**

This is 3.5 acres of open space. (6)

- **Locke Farm**

This is 9.46 acres of woodland, marsh, and meadow with remnants of stone walls and fruit trees. (6)

- **Smith Pond**

This is 6.4 acres of pond, marsh, and woodland in the process of pond succession. (6)

- **Sachem Swamp**

This is 6.25 acres of wooded swamp with red maple and gray birch trees. (6)

## **2. *Recreational Lands***

- **Mystic Lakes**

These 765 acres of lakes allow for motor boating, swimming, fishing, and other passive boating. (2)

- **Wedge Pond**

This pond has a community beach and allows passive boating. (2)

- **Winchester Country Club**

This private club boasts 122 acres and includes golf, swimming, and tennis. (5)

- **Parks and Playing Fields**

There are 11 parks, 7 neighborhood playgrounds, and 6 athletic fields totalling over 75 acres. (5)

## **3. *Drinking Water Sources***

Approximately 79 percent of Winchester's population receive water from the three reservoirs in the Middlesex Fells Reservation. These waters are treated by disinfection, corrosion control, and fluoridation. The remainder of the town receives water directly from the Massachusetts Water Resources Authority's connection. (7) The North Reservoir is the only outstanding resource water within the community. (8) The Commonwealth classifies outstanding resource waters based on drinking water supplies and their tributaries.

## **F. Environmental Programs**

### **1. *Recycling***

Winchester operates a voluntary recycling program without curbside pickup in addition to a composting program. (3)

## 2. *Events*

The Conservation Commission sponsors Aberjona River Days. The Winchester Trails Club and Friends of the Fells offer nature walks. (4)

## G. **Environmental Concerns**

### 1. *Hazardous Waste*

Winchester has 6 confirmed hazardous waste sites and 9 locations to be investigated on the state's master index. (9) Of the confirmed sites, 4 of them are petroleum releases in various phases of remediation. One of the sites, JO Whitten Company, is a priority hazardous material release site. Metals and cyanide leached from a lagoon into the soil. This site is in Phase 3 of cleanup and does have a public involvement plan. Another site is a former landfill with semi-volatile organic compounds and methane in the soil. This is in phase 2 of cleanup and also has a public involvement plan. (9)

### 2. *Solid Waste*

There is an active transfer station which is owned and operated by the town. (3)

### 3. *Wastewater*

The entire town is serviced by the Massachusetts Water Resources Authority. (2)

### 4. *Conservation Needs*

The 1986 Winchester Open Space and Recreation Plan is in the process of being updated. Needs identified in 1986 include: better connections and access to land, identification and preservation of unique natural features, community gardens, water quality improvement, eutrophication abatement, protection of watershed areas, promotion of water recreation, prevention of land abuse, better educational programs, among others. In addition, the Conservation Commission has identified a Canadian geese problem at the ponds throughout the town. (5, 4)

## **Section 2: Woburn, Massachusetts.**

Woburn is a suburban industrial community located 10 miles north of Boston. The total land area is 12.9 square miles. It was incorporated as a town in 1642 and as a city in 1889. From the beginning it was a manufacturing center specializing in leather tanning and shoemaking. In 1884, there were 26 large tanneries employing over 1500 people. In the early part of this century, there was some diversification of the city's economy and manufacturing which included ice cream, machine tools, mops, and paper boxes. Present day industry is predominantly high-technology, light manufacturing, and retail establishments. Residential development escalated in this century and continues to the present. (10)

### **A. Demographics**

#### **1. Population**

According to the 1990 census, the total population is 35,943 with an average density of 2,835 people per square mile. The age breakdown is as follows: (10)

under 5	6.6%
5-14	11.0%
15-44	49.7%
45-64	20.0%
65 and over	12.7%

#### **2. Race and Ethnicity**

The races are: 95.0% white, 2.3% Hispanic, 1.5% Asian or Pacific Islander, with black and Native American each less than 1% of the total population. (10)

#### **3. Household Composition**

31.5% are non-family households, 11.5% are female householders, and 3.6% male householders. 53.5% are married family households. (10)

#### **4. *Income***

On the basis of median household income, Woburn is 139th wealthiest community in the Commonwealth. The median household income is \$42,679 with 58.2% of the households averaging less than \$50,000 per year. This is a community that is white, pink, and blue collar. 5.1% of the town population lives below state determined poverty levels with 618 households receiving public assistance as the primary income. Another 3,471 households receive social security as the primary income. The majority of the residents (7,102) are employed in the service sector followed by 4,585 residents in wholesale and retail sector, and 3,392 in the manufacturing sector. 226 residents are employed in agriculture. (10)

### **B. Economic Development**

#### **1. *Employers***

Woburn is a mixed residential, commercial, and industrial city. There are a total of 1,786 employers and the three largest employers are: Marshalls with 600 employees, W.R. Grace with 500 employees, and Digital with 300 employees. Other businesses which may impact the environment, include 22 gasoline stations and 11 automotive dealers. (11)

#### **2. *Transportation***

Of the Woburn residents commuting to work, in 1990, 82.5 percent drive alone with only 8.6 percent carpooling and a meager 4.0 percent using public transportation. Woburn does have a commuter rail station with direct service to Lowell and Boston in addition to bus lines which connect to the rapid subway systems and neighboring towns. The low rate of public transportation use illustrates an environmental concern.

### **C. City Government**

#### **1. *Personnel***

Woburn has an elected mayor and city council. Woburn's other elected city officers and committees include: Alderman (9), Board of Assessors (3), Board of Appeals (5), Board of Health (4), Moderator (1), Planning Board (5), Housing Authority (6), Conservation Commission (7), Historical Commission (2), Industrial Development and Financing Authority (5), and License Commission (3), Recreation Commission (4), and Registrars of Voting (3). The appointed city officers are: Auditor, Town Counsel, Superintendent of Schools, High School Principal, City Clerk, Treasurer, Collector of Taxes, Town Engineer, Building Commissioners (4), Fire Chief, Constable, Police Chief, Public Works Director, Recreation Director, Health Director, Inspector of Animals, Purchasing Agent, Solicitor, Sheriff, and Conservation Administrator as well as their respective staffs. (12) Please see Appendix E for a complete list of public officials.

## **2. *Environmental Governmental Bodies***

- **Board of Health**

The Board of Health has oversight responsibility of the city hazardous waste sites. (12)

- **Conservation Commission**

The Conservation Commission has three to seven members who are appointed for three year terms by the Mayor. The commission meets bimonthly and is active in three major areas: wetlands protection, land acquisition, and land management and protection. Wetlands protection consists of implementing the Woburn Wetlands Ordinance of 1985. The goals of land acquisition are to protect watershed areas and valuable natural features. In determining these areas, the commission seeks input from the Mayor, City Council, residents, and others. The goals of land management are to increase public usage while maintaining protection. (13) The Conservation Commission also hosts a stewardship program which is a volunteer commission to improve land management. This includes improvements in access, visibility, signs, facilities, and amenities as well as educational programs and assisting in the acquisition of land. (14)

### 3. *Budget*

In 1993 the total town budget was \$60,950,000 with 1 percent of that dedicated for culture and recreation. Between 1990 and 1993 the town did not receive any state grants for conservation programs or water pollution control projects. (10)

### 4. *Environmental Ordinances*

- Woburn Zoning Ordinance of 1985, as amended September 6, 1994

The Woburn Zoning Ordinance is enforced by the planning commission and requires review of most development projects. The city is divided into twelve zoning districts of which four are residential (single family, multiple family, among others) and the others are business districts. There are eleven listed purposes of the Zoning Ordinance with one being: "To conserve the value of the land and buildings, including the conservation of natural resources and the prevention of blight and pollution of the environment." There is one special district which is environmentally significant. It is the *Flood Plain District*. This district overlays all other districts and ensures that all construction is accomplished in accordance with the special requirements of flood plains.

This community clearly values open space and other environmental amenities. Conservation of water, plants, and wildlife along with agriculture are uses which are permitted by right in all districts within the city.

In an effort to preserve open space in residential areas, Woburn has adopted the zoning amendments of cluster development. These residential districts allow homes or apartments to be built on smaller lots with the added requirement that the housing developer set aside common open space. For example, homes can be built on smaller lots than normally permitted if 30% of the land is set aside as common open space. Of that common open space, 80% shall be restricted for conservation only. The common open space is then managed by a homeowners association or the Conservation Commission. This zoning amendment is designed to preserve public open space in the community while allowing for new home and apartment construction.

The complete land use breakdown is as follows: (10)

<u>Classification</u>	<u>Acres</u>	<u>Percent</u>
Residential	3,356	40.4
Commercial	321	3.9
Industrial	1,061	12.8
Agriculture	175	2.1
Urban open land	462	5.6
Transportation	224	2.7
Recreation	159	1.9
Water	145	1.7
Other	2,403	28.9

- Woburn Wetlands Ordinance of 1985

The Woburn Wetlands Ordinance and subsequent regulations are the result of a 1973 Ford Foundation grant. The ordinance was designed to protect the floodplain of the Aberjona River, the streambelts of the city, and the wetland and wet soils areas from irresponsible development. (13) The wetland interests are determined to be: water supplies, groundwater, flood control, erosion control, fisheries, storm damage prevention, water pollution prevention, recreation, agriculture, aquaculture, and historic values. A partial list of adverse effects include contamination, dredging and other alterations. The Conservation Commission reviews all plans and issues permits if the project can meet environmental performance criteria. The ordinance officially states in Article I, Section 7-2:

“Except as permitted by the commission or as provided in this ordinance no person shall remove, fill, dredge, alter, or build upon or 150 feet of any freshwater wetland, marsh, meadow, bog, or swamp; upon or within 150 feet of any lake, river, pond, stream; upon or within any land under said waters; upon any land subject to flooding or inundation by groundwater or surface water.”

This ordinance regulates within 150 feet of water bodies and not the usual 100 feet and thus is stricter than the state law. The Conservation Commission also issues rules and regulations and policies to better implement and enforce the city ordinance.

## **D. Community Organizations**

### **1. *Environmental Groups***

For a more extensive list of national, regional, and local environmental groups and their addresses please see Appendix C. Regional and local groups that have Woburn residents as members or may perform studies and programs in the area include: Appalachian Mountain Club, Nature Conservancy, New England Rivers Center, New England Wildflower Society, Sierra Club New England Chapter, Trout Unlimited, Massachusetts Association of Conservation Commissions, Massachusetts Audubon Society, Conservation Law Foundation of New England, and Trustees of Reservations. Other local groups include: Habitat Institute for the Environment, Mystic River Watershed Association, Audubon Ipswich River Wildlife Sanctuary, Audubon Property Managers for Eastern Sanctuaries, For A Cleaner Environment, and Friends of the Fells.

### **2. *Service or Hobby Organizations***

A variety of clubs exist in Woburn including: American Legion Post, Boy's and Girls Club, Camp Fire, Catholic Daughters of America, Chamber of Commerce, Church Women of Woburn, City Wide Parent Teacher Organization, Center for Mental Health and Retardation, Democratic City Committee, Elks, Girl Scouts, Hadassah, Irish American Club, Knights of Columbus, Middlesex Lion's, Moose Lodge, Republican City Club, St. Anthony's Club, Sons of Italy, South End Italian Club, Towanda Club, United Veterans Club, Veterans Memorial Senior Center, Woburn Business Association, Woburn Council of Social Concern, Woburn Coalition Against Substance Abuse, Woburn's Womens Club, and Portugues American Recreation Club.

### **3. *Recreation Clubs***

Some Woburn clubs are: Astoria Softball Club, Woburn Youth Soccer, YMCA Youth Center, Woburn Country Club, Massachusetts Chapter of The National Rifle Association, and Little League.

#### *4. Citizens with Environmental Interests*

According to the Woburn conservation administrator, Woburn citizens who have been active in conservation issues include: Len Cadran, Linda Olssen, Donna Robbins, Veronica Himmel, John Clancey, Harriett Lohnes, Richard Luhr, Mel Lieberman, Carolyn Davis, Richard Humber, Robert Danehy, Alan Futterman, and Catherine Shaugnessy.

#### *5. Religious Organizations*

Churches within Woburn are: Christian Teaching and Worship Center, Church of The Living God, First Baptist Church ABC/USA, First Congressional Church, Greek Orthodox Church, Greater Grace Community, The Lord's Gathering, Lutheran Church of the Redeemer, Montvale Congressional Church, North Congressional Church, St. Anthony Church, St. Barbara's Church, St. Charles Borromeo, St. John's Baptist, St. Joseph's Church, Trinity Episcopal Church, and United Methodist Church.

#### *6. Media*

Woburn has two newspapers which are The Woburn Advocate and Woburn Daily Times.

For a complete list of community leaders please see Appendix F.

### **E. Environmental Resources**

#### *1. Conservation Lands*

- Horn Pond

This is a unique 80 acres of conservation land within a 550 acre park. The area includes granite outcrops, ponds, marsh, woodland, brooks, sandpit, orchard, an old farm, and a lagoon. The mountain is 287 feet high. This area is famous for rare wildflower species including, the sundew, an insect eating plant and the endangered cornel-leaved aster and estuary arrowhead.

Threatened plant species include: linear-leaved milkweed, pale green orchis, and tiny flowered buttercup. Most of the forested area is composed of oak and hickory hardwoods with pines and gray birch. In the low wet areas there are small red maple swamps containing a few wild azaleas. The marsh edge areas

host willows, speckled alder, elderberry, cottonwood, and silkey and red-osier dogwoods. Mammals that can be expected are: red fox, racoon, striped skunk, Virginia opossum, cottontail, eastern gray squirrel, red squirrel, eastern chipmunk, meadow vole, and star-nosed mole. The area has large numbers of resident birds and is a stopover for migrating species. Horn Pond offers fishing and is occasionally stocked by the State Division of Fisheries and Wildlife. Fish species include largemouth bass, yellow perch, rainbow trout, brook trout, and brown trout. There are 5 marked nature trails through the area and a 1 mile fitness trail with 14 exercise stations. Maps are available through the Conservation Commission. (13, 15, 16, 17)

- **Town Forest**

This is 39 acres of woodland with a nature trail and an athletic field. (13, 17)

- **Shaker Glen**

This is 24 acres of densely wooded land along Shaker Glen Brook. The brook is reported to have excellent fishing. A pond and cattail marsh are found here in addition to an evergreen forest with eastern hemlocks, red cedars, Atlantic white cedars, and white pines. It is considered to have one of the finest hemlock groves in Massachusetts. A lichen called British Soldiers and a coral fungus grow in the rich soil. Another part of the area has a hardwood forest with oaks, sycamores, black birches, and red maples. There is a nature trail here with 14 nature stations. A brochure is available from the Conservation Commission. (14, 17)

- **Cranberry Bog Conservation Area**

This is 29.5 acres of wetland situated upon what was once Mill Pond along both sides of the Aberjona River. Cattails, loosestrife, sedges, and other marsh plants attract many species of wildlife. Pheasants and muskrats can be seen from the trail and upper dam. (14)

- **Loves Lane**

This is 4.2 acres preserved to protect the headwaters of Sucker Brook. It is a wooded area with rolling hills and rocky outcrops. Hardwood forests of oak, hickory, and maple replace the former farmland. (14)

- Gatta Park

This is 1.5 acres of marshland beside a privately owned wetland. (14)

- Rag Rock

This is 10 acres of a sparsely wooded area which rises to 246 feet to a former Native American village. (14)

- Quail Run Area

This is 40 acres of common open space set aside as part of a cluster housing development.

- Battle Road Woodlands

This is a historic area. (17)

- Halls Brook Storage Area

This area is preserved for flood control purposes.

## 2. *Recreational Lands*

- Horn Pond Mountain Park

390 acres are available for a wide variety of recreational activities including non-motor boating, basketball, fishing, golf, picnicking, and hiking. (10)

- Woburn Country Club

This private club boasts 160 acres and includes facilities for golf and tennis.

- Parks and Playing Fields

There are 17 city parks and playing fields. (17)

## 3. *Drinking Water Sources*

The city's water comes from city owned wells and the Metropolitan District Commission (MDC). Six city wells located near Horn Pond meet two thirds of the total needs. The MDC sells Woburn water from the Quabbin Reservoir located 60 miles west of Boston for the other third. Eastern Woburn was serviced by groundwater wells G and H before being closed in

1979 due to dangerous levels of trichloroethylene and other organics. That water was replaced by the MDC connection. (17, 18)

## **F. Environmental Programs**

### **1. Recycling**

Woburn operates a voluntary recycling program without curbside pickup. (12)

### **2. Events**

The Conservation Commission maintains hiking trails in the Horn Pond area, hosts fishing derbies, skating, community gardening, and sponsors tree plantings. In addition, it offers field trips. (13, 19).

## **G. Environmental Concerns**

### **1. Hazardous Waste**

Woburn has a long history of industrialization and an accompanying legacy of hazardous waste. (20) Woburn has two federal Superfund sites (Wells G&H and Industriplex) and 105 sites on the Massachusetts hazardous waste list. (9) Of these 105 sites, 61 are locations to be investigated and 45 are confirmed hazardous waste disposal sites. Cleanup has been completed at 3 sites and 17 other confirmed sites are presently undergoing cleanup. At the 17 sites, 5 result from petroleum releases. The remaining 12 sites contain a host of hazardous materials including: volatile and semi-volatile organic compounds, metals (chromium, arsenic, lead, copper, and zinc) , chlorinated solvents, PCBs, and pesticides. The releases are in the soil, groundwater, surface water, and wetlands. (9) In addition to the actual waste sites, The Massachusetts Institute of Technology researchers have shown that toxic waste metals and organic contaminants have been transported throughout the watershed. Please see Appendix A for a complete list of MIT related publications.

### **2. Solid Waste**

The state ordered the Woburn landfill closed in 1987. Waste is now trucked out of the city by a private collector. (17)

### *3. Wastewater*

The sewage flows by gravity and seven pumping stations to six Massachusetts Water Resource Authority interceptors which transport the wastewater to the Deer Island Wastewater Treatment Facility. The sanitary and storm sewers are separate. In the late 1980s, east Woburn was experiencing overflow problems which lead to water quality problems in Horn Pond. (17)

### *4. Conservation Needs*

The 1988 Woburn Open Space and Recreation Plan is in the process of being updated. The primary need identified in 1988 is to protect unique and sensitive lands from willful or accidental destruction by developers. Additional needs include: improvement in the physical appearance of existing open spaces, increased public awareness of conservation sites, and acquisition of open spaces. In 1988, 350 surveys were distributed to residents at various locations throughout Woburn. Unfortunately, only 10% were returned, so the results are inconclusive. Nonetheless, protection of water resources was the most desired goal followed by environmental conservation and then improvement of existing recreation areas. In the open comments section, many people wrote that they would like to see Horn Pond open for swimming. On July 23, 1995 in the Boston Globe, an article discussed the city owned golf course. Two residents were quoted as being opposed to pumping water from Horn Pond and there is a fledgling 'Save Horn Pond' group.

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## **7. Conclusion**

When public involvement programs are well structured, the public is able to contribute to making environmental decisions which are technically feasible, fiscally sound, and satisfactory to all affected parties. Thus, public participation can improve the overall environmental management process. However, in order to be effective, a public involvement program must be thoughtfully planned and executed.

Public involvement programs must adhere to basic principles. An important principle is to create opportunities for education and interaction among all the affected parties. There are several techniques which can accomplish this, including, technical assistance programs, information centers, and dialogues with professionals. Another basic principle is to understand the social reality of the community. A community survey can provide information about the local perceptions and concerns in order to gauge the social reality of the residents.

Effective public involvement programs are not arranged at the last minute. The program must be thoroughly planned and organized. For example, there must be an analysis of the existing community structure. This includes collecting information about the local government, leaders, environmental programs and resources, and perceived problems. The case study of the communities of Winchester and Woburn illustrate the necessary information which must be collected.

This case study provides information essential to the design of an effective public involvement program. For example, the town of Winchester has a special Waste Study Committee that investigates issues of solid waste. Very few communities have committees like this. Because the members of this committee have demonstrated an environmental concern, it is likely that they will want to participate in other environmental projects. Furthermore, Winchester has an environmental outdoor club, Winchester Trails, which should also be incorporated into any public involvement

program. Likewise, the City of Woburn hosts two environmental advocacy groups: For A Cleaner Environment and a fledling Save Horn Pond group. It is important that the environmental decision makers be aware of all these organizations in order to include them into the public involvement programs.

Environmental decision makers will also want to solicit the input of all the community leaders, those people who have demonstrated a commitment to the community, for a public involvement program. The case study illustrates the wide range of organizations and public officials that exist in these relatively small suburbs.

Finally, environmental decision makers must understand the local environmental regulations such as the wetlands ordinances and conservation programs so that they can be incorporated into a larger environmental public involvement program.

In conclusion, an effective public involvement program will lead to environmental solutions which are acceptable and thus implementable. However, there is a lot of organization and preparation which must be done in order to have a successful program.

## APPENDIX A

### Publications and Investigations from The Massachusetts Institute of Technology

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## **APPENDIX B**

### **Winchester Public Officials for 1995**

State Senator  
Mr. Charles Shannon  
State House, Room 421  
Boston, MA 02133

State Representative  
Mr. Paul Casey  
State House, Room 167  
Boston, MA 02133

Mr. Gerald Polcari, Selectman  
3 Lantern Lane  
Winchester, MA 01890

Mr. William O'Leary, Selectman  
34 Mount Pleasant St.  
Winchester, MA 01890

Ms. Carol Mullin, Selectman  
76 Arlington St.  
Winchester, MA 01890

Mr. Stephen Powers, Selectman  
29 Thornberry Rd.  
Winchester, MA 01890

Mr. Peter Van Aken, Selectman  
97 Grove St.  
Winchester, MA 01890

Mr. James Evans  
School Committee  
58 Vine St.  
Winchester, MA 01890

Ms. Jerilyn Heinold  
School Committee  
19 Kenwin Rd.  
Winchester, MA 01890

Eli Bortman  
School Committee  
25 West Chardon Rd.

Winchester, MA 01890

Ms. Kathleen Bodie  
School Committee  
5 Dix Terrace  
Winchester, MA 01890

Mr. Edward O'Connell  
School Committee  
25 Arlington St.  
Winchester, MA 01890

Mr. George Anderson, Assessor  
38 Hutchinson Rd.  
Winchester, MA 01890

Ms. Susan Lippman, Assessor  
25 Glen Green  
Winchester, MA 01890

Mr. Eric Josephson, Assessor  
38 Englewood Rd.  
Winchester, MA 01890

Dr. C. Donald Chipman  
Board of Health  
2 Goddu Ave.  
Winchester, MA 01890

Mr. Randall Schwartz  
Board of Health  
15 Manchester Rd.  
Winchester, MA 01890

Ms. Dorothea Sopper, R.N.  
Board of Health  
10 Canterbury Rd.  
Winchester, MA 01890

Mr. John Sullivan, Moderator  
32 Canterbury Rd.  
Winchester, MA 01890

Mr. Daniel Chane, III  
Planning Board  
125 Forest St.  
Winchester, MA 01890

Mr. Harry Chelafo  
Planning Board  
52 North Border Rd.  
Winchester, MA 01890

Mr. Stephen Parkhurst  
Planning Board  
11 Brooks St.  
Winchester, MA 01890

Mr. Richard Welch, Jr.  
Planning Board  
9 Viking Rd.  
Winchester, MA 01890

Mr. Peter Kelleher  
Planning Board  
21 Brookside Ave.  
Winchester, MA 01890

Mr. Werner Carlson  
Housing Authority  
14 Bigelow Ave.  
Winchester, MA 01890

Mr. David Roth  
Housing Authority  
42 Lincoln St.  
Winchester, MA 01890

Mr. James Skanan, Jr.  
Housing Authority  
51 Wildwood St.  
Winchester, MA 01890

Mr. Archie McIntyre  
Housing Authority  
48 Everett Ave.  
Winchester, MA 01890

Mr. Richard Carey  
Housing Authority  
18 Euclid Ave.  
Winchester, MA 01890

Ms. Marianne O'Brien  
Housing Authority  
18 Chestnut St.

Winchester, MA 01890

Mr. Francis Sopper  
Housing Authority  
10 Canterbury Rd.  
Winchester, MA 01890

Ms. Maura Looney  
Housing Authority  
19 Perkins Rd.  
Winchester, MA 01890

Mr. Dominic Serratore  
Building Commissioner  
71 Mount Vernon St.  
Winchester, MA 01890

Mr. Joseph Bonner  
Comptroller  
71 Mount Vernon St.  
Winchester, MA 01890

Ms. Elaine Vreeland  
Conservation Commission  
71 Mount Vernon St.  
Winchester, MA 01890

Ms. Barbara Ciampa  
Council on Aging  
71 Mount Vernon St.  
Winchester, MA 01890

Officer Paul Austin  
D.A.R.E.  
71 Mount Vernon St.  
Winchester, MA 01890

Mr. Jerry Smith  
Dog Officer  
71 Mount Vernon St.  
Winchester, MA 01890

Mr. John Ciarcia  
Town Engineer  
71 Mount Vernon St.  
Winchester, MA 01890

Mr. Charles McNutt

**Fire Chief  
71 Mount Vernon St.  
Winchester, MA 01890**

**Ms. Carol Thomas  
Treasurer  
71 Mount Vernon St.  
Winchester, MA 01890**

**Mr. Joseph Perritano  
Police Chief  
71 Mount Vernon St.  
Winchester, MA 01890**

**Mr. Anthony Celli  
Director of Public Works  
71 Mount Vernon St.  
Winchester, MA 01890**

**Lee Evans  
Recreation Director  
71 Mount Vernon St.  
Winchester, MA 01890**

**Ms. Carolyn Ward  
Town Clerk  
71 Mount Vernon St.  
Winchester, MA 01890**

**Mr. Chadwick Maurer  
Town Manager  
71 Mount Vernon St.  
Winchester, MA 01890**

**Mr. Joseph Capone  
Weights and Measures  
71 Mount Vernon St.  
Winchester, MA 01890**

**Mr. Robert Fitzgerald  
Superintendent of Schools  
154 Horn Pond Brook Rd.  
Winchester, MA 01890**

**Dr. John Ritchie, Principal  
Winchester High  
80 Skillings Rd.  
Winchester, MA 01890**

**Mr. David Cregger  
Waste Study Committee  
15 Euclid Ave.  
Winchester, MA 01890**

**Mr. John Airey  
Waste Study Committee  
780 Main St.  
Winchester, MA 01890**

**Mr. Edward Barker  
Waste Study Committee  
389 Washington St.  
Winchester, MA 01890**

**Mr. Anthony Celli  
Waste Study Committee  
10 Winslow Rd.  
Winchester, MA 01890**

**Mr. Bob Cronon  
Waste Study Committee  
26 Allen Rd.  
Winchester, MA 01890**

**Mr. J. Farrell  
Waste Study Committee  
33 Pierrepoint  
Winchester, MA 01890**

**Mr. T. Hayden  
Waste Study Committee  
8 Everett Rd.  
Winchester, MA 01890**

**Mr. Kevin Drum  
Waste Study Committee  
77 Lawson Rd.  
Winchester, MA 01890**

**Ms. Carol Mullin  
Waste Study Committee  
76 Arlington St.  
Winchester, MA 01890**

**Mr. George Nowell  
Waste Study Committee  
68 Nelson St.**

**Winchester, MA 01890**

**Mr. Randall Swartz  
Waste Study Committee  
15 Manchester Rd.  
Winchester, MA 01890**

**Mr. John Wortmann  
Conservation Commission  
10 Fells Rd.  
Winchester, MA 01890**

**Mr. Steven Lewis  
Conservation Commission  
107 Mount Vernon St.  
Winchester, MA 01890**

**Mr. Richard Maggio  
Conservation Commission  
8 Spruce St.  
Winchester, MA 01890**

**Mr. Jay Olmsted  
Conservation Commission  
197 Mystic Valley Parkway  
Winchester, MA 01890**

**Awinash Manmade  
Conservation Commission  
354 Cambridge St.  
Winchester, MA 01890**

**Mr. Carl Boener  
Conservation Commission  
419 Highland Ave.  
Winchester, MA 01890**

## **APPENDIX C**

### **Environmental Advocacy Organizations**

American Conservation Associations, Inc.  
30 Rockefeller Plaza, Room 5510  
New York, New York 10112  
(212) 247-3700

American Rivers Conservation Council  
323 Pennsylvania Ave, SE  
Washington, DC 20003  
(202) 547-6900

Conservation Foundation  
1717 Massachusetts Ave., NW  
Washington, DC 20036  
(202) 797-4300

Environmental Defense Fund  
444 Park Ave. South  
New York, NY 10016  
(212) 686-4191

Wilderness Society  
1901 Pennsylvania Ave., NW  
Washington, DC 20006  
(202) 828-6600

Natural Resources Defense Council  
Ms. Ann Notthoff  
40 West 20th St.  
New York, NY 10011

Izaak Walton League of America  
1701 North Fort Myer Dr. Suite 1100  
Arlington, VA 22209  
(703) 528-1818

National Association of Conservation Districts  
1025 Vermont Ave., NW Suite 730  
Washington, DC 20005

Mass. Environmental Education Society  
Ms. Jenny Beaujean  
590 Washington St.  
Lynn, MA 01901

Mass. Urban Forestry Council  
David Rykbost St.  
Woburn, MA 01801

International Council for Local Environmental Initiative  
763 Mass. Ave.  
Cambridge, MA 02139

MassPIRG  
29 Temple Place  
Boston, MA 02111  
292-4800

Neponset River Watershed Assoc.  
Mr. Ian Cook  
2438 Washington St.  
Canton, MA 02021

AMC  
Mr. Tom Steinback,  
Conservation Specialist  
5 Joy St.  
Boston, MA 02108

Nature Conservancy  
Mass. Chapter  
Attn: Land Manager  
79 Milk St., Suite 300  
Boston, MA 02109

Nature Conservancy  
Northeast Region  
Eastern Heritage Task Force  
Lesley Sneddon  
201 Devonshire  
Boston, MA 02110

GreenPeace  
Ms. Niaz Dory  
155 Mass. Ave. Suite 301  
Boston, MA 02115

Manomet Bird Observatory  
Environmental Scientist  
Box 936  
Manomet, MA 02345  
(508) 224-6521

Boston Greenspace Alliance  
Mr. Richard Heath  
44 Bromfield St.  
Boston, MA 02140

New England  
Environmental Network  
Ms. Caroline Simmons  
Lincoln Filene Center  
Tufts University  
Medford, MA 02155

The Environmental League  
Ms. Wendy Deal  
3 Joy St.  
Boston, MA 02108

New England Wildflower Society  
attn: Environmental Scientist  
Hemenway Rd.  
Framingham, MA 01701

Sierra Club New England Chapter  
Ms. Nancy Moore  
3 Joy St.  
Boston, MA 02108

Charles River Watershed Assoc.  
Attn: Environmental Coordinator  
2391 Commonwealth Ave.  
Auburndale, MA 02166

Habitat Institute for The Environment  
Mass. Audubon Society  
Box 136  
10 Juniper Rd.  
Belmont, MA 02178

Ipswich River Watershed Assoc.  
Ms. Kerry McKim  
87 Perkins Row  
Topsfield, MA 01983

Lake Cochituate Watershed Assoc.  
Mr. Robert Wenstrup  
11 Morrill Dr.  
Wayland, MA 01778

Mass. Association of Conservation  
Commissions  
10 Juniper Rd.  
Belmont, MA 02178

Merrimack River Watershed Council  
Marea Gabriel  
P.O. Box 1377  
Lawrence, MA 01842

Mystic River Watershed Assoc.  
Dr. Herbert Meyer  
276 Mass. Ave.  
Arlington, MA 02174

Mass. Audubon Society  
South Great Rd.  
Lincoln, MA 01773  
259-9500

Audubon Ipswich River Wildlife Sanctuary  
87 Perkins Row  
Topsfield, MA 01983  
(508) 887-9264

Audubon: Property Manager for  
Eastern Sanctuaries

293 Moose Hill St.  
Sharon, MA 02067  
(617) 784-5691

Conservation Law Foundation  
62 Summer St.  
Boston, MA 02110  
350-0990

Clean Water Action  
76 Summer St., 6th Floor  
Boston, MA 02110  
423-4661

The Trustees of Reservations  
572 Essex St.  
Beverly, MA 01915-1530  
(508) 921-1944

Friends of The Fells  
P.O. Box 560057  
West Medford, MA 02156

FACE  
Ms. Gretchen Latowsky  
P.O. Box 180  
Woburn, MA 01801

## **APPENDIX D**

### **Winchester Community Leaders**

Chamber of Commerce  
Ms. Catherine Alexander  
25 Waterfield Rd.  
Winchester, MA 01890

Christopher Columbus Club  
Mr. Dan McCue  
17 Raymond Place  
Winchester, MA 01890

Church Women United  
Mrs. Mary Lou Egly  
43 Wildwood St.  
Winchester, MA 01890

Ambrose School PTA  
Ms. Pam Webster-Walsh  
27 High St.  
Winchester, MA 01890

Lincoln School PTA  
Ms. Bernadette Kearney  
161 Mystic Valley Parkway  
Winchester, MA 01890

Lynch School PTA  
Ms. Karen Martin  
10 Brantwood Rd.  
Winchester, MA 01890

McCall Middle School PTA  
Ms. Elaine Kuttner  
458 Main St.  
Winchester, MA 01890

Muraco School PTA  
Ms. Vicky Waterbury  
33 Bates Rd.  
Winchester, MA 01890

Winchester High PTA  
Ms. Anne Umscheid  
80 Skillings Rd.  
Winchester, MA 01890

Vinson-Owen PTA  
Ms. Linda Pickering  
75 Johnson Rd.  
Winchester, MA 01890

Community School Association  
Betsey Cregger, President

15 Euclid Ave.  
Winchester, MA 01890

Daughters of The American Revolution  
Mrs. Charles P. Reeves  
7 Lakeview Rd.  
Winchester, MA 01890

Democratic Town Committee  
Mary Scott Wagner, Chair  
9 Madison Ave.  
Winchester, MA 01890

Elks  
Mr. James Kirkpatrick  
5 Francis Circuit St.  
Winchester, MA 01890

En Ka Society  
Ms. Nancy Clark  
378 Self Border Rd.  
Winchester, MA 01890

Fortnightly Woman's Club  
Mrs. Richard Sheppard  
82 Salisbury St.  
Winchester, MA 01890

Friends of Art  
Ms. Jane Murray  
60 Oxford St.  
Winchester, MA 01890

Friends of Music  
Ms. Mary Ducey  
10 Wellington Rd.  
Winchester, MA 01890

Hadassah  
Ms. Arlene Farber  
191 Lawrence Rd.  
Medford, MA 02155

League of Women Voters  
Ms. Maryann McCall-Taylor  
8 Sanborn St.  
Winchester, MA 01890

Mystic Valley  
Smith College Club  
Ms. Terry Marotta  
9 Ravenscroft Rd.  
Winchester, MA 01890

The Multicultural Network  
Ms. Sandy Thompson  
48 Samoset Rd.  
Winchester, MA 01890

North Shore Cyclists  
M. Doyle  
53 Emerson Rd.  
Winchester, MA 01890

Sachem Youth Baseball  
Robert Sullivan  
10 Euclid Ave.  
Winchester, MA 01890

Sons of Italy  
President  
117 Swanton St.  
Winchester, MA 01890

Sister City Organization  
Ms. Judie Muggia  
14 Dartmouth St.  
Winchester, MA 01890

Winchester Badminton Club  
Mr. Ray Jenkins  
176 Highland Ave.  
Winchester, MA 01890

Winchester Boat Club  
Commodore  
65 Cambridge St.  
Winchester, MA 01890

Winchester College Club  
Ms. Martha Ladd  
42 Cabot St.  
Winchester, MA 01890

Winchester Concert Series  
103 Cambridge St.  
Winchester, MA 01890

Winchester Country Club  
Mr. Charles Raffi, Jr.  
468 Mystic Arlington  
Winchester, MA 01890

Winchester Drama Workshop  
Ms. Paulett Taggart  
85 The Ledges  
75 Wainwright Rd.  
Winchester, MA 01890

Winchester Estates Garden Club  
Ms. Susan Nesline  
5 Squire Rd.  
Winchester, MA 01890

Winchester Garden Club  
Mrs. Webster Brockelman

38 Lorena Rd.  
Winchester, MA 01890

Winchester Historical Society  
Mr. Edward D'Agostino  
45 Everett Ave.  
Winchester, MA 01890

Winchester Home and Garden Club  
Ms. Janet Holborow  
120 Forest St.  
Winchester, MA 01890

Winchester Interface Housing Corp.  
Ms. Candace Margles  
20 Grove St.  
Winchester, MA 01890

Winchester Music Club  
Mr. John Willis  
30 Rangeley Rd.  
Winchester, MA 01890

Winchester Music Society  
Mr. Martin Hitchcock  
29 Wildwood St.  
Winchester, MA 01890

Winchester Newcomers Club  
Ms. Lisa Michaels  
203 Highland Ave.  
Winchester, MA 01890

Winchester Republican Town Committee  
Mr. Daniel Strange  
84 Sheridan Circle  
Winchester, MA 01890

Winchester Soccer Club  
Mr. Jay Boylan  
23 Yale St.  
Winchester, MA 01890

Winchester Sports Foundation  
Mr. David Pywell  
5 Lakeview Rd.  
Winchester, MA 01890

Winchester Tennis Association  
Mr. Craig Potter  
58 Emerson Rd.  
Winchester, MA 01890

Winchester Trails  
Ms. Margaret Messinger  
226 Mystic Valley Parkway  
Winchester, MA 01890

Winton Club  
Mrs. George Neuner  
8 Ravenscroft Rd.  
Winchester, MA 01890

Women's Republican Club  
Ms. Marcia Saltmarsh  
9 Myrtle St.  
Winchester, MA 01890

First Baptist Church of Winchester  
William Huegel, Pastor  
90 Mount Vernon St.  
Winchester, MA 01890

Faith Fellowship Ministries  
Mr. Jonathan Del Turco, Pastor  
263 Main St.  
Winchester, MA 01890

First Church of Christ, Scientist  
Community Leader  
114 Church St.  
Winchester, MA 01890

First Congregational Church  
Dr. George Waterbury, Pastor  
21 Church St.  
Winchester, MA 01890

Second Congregational Church  
Susan Cartmeli, Minister  
485 Washington St.  
Winchester, MA 01890

Parish of The Epiphany  
Robert O'Neill, Rector  
70 Church St.  
Winchester, MA 01890

Temple Shir Tikvah  
Rabbi David Kudan  
P.O. Box 373  
Winchester, MA 01890

Immaculate Conception Church  
Charles McGahey, Pastor  
79 Sheridan Circle  
Winchester, MA 01890

St. Eulalia's Church  
Francis McGann, Pastor  
50 Ridge St.  
Winchester, MA 01890

St. Mary's Church  
Richard Messina, Pastor

158 Washington St.  
Winchester, MA 01890

Winchester Unitarian Church  
Arline Sutherland, Minister  
478 Main St.  
Winchester, MA 01890

## **APPENDIX E**

### **Woburn Public Officials for 1995**

Senator Edward Kennedy  
2400 JFK Federal Building  
Boston, MA 02203

Senator John Kerry  
1 Bowdoin Square, 10th Floor  
Boston, MA 02114

Representative Edward Markey  
7th Congressional District  
5 High St., Suite 101  
Medford Square, MA 02155

Senator Robert Havern III  
Room 512, State House  
Boston, MA 02133

Representative Carol Donovan  
Room 167, State House  
Boston, MA 02133

Mr. John Curran, Alderman  
10 Common St.  
Woburn, MA 01801

Mr. Bryan Melanson, Alderman  
10 Common St.  
Woburn, MA 01801

Mr. Anthony Imperioso, Alderman  
10 Common St.  
Woburn, MA 01801

Mr. Kevin McDonough, Alderman  
10 Common St.  
Woburn, MA 01801

Mr. Scott Galvin, Alderman  
10 Common St.  
Woburn, MA 01801

Mr. Brian Shaughnessy, Alderman  
10 Common St.  
Woburn, MA 01801

Mr. Paul Medeiros, Alderman  
10 Common St.  
Woburn, MA 01801

Mr. Richard Crocker, Alderman  
10 Common St.  
Woburn, MA 01801

Mr. Timothy Dever, Alderman  
10 Common St.  
Woburn, MA 01801

Mr. Terence Kenney, Assessor  
10 Common St.  
Woburn, MA 01801

Mr. George Berardi, Assessor  
10 Common St.  
Woburn, MA 01801

Mr. William Sullivan, Jr.  
Assessor  
10 Common St.  
Woburn, MA 01801

Mr. Gerald Surette, Auditor  
10 Common St.  
Woburn, MA 01801

Mr. Robert Martin  
Board of Appeals  
10 Common St.  
Woburn, MA 01801

Mr. William Sullivan  
Board of Appeals  
10 Common St.  
Woburn, MA 01801

Mr. Ernest Barbas  
Board of Appeals  
10 Common St.  
Woburn, MA 01801

Mr. Philip McGovern  
Board of Appeals  
10 Common St.  
Woburn, MA 01801

Mr. Clarence Scott  
Cemetery Commission  
10 Common St.  
Woburn, MA 01801

Mr. Kenneth Summers  
Board of Appeals  
10 Common St.  
Woburn, MA 01801

Ms. Naomi Foley  
City Clerk  
10 Common St.  
Woburn, MA 01801

Mr. Stephan Spanos  
Board of Health  
10 Common St.  
Woburn, MA 01801

Mr. John Mahoney  
Collector of Taxes  
10 Common St.  
Woburn, MA 01801

Mr. John Fralick  
Board of Health  
10 Common St.  
Woburn, MA 01801

Ms. Theresa Murphy  
Conservation Commission  
10 Common St.  
Woburn, MA 01801

Mr. Francis Ryan  
Board of Health  
10 Common St.  
Woburn, MA 01801

Mr. Richard Cutts  
Conservation Commission  
10 Common St.  
Woburn, MA 01801

Mr. Stephan Spanos  
Board of Health  
10 Common St.  
Woburn, MA 01801

Mr. Michael Benenate  
Conservation Commission  
10 Common St.  
Woburn, MA 01801

Mr. Italo Galante  
Cemetery Commission  
10 Common St.  
Woburn, MA 01801

Mr. John Zelonis, Jr.  
Conservation Commission  
10 Common St.  
Woburn, MA 01801

Ms. Veronica McManus  
Cemetery Commission  
10 Common St.  
Woburn, MA 01801

Mr. Peter Brunckhorst  
Conservation Commission  
10 Common St.  
Woburn, MA 01801

Ms. Irene Simas  
Cemetery Commission  
10 Common St.  
Woburn, MA 01801

Duane Cleak  
Conservation Commission  
10 Common St.  
Woburn, MA 01801

Ms. Karen Olson  
Cemetery Commission  
10 Common St.  
Woburn, MA 01801

Mr. Tom Brady  
Conservation Commission  
10 Common St.  
Woburn, MA 01801

Ms. Mary McLaughlin  
Housing Authority  
10 Common St.  
Woburn, MA 01801

Mr. Robert Zampbell, Constable  
10 Common St.  
Woburn, MA 01801

Ms. Arleen Mozden  
Housing Authority  
10 Common St.  
Woburn, MA 01801

Mr. John Grammer, Dog Officer  
10 Common St.  
Woburn, MA 01801

Mr. Donald Queenin  
Housing Authority  
10 Common St.  
Woburn, MA 01801

City Engineer  
10 Common St.  
Woburn, MA 01801

A.J. Gerald Lacasse  
Industrial Development and  
Financing Authority  
10 Common St.  
Woburn, MA 01801

Mr. Robert Doherty, Fire Chief  
10 Common St.  
Woburn, MA 01801

Mr. Robert Connors  
Industrial Development and  
Financing Authority  
10 Common St.  
Woburn, MA 01801

Ms. Joanne Mulkerin  
Historical Commission  
10 Common St.  
Woburn, MA 01801

Mr. Thomas Smith  
Historical Commission  
10 Common St.  
Woburn, MA 01801

Mr. James McKeown  
Industrial Development and  
Financing Authority  
10 Common St.  
Woburn, MA 01801

Mr. Robert McNabb  
Housing Authority  
10 Common St.  
Woburn, MA 01801

Mr. Augustine Costanzo  
Industrial Development and  
Financing Authority  
10 Common St.  
Woburn, MA 01801

Mr. Stanley Flight  
Housing Authority  
10 Common St.  
Woburn, MA 01801

Mr. James McPartlin  
Industrial Development and  
Financing Authority  
10 Common St.  
Woburn, MA 01801

Mr. Joseph Mantini  
Housing Authority  
10 Common St.  
Woburn, MA 01801

Mr. John Grammer  
Inspector of Animals  
10 Common St.  
Woburn, MA 01801

Mr. Steve Paris  
Inspector of Buildings  
10 Common St.  
Woburn, MA 01801

Mr. Robert Simonds  
Public Works Department  
10 Common St.  
Woburn, MA 01801

Mr. Joseph Pineau  
Inspector of Buildings  
10 Common St.  
Woburn, MA 01801

Mr. William McGowan  
Purchasing Agent  
10 Common St.  
Woburn, MA 01801

Mr. Robert McGann  
Inspector of Buildings  
10 Common St.  
Woburn, MA 01801

Ms. Mary McFague  
Recreation Commission  
10 Common St.  
Woburn, MA 01801

Mr. Al Fay  
Inspector of Buildings  
10 Common St.  
Woburn, MA 01801

Mr. Louis Ferullo  
Recreation Commission  
10 Common St.  
Woburn, MA 01801

Mr. Dennis Donovan  
License Commission  
10 Common St.  
Woburn, MA 01801

Ms. Sandra Niemszyk  
Recreation Commission  
10 Common St.  
Woburn, MA 01801

Mr. Kevin Maguire  
License Commission  
10 Common St.  
Woburn, MA 01801

Mr. Robert Morgan  
Recreation Commission  
10 Common St.  
Woburn, MA 01801

Ms. Patricia Galante  
License Commission  
10 Common St.  
Woburn, MA 01801

Ms. Rita Gerry  
Registrar of Voting  
10 Common St.  
Woburn, MA 01801

Mr. John Rabbitt, Mayor  
10 Common St.  
Woburn, MA 01801

Mr. Beulah Burnett  
Registrar of Voting  
10 Common St.  
Woburn, MA 01801

Mr. John Cashell  
Planning Board  
10 Common St.  
Woburn, MA 01801

Mr. Nicholas Barbas  
Registrar of Voting  
10 Common St.  
Woburn, MA 01801

Mr. Phillip Mahoney,  
Police Chief  
10 Common St.  
Woburn, MA 01801

**Mr. Dennis Devine  
Retirement Board  
10 Common St.  
Woburn, MA 01801**

**Mr. Gerald Surette  
Retirement Board  
10 Common St.  
Woburn, MA 01801**

**Mr. Philip Kiklis  
Retirement Board  
10 Common St.  
Woburn, MA 01801**

**Mr. John McGonigle, Sheriff  
10 Common St.  
Woburn, MA 01801**

**Mr. Edward Robertson, Solicitor  
10 Common St.  
Woburn, MA 01801**

**Mr. Edward Orsi, Treasurer  
10 Common St.  
Woburn, MA 01801**

**Mr. Carl Batchelder  
Superintendent of Schools  
55 Locust St.  
Woburn, MA 01801**

**Mr. Robert Norton, Principal  
Woburn High School  
88 Montvale Ave.  
Woburn, MA 01801**

## **APPENDIX F**

### **Woburn Community Leaders**

American Legion Post 101  
Ainche Lukach, Commander  
194 Lexington St.  
Woburn, MA 01801

Boy's and Girls Club of Woburn  
Glenn Stirling, Director  
One Charles Gardner Lane  
Woburn, MA 01801

Campfire of Woburn  
Elaine Noonan  
19 Felton St.  
Woburn, MA 01801

Catholic Daughters of America  
Mrs. Ester Mazza, Regent  
100 Cambridge Rd.  
Woburn, MA 01801

Center for Mental Health  
and Retardation  
Main St.  
Woburn, MA 01801

Chamber of Commerce  
Virginia Allen, President  
7 Alfred St.  
Woburn, MA 01801

Church Women of Woburn  
Mrs. Dorothy Kelleher  
c/o Saint Charles  
280 Main St.  
Woburn, MA 01801

City Wide P.T.O.  
Ms. Veronica Andrews  
c/o Joyce Middle School  
Locust St.  
Woburn, MA 01801

Democratic City Committee  
Mrs. Mary McFague, Chairman  
18 Hawatha Rd.  
Woburn, MA 01801

Elks  
Mr. Barry Cerra, Exalted Ruler  
295 Washington St.  
Woburn, MA 01801

Hadassah  
Ms. Sybil Saloman  
224 Park St. 17B  
Stoneham, MA 02180

Irish American Club  
Tim Sheedy, President  
147 Main St.  
Woburn, MA 01801

Knights of Columbus,  
President  
4 Bennett St.  
Woburn, MA 01801

Lion's Breakfast Club  
John Metcalf, President  
7 Robert Ave.  
Woburn, MA 01801

Lions Club  
Mr. Robert McKillop  
4 Harvard St.  
Woburn, MA 01801

Middlesex Lions  
Elizabeth Collins  
12 Myrtle St.  
Woburn, MA 01801

Portugues American Club, President  
83 Main St.  
Woburn, MA 01801

St. Anthony's Club  
Mr. Gerald Benullo  
1020 Main St.  
Woburn, MA 01801

**Sons of Italy  
President  
168 Lexington St.  
Woburn, MA 01801**

**South End Italian Club  
Mr. Joseph Limonciello, President  
44 Fowle  
Woburn, MA 01801**

**Towanda Club  
Mr. Paul Farrow  
19 Abbott  
Woburn, MA 01801**

**Woburn Council of Social Concern  
Mr. Dean Solomon, Director  
19 Campbell St.  
Woburn, MA 01801**

**Woburn's Womens Club  
Ms. Violet Worden  
13 Pleasant St.  
Woburn, MA 01801**

**United Veterans Council  
Mr. Walter Foley, Commander  
6 Pheasant Ln.  
Woburn, MA 01801**

**Veteran's Memorial Senior Center  
Services Coordinator  
144 School St.  
Woburn, MA 01801**

**VFW 543  
Mr. Harold Essigamann, Commander  
18 Walnut St.  
Woburn, MA 01801**

**Woburn Business Association  
Mr. Paul Meaney  
200 West Cummings Park, Suite 5  
Woburn, MA 01801**

**Woburn Coalition Against  
Substance Abuse  
Ms. Donna Donovan  
33 Plympton St.  
Woburn, MA 01801**

**Astoria Softball Club  
P.O. Box 18  
Winchester, MA 01890**

**Mass. Chapter of NRA, President  
Rifle Range Rd.  
Woburn, MA 01801**

**Woburn Country Club, Director  
Country Club Rd.  
Woburn, MA 01801**

**Woburn Youth Soccer  
Mr. Paul Sands  
73 Mount Pleasant St.  
Woburn, MA 01801**

**YMCA Youth Center, Director  
523 Main St.  
Woburn, MA 01801**

**Mr. Len Cadran  
14 Locust St.  
Woburn, MA 01801**

**Mr. Nick Loomis  
16 Pine St.  
Woburn, MA 01801**

**Linda Olsson  
60 Water St.  
Woburn, MA 01801**

**Mr. Alan Futterman  
Community Initiatives Specialis  
Winchester Hospital  
48 Highland Ave.  
Winchester, MA 01890**

**Ms. Donna Robbins  
12 Wyman St.  
Woburn, MA 01801**

Ms. Veronica Himmel  
Packard St.  
Woburn, MA 01801

First Congregational Church  
Thomas Fisher, Pastor  
322 Main St.  
Woburn, MA 01801

Ms. Harriett Lohnes  
44 Main St.  
Woburn, MA 01801

Greater Grace Community  
Pastor  
10 Henshaw St.  
Woburn, MA 01801

Mr. John Clancey  
50 Cambridge Rd. Apt. 213  
Woburn, MA 01801

Ms. Carolyn Davis  
80 Lowell St.  
Woburn, MA 01801

The Lord's Gathering  
30 Tower Office Park  
Ron Satrape, Pastor  
Woburn, MA 01801

Mr. Mel Lieberman  
9 Wiley St.  
Woburn, MA 01801

Lutheran Church of The Redeemer  
60 Forest Park  
Theodore Ast, Pastor  
Woburn, MA 01801

Mr. Richard Luhr  
10 Church St.  
Woburn, MA 01801

Mr. Richard Humber  
63 Wood St.  
Woburn, MA 01801

Montvale Congregational Church  
Central and Orange Sts.  
Michele Rogers-Brigham, Pastor  
Woburn, MA 01801

Mr. Robert Danehy  
32 Beacon St.  
Woburn, MA 01801

North Congregational Church  
Martha Koenig-Stone, Pastor  
896 Main St.  
Woburn, MA 01801

Ms. Catherine Shaugnessy  
31 Scott St.  
Woburn, MA 01801

Church of The Living God  
James Hicks, Pastor  
205 Cambridge Rd.  
Woburn, MA 01801

St. Anthony Church  
Leo Lynch, Pastor  
851 Main St.  
Woburn, MA 01801

First Baptist Church ABC/USA  
Carole Simpkins, Pastor  
Main St. at Winn St.  
Woburn, MA 01801

St. Barbara's Church  
Vincent Mellone, Pastor  
Four Corner, Cambridge Rd.  
Woburn, MA 01801

**St. Charles Borromeo  
Paul Sughrue, Pastor  
280 Main St.  
Woburn, MA 01801**

**St. John's Baptist  
Dr. Larry Edmunds, Pastor  
38 Everett St.  
Woburn, MA 01801**

**St. Joseph's Church  
Harold LeBlanc, Pastor  
100 Washington St.  
Woburn, MA 01801**

**Trinity Episcopal Church  
Bruce Young, Rector  
Main and Davis Sts.  
Woburn, MA 01801**

**United Methodist Church  
William Flug, Pastor  
523 Main St.  
Woburn, MA 01801**

**Christian Teaching  
and Worship Center  
Paul Johnian, Pastor  
73 Pine St.  
Woburn, MA 01801**

**Greek Orthodox Church  
Annunciation of The Virgin Mary  
Nicholas Petropoulakos, Pastor  
70 Montvale Ave.  
Woburn, MA 01801**