COLLABORATION AS AN IMPLEMENTATION STRATEGY: AN ASSESSMENT OF SIX WATERSHED MANAGEMENT PROGRAMS

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ABSTRACT

This study utilizes a networked perspective to examine the role that collaboration plays as an implementation strategy. The study utilizes an inductive approach to generate conceptual frameworks and testable propositions by analyzing implementation efforts in six watersheds: Inland Bays (DE); Lake Tahoe (CA, NV); Narragansett Bay (RI, MA); Salt Ponds (RI); Tampa Bay (FL); and Tillamook Bay (OR). The analysis examined four research questions: (1) What implementation activities were observed? (2) What role did collaboration play in the implementation process? (3) How did the institutional setting influence the collaborative process? (4) What public value was created? These questions were answered using an qualitative, comparative case study research design that developed theory grounded in the data.

Collaboration emerged as an important implementation strategy in all six watersheds. At the operational level, collaboration was used to deliver public services such as permitting, public education, training, environmental monitoring, and data collection. At the policy-making level participants were engaged in a wide range of activities oriented towards sharing information, pooling resources, and developing shared policies and norms. There were also attempts to institutionalize shared policies by developing formal agreements, creating new programs, and developing new institutions.

A theoretical framework was developed with testable propositions that help explain the particular pattern of collaborative activities in each watershed. The framework postulates that the watershed’s contextual conditions create an interorganizational system’s collaborative capacity. Five sets of contextual factors had
the largest influence: the physical environment; configuration of problems; institutional setting; situational histories; and, programmatic context. Once these opportunities exist, the actors must still reach collective agreement on the activities to be pursued jointly. This decision-making process was influenced by a different set of situational factors: the mix of actors; mix of problems and policy solutions; the nature of the decision-making process; and, the expected outcomes. The situational factors create incentives and constraints that influenced the participants’ ability to reach agreement. The final section analyzes the different ways that collaboration generates public value at the individual, organizational, network, and societal level and discusses the implementation problems that occurred.
# TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION  
Using Collaboration to Implement Watershed Management Programs 4  
Research Design 5  
Data Collection 5  
Organization Collaboration of the Dissertation 6  
Endnotes 7  

CHAPTER TWO: CONCEPTUAL BACKGROUND 8  
Research on Watershed Management Programs 8  
Research on Interorganizational Policy Implementation 12  
Third Generation Implementation Research 13  
Interorganizational Networks 16  
Collaboration 19  
Competing Theories Explaining Why Organizations Interact 21  
Principal-Agent Theory 22  
Resource Dependency/Exchange Theory 22  
Transaction Cost Theory 23  
Institutionalism 25  
Factors Influencing Interorganizational Relationships 26  
Organizational Change Research 27  
Diffusion of Innovations 28  
Institutional Analysis 31  
What is an Institution? 32  
Levels of Action 33  
Factors Influencing Collaborative Processes 34  
Summary 35  
Endnotes 35  

CHAPTER THREE: METHODOLOGY 39  
Data Sources 40  
Program Documents and Archival Records 40  
Guided Discussions During Site Visits 42  
Guided Discussions by Telephone 45  
Participant and Direct Observation 45  
Data Analysis 46  
Cross-Case Analysis 48  
Case Selection 52  
Ensuring the Validity of the Conclusions 53  
Limitations of the Study 54  
Endnotes 55
CHAPTER FOUR: IMPLEMENTING THE SIX WATERSHED MANAGEMENT PROGRAMS

Narragansett Bay
  Narragansett Bay Project
    Management Conference Structure
    Planning Activities
    Developing the CCMP
    The CCMP
  Implementation Activities
    Progress Implementing the CCMP
  Future Prospects

Inland Bays
  Delaware Inland Bays Estuary Program
    Management Conference
    Planning Activities
    Developing the CCMP
    The CCMP
  Implementation Activities
    Progress Implementing the CCMP
  Future Prospects

Tampa Bay
  Tampa Bay Estuary Program
    Management Conference
    Planning Activities
    Developing the CCMP
    The CCMP
  Implementation Activities
    Progress Implementing the CCMP
  Future Prospects

Tillamook Bay
  Tillamook Bay National Estuary Program
    Management Conference
    Planning Activities
    Developing the CCMP
    The CCMP
  Implementation Activities
    Progress Implementing the CCMP
  Future Prospects

Lake Tahoe
  Tahoe Regional Planning Agency
    1969 Compact
    1980 Compact
  Implementing the Regional Plan
  Future Prospects
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt Ponds</td>
<td>129</td>
</tr>
<tr>
<td>Salt Ponds SAMP</td>
<td>131</td>
</tr>
<tr>
<td>Planning Activities</td>
<td>131</td>
</tr>
<tr>
<td>Implementation of the 1984 SAMP</td>
<td>133</td>
</tr>
<tr>
<td>Evolution of the Salt Ponds SAMP</td>
<td>136</td>
</tr>
<tr>
<td>1999 Revisions to the SAMP</td>
<td>137</td>
</tr>
<tr>
<td>Future Prospects</td>
<td>139</td>
</tr>
<tr>
<td>Summary</td>
<td>139</td>
</tr>
<tr>
<td>Using Collaboration as an Implementation Strategy</td>
<td>143</td>
</tr>
<tr>
<td>Endnotes</td>
<td>147</td>
</tr>
<tr>
<td>CHAPTER FIVE: COLLABORATION AS AN IMPLEMENTATION STRATEGY</td>
<td>150</td>
</tr>
<tr>
<td>Watershed Management as a Governance Strategy</td>
<td>151</td>
</tr>
<tr>
<td>Collaboration Takes Many Forms</td>
<td>153</td>
</tr>
<tr>
<td>A Framework for Classifying Collaborative Activities</td>
<td>154</td>
</tr>
<tr>
<td>Operational Level</td>
<td>155</td>
</tr>
<tr>
<td>Improving Environmental Conditions</td>
<td>156</td>
</tr>
<tr>
<td>Restoration Projects</td>
<td>157</td>
</tr>
<tr>
<td>Land Acquisition</td>
<td>157</td>
</tr>
<tr>
<td>Installing BMPs and Other Environmental Improvements</td>
<td>158</td>
</tr>
<tr>
<td>Collaborative Permitting</td>
<td>160</td>
</tr>
<tr>
<td>Educating the Public and Decisionmakers</td>
<td>161</td>
</tr>
<tr>
<td>Public Outreach Activities</td>
<td>161</td>
</tr>
<tr>
<td>Training and Technical Assistance</td>
<td>162</td>
</tr>
<tr>
<td>Monitoring and Enforcement</td>
<td>163</td>
</tr>
<tr>
<td>Monitoring and Data Collection</td>
<td>164</td>
</tr>
<tr>
<td>Enforcement</td>
<td>164</td>
</tr>
<tr>
<td>Policy-Making Level</td>
<td>165</td>
</tr>
<tr>
<td>Knowledge Sharing</td>
<td>167</td>
</tr>
<tr>
<td>Developing and Sharing Information</td>
<td>168</td>
</tr>
<tr>
<td>Meetings and Informal Contacts</td>
<td>170</td>
</tr>
<tr>
<td>Resource Sharing</td>
<td>173</td>
</tr>
<tr>
<td>Pooling Staff Resources</td>
<td>173</td>
</tr>
<tr>
<td>Pooling Financial Resources</td>
<td>175</td>
</tr>
<tr>
<td>Shared Policies, Regulations, and Social Norms</td>
<td>177</td>
</tr>
<tr>
<td>Developing formal Goals, Policies, and Regulations</td>
<td>178</td>
</tr>
<tr>
<td>Developing Informal Social Norms</td>
<td>178</td>
</tr>
<tr>
<td>Monitoring and Enforcement</td>
<td>180</td>
</tr>
<tr>
<td>Institutional Level</td>
<td>181</td>
</tr>
<tr>
<td>Formalizing Shared Policies and Social Norms</td>
<td>183</td>
</tr>
<tr>
<td>Developing New Collaborative Organizations</td>
<td>185</td>
</tr>
<tr>
<td>Implications for Researchers and Practitioners</td>
<td>187</td>
</tr>
<tr>
<td>Implications for Researchers</td>
<td>189</td>
</tr>
<tr>
<td>Collaboration is a Dynamic and Evolutionary Process</td>
<td>190</td>
</tr>
<tr>
<td>Bandwagon Effects and Collaborative Inertia</td>
<td>191</td>
</tr>
</tbody>
</table>
Sources of Public Value 279
   Policy Outputs and Outcomes 279
   Job Satisfaction and Motivation 281
   Learning, Adaptation, and Change 282
   Organizational and Network Capacity 284
   Social Capital and Civil Society 287
Implementation Problems and Costs 290
   Disposition and Skills of Implementors 290
Resources 294
   Slack Resources 294
   Financial Resources 296
Changing Institutional Setting 298
Implications for Researchers and Practitioners 299
Endnotes 301

CHAPTER EIGHT: SUMMARY AND CONCLUSIONS 302
   Using Collaboration as an Implementation Strategy 302
   Problems with Traditional Implementation Research 305
   Directions for Future Implementation Research 307
   Future Collaboration Research 308

BIBLIOGRAPHY 311
LIST OF TABLES, FIGURES, AND APPENDICES

Tables

Table 2.1: Top-Down vs. Bottom-Up Approaches to Policy Implementation 13
Table 2.2: Strengths and Weaknesses of Third Generation Implementation Studies 14
Table 2.3: Terms and Concepts Used to Describe the Network Phenomena 18
Table 3.1: Chronology of the Study 41
Table 3.2: Examples of Program Documents and Archival Records Analyzed 42
Table 4.1: Main Actors Involved in Governing the Narragansett Bay Watershed 61
Table 4.2: Selected Activities Related to the Narragansett Bay CCMP 63
Table 4.3: Sources of Nutrient Inputs to the Inland Bays 72
Table 4.4: Selected Events in the Inland Bays Watershed 73
Table 4.5: Main Actors Involved in Governing the Inland Bays Watershed 75
Table 4.6: Implementation of the DIBEP CCMP 80
Table 4.7: No Progress Reported or Progress is Unknown by the CIB 82
Table 4.8: Timeline of Selected Activities Related to the TBEP 87
Table 4.9: Main Actors Involved in Governing the Tampa Bay Watershed 88
Table 4.10: Membership in Various Interorganizational Committees 90
Table 4.11: Environmental Monitoring Programs 92
Table 4.12: TBEP’s Goals for Water and Sediment Quality 94
Table 4.13: TBEP’s Goals for Bay Habitats 95
Table 4.14: TBEP Annual Funding Contributions for 1998 to 2000 97
Table 4.15: Events Addressing Environmental Problems in Tillamook Bay 103
Table 4.16: Differences Between the USDA’s RCWP and the EPA’s NEP 104
Table 4.17: Main Actors Involved in Governing the Tillamook Bay Watersheds 105
Table 4.18: Goals and Targets in the TBNEP’s CCMP 110
Table 4.19: TCPF Strategies and Plans that Recommend Strategies 111
Table 4.20: TCPF’s Strategies, Five-Year Local Actions, and Implementation 113
Table 4.21: Sources of Water Quality Problems in Lake Tahoe 118
Table 4.22: History of the TRPA’s Development 119
Table 4.23: Main Actors Involved in Governing the Watershed 120
Table 4.24: TRPA’s Governance Structure 121
Table 4.25: Selected Representation in TRPA Decision-Making Processes 123
Table 4.26: Entities Participating in the TRPA’s EIP 127
Table 4.27: Summary Results of 1996 Threshold Review 128
Table 4.28: Main Actors Involved in Governing the Salt Ponds Watershed 132
Table 4.29: Major Events in the Salt Ponds 133
Table 4.30: Actions Contained in the Salt Ponds SAMP 135
Table 4.31: CRMC’s Density Controls in the 1999 SAMP 138
Table 4.32: Characteristics of the Six Case Studies 140
Table 4.33: Selected Implementation Accomplishments and Future Challenges 144
Table 4.34: Use of Policy Instruments 145
Table 5.1: Collaborative Activities at the Operational Level 156
Table 5.2: Collaborative Activities at the Policy-Making Level 166
Table 5.3: Pooling Resources to Implement the EIP – Capital Needs by Sector 176
Table 5.4: Collaborative Activities at the Institutional Level 182
Table 5.5: Examples of Collaborative Organizations 186
Table 5.6: Mechanisms Used to Improve Accountability 200
Table 6.1: Summary of the Propositions Suggested by the Proposed Framework 265
Table 7.1: Potential Sources of Public Value from Collaboration 280

---

**Figures**

Figure 2.1: Variables Determining the Rate of Innovation Adoption 29
Figure 2.2: Variables Related to Organizational Innovativeness 30
Figure 2.3: The Institutional Analysis and Development (IAD) Framework 32
Figure 4.1: Typical Estuary Program Management Conference Structure 57
Figure 4.2: The NEP’s Planning Process 58
Figure 4.3: Narragansett Bay Watershed, Rhode Island and Massachusetts 59
Figure 4.4: Location of the NBEP Within RIDEM’s Organizational Structure 67
Figure 4.5: The Inland Bays Watershed, Delaware 71
Figure 4.6: Annual Nitrogen Loadings to Tampa Bay (1992 – 1994 Average) 86
Figure 4.7: The Tillamook Bay Watershed, Oregon 101
Figure 4.8: Lake Tahoe Watershed, California and Nevada 116
Figure 4.9: Salt Ponds Watershed, Rhode Island 130
Figure 6.1: A Framework for Analyzing the Collaborative Process 207

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**Appendices**

APPENDIX A: SAMPLE DISCUSSION GUIDE – TILLAMOOK BAY 356
APPENDIX B: OUTLINE FOR THE DETAILED CASE STUDIES 365
CHAPTER ONE
INTRODUCTION

A growing number of researchers recognize that a network perspective can improve implementation research by avoiding what Hjern and Porter (1981) call the ‘lonely organization syndrome’ (e.g., Cline 2000; O’Toole 2000, 1997, 1995; Hanf and O’Toole 1992; Menzel 1987; Mandell 1984; Hanf 1982). This study utilizes a networked perspective to examine the role that collaboration plays as an implementation strategy by examining the implementation efforts in six watershed management programs. My analysis is guided by the following research questions:

- What implementation activities resulted from the six watershed management programs?
- How did collaboration aid in implementing the watershed management programs?
- What factors related to a watershed’s institutional setting created collaborative capacity and influenced the ability to utilize these opportunities for collaboration?
- What public value was added as a result of these collaborative activities? Conversely, what costs or problems result from these collaborative activities?

Given that the research in this area is in its early stages, the study is developmental and uses an inductive approach to generate conceptual frameworks and testable propositions (Agranoff and McGuire 2000).

The answers to these research questions have important implications for researchers and practitioners. A growing number of researchers recognize the ubiquitous nature of networks and the important roles they play in social and organizational life. Most government programs are implemented through interorganizational networks (Hall and O’Toole 2000; O’Toole 2000, 1995; Kickert, et al., 1997; Menzel 1987; O’Toole and Montjoy 1984; Hjern and Porter 1981). This may be due to the tendency for policies and programs to collect around problems over time as policy systems develop (Elmore 1985). As a result, policy systems often include numerous programs at the federal, state, and local level that use different policy instruments (e.g., regulation, expenditures,
education, etc.) to address societal problems. In the U.S., this portfolio of government programs varies across state and local governments, reflecting the differences in capacity and policy innovation that are an integral part of the changing nature of federalism.

Practitioners increasingly find that they must learn how to manage interorganizational relationships such that individual organizations can achieve their respective goals (Mandell 1989). As Bressers and others (1995b, 4) observe:

“Often, no organization of government possesses sufficient authority, resources, and knowledge to effect the enactment and achievement of policy intentions. Instead, policies require the concerted efforts of multiple actors, all possessing significant capabilities but each dependent on multiple others to solidify policy intention and convert it into action. Indeed, it is often difficult for any one actor, or group of actors, to manage, or manipulate, the flow of problems and solutions onto the political agenda in the first place. Thus, there are complex multi-actor processes for both the identification, definition and resolution of policy problems, and for the implementation of policy.”

While the polycentric structure of the U.S. federal system creates numerous opportunities for collaboration (Ostrom 1994, 1989; Wright 1988; Elazar 1987), it also places limits on whether practitioners can exploit an interorganizational system’s collaborative capacity (Bardach 1998, 1996;). Federal, state, and local actors often have different statutory and budgetary responsibilities and missions that protect different constituencies while placing some organizations in conflict with one another. Governmental and nongovernmental organizations (NGOs) may resist participating in efforts that run counter to their interests or those of their constituencies. Some organizations lack the capacity (i.e., slack resources) to become engaged in collaborative activities because they can be costly and time-consuming and require a significant commitment of organizational resources (Imperial 1999a, 452). Thus, the portfolio of government programs can create governance problems such as: (1) fragmentation and duplication of responsibility and authority; (2) poor use of existing information and resources; (3) inconsistency of policies across and between governmental levels; and (4) gaps in service delivery or performance (Imperial 1999a).

A central challenge confronting practitioners is to find ways to improve governance in a world of shared power where the capacity for solving policy problems is
widely dispersed and few organizations have the power to accomplish their missions by acting alone (Milward and Provan 2000). Governance generally refers to the means for achieving direction, control, and coordination of individuals and organizations that have varying levels of autonomy on the behalf of interests or objectives to which they jointly contribute (Lynn, et al. 2000; Frederickson 1996). It involves the configuration of: governmental and nongovernmental organizations; statutes; organizational, financial, and programmatic structures; administrative rules and routines; resource levels; and institutionalized rules and norms. Thus, it is inherently political and involves bargaining, negotiation, and compromise that can produce winners or losers. It also involves formal structures and the exercise of judgement and personal relationships between those individuals involved in implementing public programs (Lynn, et al. 2000, 236; Milward and Provan 2000; Frederickson 1996).

Collaboration is one strategy practitioners use to improve governance and implement policies in interorganizational settings. Following Bardach (1998, 8), who builds on the work of Moore (1996), collaboration is any joint activity by two or more organizations intended to increase public value by working together rather than separately. This interactive process involves autonomous actors who use shared rules, norms, or organizational structures to act or make decisions related to an issue or problem (Gray and Wood 1991, 146). The challenge for researchers is to explain how these processes influence outcomes or performance while recognizing the configurational and loosely-coupled character of the institutional setting (Lynn, et al. 2000, 257).

Organizations collaborate in a variety of ways and the activities may be permanent, temporary, project-based, or ad hoc in nature (Mandell 1990). Practitioners are often involved in over-lapping collaborative activities (e.g., Agranoff and McGuire 1998a, 1998b; and, Bressers, et al. 1995a). Some activities will be preparatory while others will be “nested” such that one activity influences or constrains another (Bardach 1998, 20). Collaboration also tends to be a trial and error process with practitioners becoming engaged in new activities as they learn how to work together and discover ways to add public value. Thus, there is an evolutionary dimension where the outcomes of one collaborative effort can create the inputs for subsequent efforts (Bardach 1998; and, Simonin 1997).
Unfortunately, while collaboration is clearly a practical concern, the process is not well understood; nor is the pragmatic concern of how managing in these settings differs from that of managing a single organization (Agranoff and McGuire 2000; Jones, et al. 1997; Mandell 1990). There is no consensus on definitions, concepts, or methodological approach to studying collaboration. There is little agreement on the factors that create an interorganizational system’s collaborative capacity. The factors that influence whether organizations participate in collaborative activities remains poorly understood. There is also no readily accepted framework for understanding how collaborative activities create public value or the implementation problems that result. This study addresses these shortcomings.

Using Collaboration to Implement Watershed Management Programs

The study also contributes to the growing literature on watershed management. Watershed management is based on the premise that the context specific nature of environmental problems requires complex policy solutions that require the expertise and authority of multiple agencies located at different levels of government. Common themes of watershed management programs include:

- Approaching problems from an integrated or systems perspective;
- Improving institutional performance;
- Improving the integration of government policies;
- Enhancing the coordination of governmental and nongovernmental programs;
- Broad public participation;
- The involvement of key stakeholders in government decision making; and,
- Having a stronger scientific basis in government policies (Imperial 1999a).

Therefore, watershed management is as much a problem of “governance” involving multiple networks of organizations, as it is a question of science and designing effective policies (Imperial 1999a). The challenge for practitioners is to find ways to get this portfolio of actors and programs to work together in a manner that improves environmental conditions. One might assume that these programs would employ collaboration as an implementation strategy.
However, few studies have looked at the role collaboration plays in implementing watershed management programs (e.g., Wondoleck and Yaffee 2000). Moreover, there is little agreement on the factors that influence whether watershed management programs are able to develop and implement watershed management programs (Leach, et al. 2000a). There is also little agreement among researchers on the ways that watershed management programs create public value. Thus, this study offers important contributions to the growing body of research on watershed management programs. It also reveals important implications for the practitioners involved in watershed management programs.

**Research Design**

My interest in understanding collaborative processes led me to employ a qualitative methodology that follows many of the strategies recommended for developing grounded theory (Strauss and Corbin 1990; and Glaser and Strauss 1967). Case selection was guided by criteria that assured there would be differences in ecological settings, environmental problems, institutional environment, and situational histories. The watersheds also utilized a variety of regulatory and nonregulatory policy instruments. This led to the selection of the following watersheds: Inland Bays (DE); Narragansett Bay (RI, MA); Salt Ponds (RI); Lake Tahoe (CA, NV); Tampa Bay (FL); and, Tillamook Bay (OR). Four of the watersheds participated in the EPA’s National Estuary Program (NEP) (i.e., Inland Bays, Narragansett Bay, Tampa Bay, and Tillamook Bay). Lake Tahoe was a federal-state compact. A special area management plan (SAMP) was developed for the Salt Ponds as part of the state’s federally approved coastal zone management (CZM) program.

**Data Collection**

Data was collected as part of a larger research project conducted for the National Academy of Public Administration (hereafter referred to as the Academy) as part of its Learning from Innovations in Environmental Protection project. The project assessed the development and implementation of the six watershed management programs and resulted in a final report entitled *Environmental Governance in Watersheds: The*
Importance of Collaboration to Institutional Performance (Imperial and Hennessey 2000a). Data for this study comes primarily from two sources: (1) field interviews with more than 200 individuals; and, (2) program documents and archival records. Other data sources included telephone interviews, direct observation, and participant observation.

Systematic qualitative techniques (e.g., pattern coding and causal chains) were used to analyze the data (e.g., Miles and Huberman 1994). Codes were derived both inductively and deductively from the data and generated based on a start list derived from previous research (e.g., Miles and Huberman 1994; Strauss and Corbin 1990). As coding continued, patterns emerged and codes were used to dimensionalize concepts. When coding the data, quotes and short vignettes were identified to add context to the case studies. As the analysis continued, tables, figures, and displays were used to identify trends and make observations (Miles and Huberman 1994). This analysis resulted in six detailed technical reports that contain additional analysis and documentation to support the findings described in subsequent chapters (Hennessey and Imperial 2000a; Imperial 2000a, 2000b; Imperial, et al. 2000; Imperial and Summers 2000; Kauneckis, et al. 2000).

Cross-case analysis deepened understanding of collaborative processes and helped determine the extent to which the findings extended beyond individual cases. The basic approach was one of synthesizing interpretations and looking for themes that cut across the cases (Miles and Huberman 1994). Potential rival explanations were contrasted against one another to identify logical inconsistencies and to determine their consistency with the data (Yin 1994). The chain of events was examined to help determine causality. Potential threats to the validity were then analyzed (Cook and Campbell 1979).

Organization of the Dissertation

The next chapter discusses the literature used to frame and guide this inquiry. The study draws on research on watershed management programs, research on networks and collaboration, and research on institutional analysis, specifically the institutional analysis and development (IAD) framework developed by Elinor Ostrom (1999, 1990) and her colleagues. This is followed in Chapter Three by a discussion of the procedures used to collect and analyze the data. It also discusses some of the study’s limitations and the steps taken to improve the reliability and validity of the reported findings.
Chapter Four describes each case study and summarizes the extent to which each watershed management program has been implemented. Chapter Five goes a step further and analyzes these efforts to determine the extent to which collaboration was used as an implementation strategy. A framework is proposed to organize these findings, which illustrates the various ways that collaborative activities can be related and how these activities occur at different levels. The chapter concludes with some general observations about collaborative processes and offers some guidance for practitioners.

Chapter Six explains why a different pattern of collaborative activities was observed in each watershed. Various contextual factors created the collaborative capacity in each watershed. These factors also created incentives and constraints that influenced whether organizations participated in collaborative processes or were able to find opportunities for joint action. My analysis also identified a different set of situational factors that influenced whether the actors where able to find opportunities for collaboration that fit the collective constraint set. This analysis produced a set of formal propositions that could be operationalized, tested, and refined in subsequent research. It also suggested important implications for researchers and practitioners.

Chapter Seven examines the different ways public value was created at the individual, organizational, network, and societal level. It also discusses common implementation problems observed in the six watersheds. Implications suggested by this analysis are then discussed. Chapter Eight summarizes the study’s main findings and identifies important areas for future research.

Endnotes
1 Conversely, Kettl (1993, 1990) argues that most implementation actually occurs in relatively simple, hierarchical institutional arrangements. However, these arguments are not supported by an empirical analysis and Hall and O’Toole’s (2000) analysis suggests that most implementation actually occurs in networks with more complicated structures.
CHAPTER TWO
CONCEPTUAL BACKGROUND

The study contributes to three distinct, but related areas of research. There is a growing body of environmental policy research examining watershed management programs, however, there are few detailed implementation studies and little research examines the role that collaboration plays in implementing these programs. There is a growing body of research examining implementation in networked settings. Of particular interest is the research focused on collaboration and other interorganizational processes. Finally, the study builds on research examining institutions designed to resolve collective action problems, in particular the institutional analysis and development (IAD) framework developed by Elinor Ostrom (1999, 1990) and her colleagues. The following sections describe each stream of research to provide a general theoretical foundation for the conceptual frameworks and testable propositions advanced in subsequent chapters.

Research on Watershed Management Programs

The watershed or ecosystem-based approach to natural resource management has received growing support from practitioners (ESA 1995), government officials (CRS 1994; GAO 1994; and, EOP 1993), and researchers (e.g., Haeuber 1996; Cortner and Moote 1994; Grumbine 1994; and Slocombe 1993a, 1993b). This research goes by a variety of names such as ecosystem management, watershed management, river basin management, integrated coastal zone management, integrated environmental management, collaborative stewardship, civic environmentalism, and community-based management. Regardless of the terminology, these efforts tend to be place-based, cooperative, multi-party, and are grounded in high quality scientific and time and place information (Margerum and Born 2000; Wondolleck and Yaffee 2000).¹

These efforts are growing in prominence (Cortner and Moote 1994). Since 1992, all four federal land management agencies, the National Park Service, the Bureau of Land Management, the Fish and Wildlife Service, and the Forest Service, have announced that they are, or soon will be, implementing ecosystem-based approaches to managing their...
land resources (Haeuber 1996; GAO 1994). Numerous federal agencies have also become engaged in ecosystem-based management activities including:

- Natural Resource Conservation Service (NRCS);
- National Oceanic and Atmospheric Administration (NOAA);
- Department of Defense (DOD);
- Department of Energy (DOE);
- Bureau of Indian Affairs (BIA);
- Bureau of Mines;
- Bureau of Reclamation;
- Minerals Management Service (MMS);
- National Biological Survey;
- U.S. Geological Survey (USGS);
- Environmental Protection Agency (EPA); and, the
- National Aeronautics and Space Administration (NASA) (CRS 1994).

The National Performance Review (Executive Office of the President 1993) even recommended that the President issue an executive order establishing ecosystem management policies across the federal government. Some states (e.g., Florida) have embarked on their own statewide ecosystem management programs (Imperial 2000b) and others (e.g. Oregon) have statewide watershed management programs (Imperial and Summers 2000). The federal government also supports watershed management efforts through programs such as NOAA’s Coastal Zone Management (CZM) Program and the EPA’s National Estuary Program (NEP).

This “systems-based” approach has been applied in a variety of settings to address a wide range of resource management problems. It is used to manage terrestrial habitat systems such as the Greater Yellowstone Ecosystem. Researchers have examined whether the approach might improve the management of fisheries such as those on Georges Bank and other large marine ecosystems. There is also a growing body of research that examines how this approach is used to manage the watersheds of various estuaries and riverbasins such as the Chesapeake Bay, the Great Lakes, Columbia River, and Puget Sound. There is even a small body of research on the watershed management efforts in the Inland Bays, Lake Tahoe, Narragansett Bay, Salt Ponds, Tampa Bay, and Tillamook Bay, which are the subjects of this study.
One of the features that make watersheds a useful unit of analysis for intergovernmental studies is that watershed management programs often operate in different institutional settings. Sometimes federal programs such as the EPA’s National Estuary Program (NEP) have been established to assist, support, or encourage, state and local watershed management efforts (e.g., Imperial and Hennessey 1996; Imperial et al. 1993). Federal requirements such as of the Clean Water Act’s (CWA’s) Section 208 or total maximum daily loading (TMDL) requirements often stimulate watershed management efforts. Some states have taken steps to encourage or support the development of watershed partnerships (University of Colorado 1996; Kenney 2000, 1999). In other cases, watershed partnerships develop as a result of community-based efforts initiated by state or local officials or even NGOs.18

Despite this growing body of research, there have been few attempts to synthesize these research findings; the studies tend to be descriptive rather than theoretical, focus on program development rather than implementation, and look at single cases rather than conducting comparative studies. Others summarize available knowledge by drawing upon theory and empirical evidence to examine the:

- Distribution and functions of partnerships (e.g., Kenney 1999; and University of Colorado);
- Social and environmental factors influencing partnership formation (e.g., Lubell 2000; Pelkey, et al. 1999; Lubell, et al. 1998);
- Political environment confronting watershed management programs (e.g., Cortner and Moote 1999);
- Role of science in the policy process (Healey and Hennessey 1994; and, Weinberg 1972);
- Stakeholder involvement and public participation processes,19 and,
- The use of adaptive management strategies.20

This suggests that watershed management has a strong administrative and institutional orientation, although these processes remain poorly understood (Imperial 1999b).

Recent research is beginning to examine the role that collaboration plays in watershed management (Margerum and Born 2000; Wondolleck and Yaffee 2000; Busenberg 1999; Randolph and Bauer 1999; Selin and Chavez 1995; Cortner and Moote 1994). There appears to be a high latent potential for using collaboration as an
implementation strategy in this policy domain because watershed problems are often addressed by numerous agencies at different levels of government. There are also many types of specialization that add further complexity to the institutional arrangements as watershed problems are often addressed by medium (e.g., air, water, soil, land use, etc.), geographic location (e.g., wetlands, coastal zone, tidal waters, agricultural land, forest land, etc.), pollutant, law (federal or state), or by function (e.g., permitting, enforcement, public education, installing BMPs, issuing grants, etc.) (Bardach 1998, 53, 93 - 94).

Leach and others (2000a) systematically reviewed 36 empirical studies of watershed partnerships using statistical techniques. Their meta-analysis identified 210 items influencing the success of watershed partnerships. Common contextual variables include factors related to the ecological setting, problems, issue salience, situational history, and the regulatory or programmatic context. Common endogenous factors included: partnership initiation; partnership composition; nature of the focal issue; organizational processes and direction setting; the partnership’s organizational structure; leadership; staffing; governmental commitment and support; and funding (Born and Genskow 2001; and Leach, et al. 2000a). These variables are consistent with many of the factors identified in the environmental planning literature (Briassoulis 1989) as well as research on policy implementation (e.g., O’Toole 1986) and the IAD framework (Ostrom 1999; and, Imperial 1999b).

There have been several attempts to systematically evaluate watershed management programs and related efforts to manage natural resources.21 Despite these efforts, there is no consensus on how to evaluate the value added by watershed management programs. Some studies emphasize a particular measure of success. For example, Kenney (2000) looks at the impact of partnerships on representative democracy. Others used a multi-dimensional approach. Imperial (1999a) employed the IAD framework’s evaluative criteria (i.e., efficiency, equity, adaptability, and accountability) as well as policy outcomes. Leach and others (2000b) propose eight dimensions of a watershed partnership’s success: building capacity; education and outreach; reaching agreements; resolving conflict; monitoring and assessment; restoration projects and policy change; impacts on watershed conditions; and achieving partnership goals.
Research on Interorganizational Policy Implementation

The broad base of implementation literature and related research on interorganizational processes is the second stream of research providing the theoretical foundation for this study. Two dominant traditions of implementation research have been the “top-down” and “bottom-up” approaches with each based on different assumptions about the nature of interorganizational relationships. The “top-down,” “forward mapping,” or “programmed” approach argues that implementation problems can be minimized by the careful and explicit preprogramming of implementation procedures (e.g., Mazmanian and Sabatier 1983; Ripley and Franklin 1982; and, Edwards, 1980) [Table 2.1]. Many of these studies focused on identifying the variables crucial to implementation success and linking them in conceptual frameworks.22 This top-down model is similar to the principal-agent model used by intergovernmental management researchers (Chubb 1985).

The competing “bottom-up,” “backward mapping,” or “adaptive” approach argues that effective implementation requires a process allowing policy to be adapted based on the unfolding interaction of a policy with its institutional setting (Berman 1980, 211). Bottom-uppers view implementation as the result of a bargaining process, rather than due to the explicit control of federal decisionmakers.23 The bottom-up model is similar to Pressman’s (1975) donor-recipient model and the resource dependency/exchange model used by organizational theory researchers (e.g., Pfeffer and Salancik 1978).

Top-down and bottom-up research has been criticized because each tends to ignore the portion of the implementation process explained by the other and both tend to ignore or downplay the “networked” nature of policy implementation (Matland 1995; Lester, et al. 1987; Linder and Peters 1987; Goggin 1986; and, O’Toole 1986). This research also tends to be oriented towards generating lists of variables purported to affect the implementation process. For example, O’Toole’s (1986) analysis of over 100 implementation studies found that over half identified financial resources to be an important variable influencing success. Other commonly cited variables include policy form and content, organizational characteristics, messages received from constituency groups, and the characteristics of the organization’s economic, social and political environments (O’Toole 1986, 189; and, Goggin, et al. 1990). Researchers also disagree
Table 2.1: Top-Down vs. Bottom-Up Approaches to Policy Implementation

<table>
<thead>
<tr>
<th>Top Down</th>
<th>Characteristics/Assumptions</th>
<th>Bottom Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programmed Approach</td>
<td>Adaptive Approach</td>
<td>Federal/State Officials</td>
</tr>
<tr>
<td>Federal/State Officials</td>
<td>Key Actor</td>
<td>Low Federal Government Control</td>
</tr>
<tr>
<td>High</td>
<td>Measure of Success</td>
<td>Low</td>
</tr>
<tr>
<td>Compliance</td>
<td>Discretion of Implementor</td>
<td>Implementation Procedures</td>
</tr>
<tr>
<td>Low</td>
<td>Implementation Network/Structure</td>
<td>Decentralized or Polycentric</td>
</tr>
<tr>
<td>Well Defined</td>
<td>Standards/Regulations</td>
<td>Administrative Tool</td>
</tr>
<tr>
<td>Centralized</td>
<td>Most Appropriate When</td>
<td>Narrow</td>
</tr>
<tr>
<td>Stable</td>
<td>Scope of Policy Change</td>
<td>Well Defined</td>
</tr>
<tr>
<td>Tightly Coupled</td>
<td>Policy Clarity</td>
<td>Minor</td>
</tr>
<tr>
<td>Conflict over Policy Goals &amp; Objectives</td>
<td>Degree of Organizational Change</td>
<td>Low</td>
</tr>
<tr>
<td>Political Environment</td>
<td>Institutional Setting</td>
<td>Stable</td>
</tr>
<tr>
<td>Unstable</td>
<td>Loosely Coupled</td>
<td>Tightly Coupled</td>
</tr>
</tbody>
</table>

on what constitutes implementation “success” in multi-actor settings (O’Toole 1986). Instead, researchers typically measure success from the perspective of one organization using a limited set of criteria such as compliance (e.g., Mazmanian and Sabatier 1983), feasibility (e.g., Linder and Peters 1987), effectiveness (e.g., Lippincott and Stoker 1992), level of effort (e.g., Thompson and Scicchitano 1985), policy outputs (e.g., Ringquist 1993a) policy outcomes (e.g., Ringquist 1993b), or whether plans matter (e.g., Burby, et al 1997; Briassoulis 1989; and, Burby, et al. 1988).

Third Generation Implementation Research

Given the limitations of the top-down and bottom-up approaches, recent attention has turned towards integrating these perspectives in what has been termed “third generation implementation research” (Goggin, et al. 1990). One of the first attempts to synthesize the top-down and bottom-up perspectives was Elmore’s (1985) forward and backward mapping [Table 2.2]. Elmore (1985) argues that policy analysts should use a ‘reversible logic’, which involves starting at both ends of a policy problem, and reasoning in both directions until a satisfactory solution is found. This requires exploring the likely
## Table 2.2: Strengths and Weaknesses of Third Generation Implementation Studies

<table>
<thead>
<tr>
<th>Approach</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
</table>
| Elmore’s (1985) Forward and Backward Mapping | • Consistent with federalism theories  
• Draws attention to institutional incentives influencing individual and organizational behavior  
• Recognizes transaction costs influence the implementation process | • Lacking conceptual development  
• Unclear what the dependent variable is  
• Wide range of implementation variables are not considered |
| Matland’s (1995) Ambiguity-Conflict Model | • Contingency model synthesizes top-down and bottom-up approaches  
• Recognizes that a single approach to implementation will not work in every situation  
• Recognizes the environment influences implementation behavior | • Not intergovernmental  
• Difficult to determine where you move from one cell to the next  
• Difficult to determine which approach is appropriate for a specific policy  
• Many implementation variables are not considered |
| Ingram’s (1990) Flexible Framework | • Contingency model synthesizes top-down and bottom-up approaches  
• Recognizes that a single approach to implementation will not work in every situation  
• Recognizes transaction costs can influence implementation behavior  
• Recognizes different “types” of policies influence implementation behavior | • Marginally intergovernmental  
• Difficult to determine where you move from one cell to the next  
• Difficult to determine what approach is appropriate when variables conflict  
• Many implementation variables are not considered |
| Sabatier and Jenkins-Smith (1999, 1993) Advocacy Coalition Framework | • Draws attention to the importance of bargaining and policy learning  
• Uses a longitudinal approach  
• Empirical research supports the proposed hypotheses | • Marginally intergovernmental  
• Focuses on statutes and policies and formal processes (e.g., hearings) rather than organizational behavior  
• More a theory of policy change than an implementation framework  
• Many traditional implementation variables are not considered |
| Goggin, et al.’s (1990) Communication Model | • Intergovernmental component  
• Implementation behavior is the dependent variable  
• Recognizes the environment influences implementation behavior  
• Incorporates organizational characteristics  
• Argues for a longitudinal approach | • Uses a general systems model instead of a series of embedded games/systems  
• Relationships between independent variables are poorly specified  
• Focus of model is on a statute, not an organization or set of organizations  
• Implementation behavior concept needs further development |
effects of a policy by examining how individuals and organizations respond when policy is enacted. Elmore (1985) recognizes the strategic nature of organizational behavior and that interorganizational policy implementation often requires tradeoffs among competing policies and objectives (Elmore 1985).

Elmore (1985) raises two important issues. First, focusing on a single statute or policy could lead to erroneous conclusions. Organizations often implement a number of federal and state statutes that require making tradeoffs among competing or conflicting objectives. Second, incentives and constraints will influence the strategic behaviors and interactions between implementing organizations.

Another approach to synthesizing top-down and bottom-up approaches employs a contingency perspective. Berman (1980) argued that either a top-down or bottom-up approach could be effective provided that it is used in the appropriate circumstances [Table 2.1]. Matland (1995) and Ingram (1990) utilize this logic and develop contingency models for policy implementation. Matland’s (1995) Ambiguity-Conflict Model argues that there are four different “types” of implementation that result from a policy’s ambiguity and level of conflict. Ingram’s (1990) Flexible Implementation Framework argues that four basic policy types result from a combination of information and negotiation costs. Both models draw attention to the different ways policies are implemented and how an organization’s environment influences the process. However, it is unlikely that a robust theory can be developed around the interaction of two variables. This is likely to lead to the same oversimplified policy advice plaguing top-down and bottom-up research. It is also unclear how interorganizational relationships should be incorporated into each model.

The Communications Model developed by Goggin and others (1990) uses a systems model to examine how inducements and constraints at the federal, state, and local level influence implementation behavior. The model also incorporates a series of organizational and situational constraints as intervening variables. Of the five models, this may best summarize the relationships between the variables emerging out of traditional implementation research. However, it fails to fully consider the networked nature of implementation and the resulting strategic interactions.
The final model is the Advocacy Coalition Framework (ACF) developed by Sabatier (1991, 1988, 1986, and 1985) and others (e.g., Sabatier and Jenkins-Smith 1999, 1993). The ACF argues that competing advocacy coalitions influence policy decisions by legislators, which in turn influence agency resources and policy outputs and outcomes. Policy change occurs as a result of continued bargaining and policy learning.

The ACF clearly has utility to understanding interorganizational policy implementation and it has been used to study watershed management programs (Lubell 2000; Lubell, et al. 1998; Pelkey, et al. 1999). It recognizes that a network of actors, both public private, influence the formation of policies as well as changes in previously enacted policies. The ACF also draws attention to the fact that in order to understand how policy systems operate, you need to look at them over relatively long periods of time. However, the ACF is oriented primarily around conflict and policy change rather than collaboration and policy implementation. The model also fails to consider how organizational characteristics influence implementation behavior.

**Interorganizational Networks**

Rather than building on this “traditional” implementation research, this study incorporates and builds upon recent scholarship that bears directly on the relevant issues associated with implementing policies in networked settings (O’Toole 2000). Researchers such as O’Toole (1997, 1996a, 1996b, 1995) and others argue that a network perspective is needed to understand interorganizational processes in order to avoid what Hjern and Porter (1981) term the ‘lonely organization syndrome.’

The increased attention given to networks should not be surprising. As Elmore (1985) observed, there is a tendency for policies and programs to collect around problems over time as the policy system develops. This is particularly true in the area of environmental policy where a complex array of programs now exists at the federal, state, and local level to address environmental problems. In many respects, the contemporary “implementation” challenge has shifted from developing and implementing new programs to modifying and networking existing government programs such that they satisfy competing federal, state, and local objectives.
Researchers from various disciplines also refer to the network phenomena using a wide range of terminology [Table 2.3]. Networks are structures of interdependence involving multiple organizations and exhibit some degree of structural stability but include both formal and informal linkages (O’Toole 1997b). Researchers have developed different concepts to understand the different types of interorganizational relationships that comprise an interorganizational system. An organization set consists of those organizations with direct links to some focal organization (Alexander 1995; Mandell 1989; Aldrich and Whetten 1981). Each relationship is a dyad, the unit of analysis for many network researchers. An action set is a group of organizations that have formed a temporary alliance for a limited purpose involving a common area of involvement (Alexander 1995; Mandell 1989; Aldrich and Whetten 1981). This concept is analogous to the concepts of advocacy coalition (e.g., Sabatier and Jenkins-Smith 1999, 1993) or implementation structure (e.g., Hjern and Porter 1981). Whereas an organization set is concerned with a focal organization’s relationships, the action set is oriented more towards the activities of a group of organizations (Alexander 1995; Mandell 1989). A network or interorganizational system is the totality of all of the organizations connected by a certain type of relationship. The interorganizational system must be bounded in some way by a common orientation such as a policy area, type of service, or a geographic area (Alexander 1995; Mandell 1989; Aldrich and Whetten 1981). Thus, the interorganizational system is analogous to the concept of policy network (e.g., Kickert, et al., 1997) or policy subsystems (e.g., Sabatier and Jenkins-Smith 1999, 1993) in that it is the collection of organizations involved in related action sets.

This study is primarily concerned with action sets and interorganizational systems. Each collaborative activity essentially involves an action set in that it is a group of organizations that have formed some form of alliance for the purpose of working together. Numerous collaborative activities occurred in each watershed, each of which could have a different combination of organizational members. The collection of organizations involved in these collaborative activities constitutes the interorganizational system in each watershed.
Table 2.3: Terms and Concepts Used to Describe the Network Phenomena

<table>
<thead>
<tr>
<th>Term/Concept</th>
<th>Examples of Prominent Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managed networks</td>
<td>Wright 1983.</td>
</tr>
<tr>
<td>Federations</td>
<td>Provan 1983.</td>
</tr>
<tr>
<td>Interorganizational policy</td>
<td>Milward 1982.</td>
</tr>
<tr>
<td>Interorganizational policy</td>
<td>O’Toole and Montjoy 1984.</td>
</tr>
<tr>
<td>Implementation</td>
<td></td>
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</tbody>
</table>
Collaboration

Collaboration is defined in many ways (see Wood and Gray 1991). Common elements of these definitions are that collaboration involves voluntary relationships between autonomous actors to solve specific problems or reach agreement on some issue by sharing resources (e.g., information, money, or staff) (Gray 1985). These relationships cross boundaries defined by organizational or programmatic affiliations, interests, perceptions, geography, or political jurisdiction (Wondolleck and Yaffee 2000). Activities are also structured by a set of shared rules, norms, or organizational structures, which are formal or informal in nature (Gray and Wood 1991, 146).

Collaboration involves a wide range of activities, ranging from joint meetings to joint service delivery or the creation of a new collaborative organization, an organization consisting of other organizations. Collaborative activities may be permanent, temporary, project-based, or ad hoc in nature (Mandell 1990) and practitioners may be involved in over-lapping collaborative activities that influence one another (e.g., Agranoff and McGuire 1998a, 1998b; and, Bressers, et al. 1995a). Collaboration also tends to be a trial and error process where practitioners become engaged in new activities as they discover new ways to work together (Bardach 1998).

Building on Moore (1996, 10), Bardach (1998, 9) argues that collaboration should only be used when the activities add public value and results in better organizational performance or lower costs than can be achieved without it (Bardach 1998, 17). Other researchers have utilized similar concepts such as collaborative advantage (Huxham 1996b) and relational rents (Dyer and Singh 1998) to capture the notion that the real objective of collaboration is for organizations to create value by working together that cannot be obtained by working independently.

The public value, collaborative advantage, and relational rent conceptualizations are consistent with the two rationales for collaboration prevalent in the literature. The first is self-interest. Organizations collaborate because they achieve something that cannot be obtained in any other way. This need not, and should not, imply that self-interest is at the expense of other organizations (Huxham 1996a). The second rationale is a moral one. It rests on the belief that the important problems facing society cannot and should not be tackled by a single organization or level of government acting alone (e.g.,
Milward and Provan 2000; Huxham 1996b). Collaboration becomes the mechanism for ensuring that a greater range of interests is represented. Thus, it enhances the democratic features of our polycentric federal system, builds social capital, and encourages a civil society by building new organizational and social networks and involving citizens in governmental and nongovernmental institutions.

While increased democratic values can be an important source of public value, collaboration should not be viewed be an end in and of itself (e.g., Himmelman 1996; and, Sink 1996). Rather, collaboration should be viewed as a means to an end (Bardach 1998). It can improve organizational performance by sharing information, risk, costs, or resources. Collaboration could also improve a network’s ability to deliver services by through improved communication or coordination or perhaps by taking advantage of economies of scale or technical specialization. It might result in new programs or changes in decision making that advance the missions of the organizations or improve the way resources are allocated. Collaboration could also lead to the development of new organizations thereby creating new institutional infrastructure.

Building on Bardach (1998), these “opportunities” for cooperating and working together are referred to as an interorganizational system’s collaborative capacity. However, practitioners will be limited in their ability to exploit opportunities for joint action. Even the most imaginative practitioner will be constrained by the realities of a federal system that places organizations at the federal, state, and local level in potential conflict with one another. Organizations may represent different constituencies or have competing or conflicting values and missions. There may also be the underlying tension of whether federal, state, regional, or local priorities should guide collaborative activities. Because these conflicts exist, there will be limits on how much actors are, or should be, willing to sacrifice for the sake of collaboration, no matter how noble the goal. Moreover, no amount of creativity will overcome the shortage of resources (e.g., staff, money, etc.) that serves as obstacles to government action or the reality of how funding is allocated (Bardach 1998, 17).

When used incorrectly or in inappropriate situations, collaboration can cause more problems than it solves. Collaborative decision making can distort information and participants may bargain to the lowest denominator such that no group’s interests are
threatened. Collaboration also has the potential to increase transaction costs because it is
time consuming, costly, and can stimulate a wide range of strategic behavior with little
Corresponding benefit.

A common strategic behavior that has been observed is “turf” guarding. Turf
refers to the exclusive domain of activities and resources over which an agency has the
right to exercise operational or policy responsibility (Bardach 1996). In many respects,
“turf” is the by-product of the U.S. federal system whereby agencies located at different
levels of government are issued directives to perform specified functions. All else being
equal, the individual or organizational preference is likely to be towards maintaining or
increasing turf because it secures the agency’s strategic position within an
interorganizational system. It also enhances a organization’s long-term survival by
developing continued support from constituency groups and the legislators that control its
resources (Bardach 1996, 177). Common threats to an agency’s turf include: (1) threats
to job security or career enhancement; (2) challenge to professional expertise; (3) loss of
policy direction; (4) undermining traditional priorities; and, (5) anxiety over
accountability (Bardach 1996, 178 -179). Organizations are also some measure of the
people working in them. Some individuals may refuse to participate in collaborative
activities because they dislike or distrust the individual(s) that they have to work with.
Other problems may be a reflection of “personalities and egos” in that participants are
more concerned with the perception of “winning” or “losing” than they are about
organizational turf (Bardach 1996, 179).

Competing Theories Explaining Why Organizations Interact

Unfortunately, many network studies are atheoretical and analyze structural
properties using a wide range of statistical techniques. However, a growing body of
theoretical research is beginning to emerge that seeks to explain why organizations often
choose to collaborate even though collective action theory (e.g., Olson 1965), game
theory’s “prisoner’s dilemma”, and Hardin’s (1968) “tragedy of the commons” offer a
pessimistic view of the prospects of collaboration. Instead, a growing number of
researchers have looked to various theoretical perspectives such as principal-agent,
resource dependency/exchange, transaction cost, and institutionalism to explain why collaborative behavior is often observed in interorganizational systems.27

**Principal-Agent Theory**

Principal-agent models are often used to examine interorganizational relationships (e.g., Milward and Provan 1998; Waterman, et al. 1998; Waterman and Meier 1998; Lynn 1996). The principal-agent model assumes that “social life is a series of contracts (Perrow 1986, 224).” Contracts specify what agents should do and what is expected in return from principals. Since agents have more information than their principals, various strategic behaviors can result. Thus, the principals have to closely monitor their agents to ensure political control (Waterman, et al. 1998; Perrow 1986). For example, Chubb (1985) uses the model to explain how federal principals use grants to control the behavior of state and local government agents. Organizations may therefore collaborate in an attempt to control an organization’s activities. The main sources of principal-agent problems are information asymmetries and the fact that agents often have a different set of incentives than their principals (Lynn 1996). As a result, inefficient behavior results. For example, the EPA may use its authority and or control over grant money to try and get state and local agencies to address its priorities. However, state and local agencies often subvert EPA’s attempts at control by using funding in ways that advance state and local objectives at the expense of the federal government’s objectives. One of the model’s main limitations is that it tends to focus on dyadic relationships whereas collaboration involves multiple principals and agents participating in a joint decision-making process such that an organization is simultaneously a principal and agent within the process but outside of the process other relationships may exist.

**Resource Dependency/Exchange Theory**

An alternative explanation is resource dependency/exchange theory. Exchange and resource dependence theories are closely related. The latter is essentially a customized version of the former, which is used to explain the external control of organizations (Frooman 1999). The subtle differences are not important for the purposes
of this analysis. The models assume that the primary incentive for all organizations is survival. Since most organizations exist in an environment with limited resources, they are dependent to varying degrees on other organizations for resources that are critical to its survival (Alexander 1995; Foa, et al. 1993; Mizruchi and Galaskiewicz 1993; Yamagishi, et al. 1988; Cook, et al. 1983; Marsden 1983; Rhodes 1981; Pfeffer and Salancik 1978; Cook 1977; and, Benson 1975). Resources are anything perceived to be valuable such as money, staff, information, power, or political support (Frooman 1999; Cook and Whitmeyer 1992; Pfeffer 1992; Emerson 1962). While organizations value autonomy they may be willing to cooperate when they depend on another organization’s resources. Interorganizational relationships can therefore be understood as transactions in which resources are exchanged between organizations (Frooman 1999; Bardach 1998; Dickson and Weaver 1997; Alexander 1995; Provan and Milward 1991; Lincoln and McBride 1985; Pfeffer and Salancik 1978; Pressman 1975).

The main difference between the principal-agent and resource dependency models is that resource dependency views the interorganizational system as being more open to influence by a wider range of jurisdictional interests. Bargaining occurs among actors seeking to maximize their individual supplies of critical resources (e.g., Liebschutz 1991; and, Ingram 1977). For example, agencies may collaborate to gain access to resources (e.g., land, volunteers, equipment) necessary to complete a restoration project or agencies may negotiate a memorandum of understanding (MOU) to delegate permitting authority from one agency to another. However, it also suggests that organizations with similar resource profiles may have little to offer one another. Thus, organizations with complementary resource profiles may be more likely to enter into interorganizational relationships (Lincoln and McBride 1985).

**Transaction Cost Theory**

Transaction cost theory was first used to explain the origins of hierarchical organization by arguing that firms used this form of organization to minimize transaction costs (e.g., Williamson 1985). Transaction cost theory has now been extended to explain interorganizational relationships (e.g., Alexander 1995). The central argument is that
transaction costs are the most significant determinants of the governance form (Osborn and Hagedoorn 1997; Zaheer and Venkatraman 1995). Collaboration and networks result when this organizational form allows the participants to maximize the benefits of a transaction (Dickson and Weaver 1997; Park 1996; Alexander 1995; Williamson 1985).

Transactions (e.g., contracting) between organizations differ in their degree of uncertainty, relative frequency, and idiosyncrasy (Maser 1986). Transaction costs are resources expended as a result of imperfect information. Organizations experience search costs because they do not know which alternatives are feasible. Bargaining and decision-making costs occur because the actors do not know which alternatives satisfy the participants. Transaction costs also result when organizations involved in a relationship have specialized assets devoted to these relationships. Monitoring costs will be incurred because it is unclear whether the participants will violate the agreements (Maser 1986). Therefore, organizations that do not cooperate and trust each other will be less efficient than those that do (Zaheer and Venkatraman 1995). This suggests that the more frequently people engage in a productive relationship, the more they can depend on informal commitments to ensure performance (Maser 1986).

The theory also suggests that organizations will be willing to engage in collaboration when transaction costs are low or benefits are incurred. To the extent that transaction costs are high, organizations may be unlikely to collaborate or do so on an informal or sporadic basis. Organizations may also be unlikely to collaborate if they have reason to believe that other potential collaborators are likely to engage in strategic behaviors (Kamieniecki, et al. 1985; and, Wright 1988). For example, agencies many be unwilling to participate in collaborative processes due to the high transaction costs associated with interagency meetings and negotiations. Potential partners may also act strategically in ways that exacerbate transaction costs (e.g., turf guarding, free riding, shirking, etc.). Conversely, the actors may enter into collaborative arrangements to lower transaction costs.
Institutionalism

Institutional theory has frequently been used to explain the importance of networks and interorganizational processes such as collaboration (Phillips, et al. 2000; Uzzi 1996; Gulati 1995). Institutional theory offers and explanation for the emergence and use of collaboration as an implementation strategy. Through repeated interactions, groups of organizations that comprise an institutional field develop a common understanding of the practices, rules, and resources that define the field and create the context within which collaborative processes occur (Phillips, et al. 2000). DiMaggio and Powell (1983) argue that these interactions produce isomorphism whereby the members of an interorganizational system faced with similar circumstances adopt similar attributes, structures and processes. The process may be coercive where powerful organizations force less powerful organizations to adopt their structures and goals. The process may be mimetic and occur when there is uncertainty and organizations tend to mimic other organizations in the field that are perceived as being successful. Normative isomorphism occurs when organizations adopt the conventional wisdom of knowledgeable staff members (DiMaggio 1983). Previous research suggests that isomorphic change will result when there is: dependence of one organization on another; centralization of resource supply; uncertain technologies or processes; loose coupling; ambitious organizational goals; professionalization of staff. Network factors are also important such as: membership in an organizational field is dependent on a single source of support; degree of interaction among network members; number of alternative organizational models in the institutional field; uncertain technology or processes; professionalization; and, structuration (Lynn, et al. 2000, 243; DiMaggio and Powell 1991). This can lead to the diffusion of structural innovations or the development of a common mindset among professionals in an interorganizational system (Provan and Milward 1991).

Collaboration can often solve important economic, technical, and strategic problems. Therefore, collaborative arrangements may emerge, be copied over time, and eventually become viewed as an accepted practice and way of organizing (Osborn and Hagedoorn 1997). The danger is that institutionalization may cause implementors to view collaboration as an end rather than a means to an end. Conversely, the same
institutional forces that promote the use of collaboration could serve to impede its use when the members of an interorganizational system view the process as being an inefficient way of organizing. It could also lead to the institutionalization of conflict (McCaffrey, et al. 1995; Ring and Van de Ven 1994; Axelrod 1984).

The process of collaboration also offers an explanation for how rules, resources, and practices can become institutionalized and spread among the members of an interorganizational system (Phillips, et al. 2000). Collaboration can also expose an interorganizational system’s members to new ideas, rules, practices, and ways of organizing, which then may be adopted. This suggests a potential for using collaboration to influence the overall development of an institutional field by promoting the process of institutionalizing various rules, practices, and ways of organizing (Phillips, et al. 2000).

Factors influencing Interorganizational Relationships

Each theory suggests a number of factors that can influence an organization’s willingness to become engaged in collaborative activities such as gaining control (i.e., principal-agent), accessing resources (i.e., resource dependency/exchange), minimizing the costs of service delivery (i.e., transaction cost), or adopting practices perceived to be effective (i.e., institutional theory). Previous research also suggests a number of other organizational factors that can influence an organization’s willingness or capacity to become engaged in collaborative activities. Studies of interorganizational relationships suggest that the attributes of individual organizations such as their culture (e.g., attitudes towards change) structure (e.g., formalization, centralization, task specialization), resources (e.g., slack resources, staff expertise and training, etc.), and strategy (e.g., innovativeness, boundary spanning, etc.) influence the potential for interorganizational coordination (Alexander 1995). Research also suggests that the symmetries or asymmetries of interdependence among organizations may influence collaboration (Alexander 1995; Hall 1995; and, Alter and Hage 1993). Previous research on interorganizational networks also suggest that factors such as program rationale, shared beliefs of participants, mutual trust, and opportunities for mutual benefit can all help overcome collective action problems and lead to collaborative behavior (Fountain 1994; Sable 1992; Mandell 1990; and, Porter 1981). Research on social network analysis
suggests that the structure (e.g., formalization, power, density, size, and geographic proximity), intensity (e.g., frequency, importance, stability, and scope of issues), and procedures for maintaining social relationships can influence the pattern of interorganizational relationships.\textsuperscript{28} Of particular interest to this study is previous research on organizational change and the diffusion of innovations.

**Organizational Change Research**

Collaboration often requires organizational change. Organization theorists have put forward a variety of competing perspectives on how internal and external organizational characteristics influence organizational change and adaptation.\textsuperscript{29} There is also a diverse range of related organizational theory research in areas such as population or community ecology,\textsuperscript{30} organizational life-cycles,\textsuperscript{31} organizational culture,\textsuperscript{32} and organizational learning\textsuperscript{33} that enhance our understanding of how organizations function, change, and learn over time.

Organizational change can be adaptive and improve performance or be disruptive and decrease performance (Amburgey, et al. 1993). Thus, decisions about whether to engage in collaborative activity may be based on whether the required change is adaptive or disruptive. Most organizational changes are incremental and occur in an organization’s periphery in order to adapt to ever changing environmental conditions and improve the effectiveness of an organization (Nadler and Tushman 1990; and, Majone 1989).\textsuperscript{34} Thus, organizations may be more likely to engage in collaboration when it requires incremental change and less likely to become involved when it requires strategic changes.\textsuperscript{35}

Previous research also identifies a number of factors that influence an organization’s attitudes towards change (e.g., Hrebinjak and Joyce 1985; Daft and Weick 1984; Meyer 1982; and, Miles and Snow 1978).\textsuperscript{36} These include an organization’s number of strategic choices (Hrebinjak and Joyce 1985), search activity (Hrebinjak and Joyce 1985; Daft and Weick 1984; Meyer 1982), and political behavior (Hrebinjak and Joyce 1985). Organizations also exhibit different behaviors in response to institutional
pressures from other organizations ranging from compliance (acquiescence) to outright
defiance (Oliver 1991a, 152).\(^{37}\)

An organizational culture that stresses innovation and cooperation may also
increase the likelihood of it becoming involved in collaborative activity (Alexander
1995). An organization’s ideology or culture is the coherent set of beliefs that bind
people in the organization together (Meyer 1982). Denison and Mishra (1995, 204) argue
that culture is an integral part of an organization’s adaptation process, particularly the
perceived importance of the environment (Daft and Weick 1984; Meyer 1982) and the
importance of attitudes towards change and flexibility (Denison and Mishra’s 1995).
Therefore, outward looking organizations (i.e., boundary spanners) may be more likely to
be involved in collaborative efforts (Alexander 1995). Organizations also learn to change
by changing. The more an organization changes, the more likely it is to have well-
developed change routines (Amburgey, et al. 1993, 54). Simonin (1997) refers to this as
the development of “collaborative know how,” the knowledge learned through
experience that allows an organization to obtain additional benefits (Milward and Provan
2000; Dyer and Singh 1998; Kraatz 1998; Simonin 1997; Alexander 1995). This finding
is consistent with the observation that some organizations are more “innovative” than
others (Rogers 1995; Damanpour 1991; Damanpour and Evan 1984).

**Diffusion of Innovations**

Collaboration can be viewed as a management innovation and it often involves
policy change and other innovative practices. A number of studies focus on state and
local government organizations and their propensity to adopt new policies, programs,
technologies, and administrative practices.\(^{38}\) Characteristics of state and local
organizations influencing their “innovativeness” include affluence, slack resources,
population size, industrialization, urbanization, education level, party competition, public
opinion, religion, political culture, interest group activity, and socioeconomic change
(Savage 1985a, 12; and, Perry, et al. 1993). Interestingly, many of these same variables
are thought to influence policy implementation (Goggin, et al. 1990).
Rogers (1995) diffusion model is the most sophisticated conceptual model. Rogers (1995, 207) proposes that the decision to adopt an innovation is explained by five attributes. The first is the relative advantage of an innovation, often measured in economic terms. However, social prestige, convenience, and satisfaction can also be important factors. Accordingly, incentives and disincentives play an important role in the decision to adopt an innovation. Second, the degree to which an innovation is perceived to be compatible with the existing values, past experiences, and needs of potential adopters. Third, the degree to which an innovation is perceived as complex, difficult to understand, and hard to use. Fourth, the degree to which an innovation may be experimented with on a limited basis (trialability). Finally, the degree to which the outputs or outcomes of an innovation’s adoption can be observed (Rogers 1995; and, Dewees and Hakes 1988). Rogers (1995, 16) hypothesizes that innovations perceived as having “greater relative advantage, compatibility, trialability, observability, and less complexity will be adopted more rapidly than other innovations” [Figure 2.1].

Other variables influencing the rate of adoption have also been identified. The type of innovation-decision (e.g., optimal, collective, authoritative) and the number of
people involved in decision-making processes. In general, the more people involved in the innovation-decision process, the slower the rate of adoption. There is also a broad base of research examining the characteristics of innovative organizations. These variables can be grouped in terms of the characteristics of leaders (e.g., attitude towards change), internal organizational characteristics (e.g., degree of centralization, complexity, formalization, interconnectedness, organizational slack, and size), and external characteristics of organizations (e.g., system openness, boundary spanning, etc.) (Rogers 1995, 380; and, Damanpour 1991) [Figure 2.2]. These variables are similar to those identified in the organization change and implementation literature.

Diffusion research on the communication processes between individuals and organizations can also contribute to our understanding of collaborative processes. Diffusion research demonstrates that opinion leaders often play an important role. Opinion leadership is the degree to which an individual can influence other individuals’ attitudes or overt behavior (Rogers 1995, 354). Societal norms and the degree to which the communication network structure is interconnected is also likely to influence the rate of adoption (Rogers 1995). Most human communication also involves the exchange of ideas among individuals who are alike, homophilous individuals. Networks containing homophilous individuals often communicate more effectively (Rogers 1995, 287).
Heterophily, the opposite of homophily, is the degree to which the individuals who interact are different in certain attributes (Rogers 1995, 287). Heterophilous communication also has important information potential because it connects socially dissimilar individuals. Accordingly, while homophilous communication facilitates the diffusion of an innovation within a network, heterophilous communication can accelerate the diffusion between different networks (Rogers 1995, 288; Alba 1982).

**Institutional Analysis**

The final area of research is the growing research on institutional analysis. Institutional analysis is an attempt to examine a problem that a group of individuals or organizations (i.e., collaborators) face and determine how the rules they adopt address a problem(s) influence their interactions and determine whether these activities add public value. Accordingly, institutional analysis can be used to improve our understanding of interorganizational relationships and processes (Margerum and Born 2000; Imperial 1999a, 1999b; O'Toole 1996c; Rhodes 1990). Specifically, this study builds upon the Institutional Analysis and Development (IAD) framework developed by Elinor Ostrom (1999, 1990) and her colleagues [Figure 2.3].

Several attributes of the IAD framework make it useful for analyzing the institutional arrangements associated with implementing watershed management programs. It recognizes the full range of transaction costs associated with implementing policies. It draws attention to contextual conditions (e.g., physical, biological, social, economic, cultural) influencing institutional design and performance. It contains no normative bias with respect to the institutional arrangements used to implement a watershed management program. It recommends using a variety of criteria to identify the strengths and weaknesses in the different institutional arrangements. Finally, the focus on rules rather than policies broadens the analysis to address a much wider range of organizational and interorganizational relationships (Imperial 1999a; Imperial 1999b).
What is an Institution?

The IAD framework defines institutions as “enduring regularities of human action in situations structured by rules, norms, and shared strategies, as well as by the physical world. The rules, norms, and shared strategies are constituted and reconstituted by human interaction in frequently occurring or repetitive situations (Crawford and Ostrom 1995, 582).” Thus, institutions include families, churches, government agencies and most organizations since they are defined by rules, norms, and shared strategies (Ostrom et al. 1993, 6). Institutions promote socially beneficial outcomes by helping actors resolve “social dilemmas” resulting when individually rational actions aggregate to produce socially irrational outcomes (Firmin-Sellers 1995, 203). Therefore, institutional
arrangements provide the means to avoid Hardin’s (1968) “tragedy of the commons” and resolve collective action and common pool resource problems (Ostrom 1990).

What differentiates institutional analysis from other forms of organizational analysis is the focus on rules. Rules are an implicit or explicit attempt to achieve order and predictability among humans (Ostrom 1986). Rules are prescriptions that forbid, permit, or require some action or outcome and the sanctions authorized if the rules are not allowed (Crawford and Ostrom 1995, 584). Rules can be formal (e.g., laws, policies, regulations, etc.) or informal (e.g., behavioral norms). Since “rules are not self-formulating, self-determining, or self-enforcing” (V. Ostrom 1980, 312), they are formulated in human language and subject to problems of lack of clarity, misunderstanding, and varied interpretations.

The stability of rule-ordered relationships depends upon the development of shared meaning of rules as well as building and maintaining credible commitments (Ostrom et al. 1994). If the actors do not believe that others will follow through on their commitments, they may be less likely to enact changes or engage in collaborative activity (Ostrom 1990). Building credible commitments (i.e., trust) and a shared understanding of what rules mean requires routine interactions. It may also require developing a system for monitoring and enforcing the rules and social norms that structure collaborative activities. Monitoring and enforcement activities can be formal (e.g., civil penalties, criminal penalties, reporting requirements, etc.) or informal (e.g., a verbal comments or facial expression demonstrating displeasure) sanctions that are either positive or negative.

Levels of Action

Rules are often nested in another set of rules that define how the first set of rules can be changed (Kiser and Ostrom 1982). Rules can therefore operate configurationally in that the way one institution (i.e., organization) functions depends upon the way it interacts with related institutions (Ostrom 1986; and, Firmin-Sellers 1995). The IAD framework distinguishes between three levels of rules that cumulatively affect actions: operational rules; collective-choice rules; and, constitutional-choice rules (Kiser and Ostrom 1982). Operational rules include decisions about when, where, and how to do something, who should monitor the actions of others, how actions should be monitored,
what information should be exchanged or withheld, and what rewards and sanctions will be assigned to combinations of actions and outcomes (Ostrom 1990, 52). Collective-choice rules influence operational activities and outcomes by determining how operational rules can be changed and who can participate in these decisions (Ostrom et al. 1994, 46). Constitutional-choice rules influence operational rules by determining who is eligible to participate and the rules used to develop and change collective-choice rules which in turn affects the set of operational rules (Ostrom et al. 1994, 46).

The interconnectedness between rules and their location at different levels has important implications. It is often necessary to understand the configurational nature of how formal (e.g., statutes, regulations, policies, zoning ordinances, permit decisions, etc.) and informal rules (e.g., rule governing organizational relationships, coordination processes, etc.) interact in order to understand the system’s collaborative capacity and why organizations exploit some opportunities but not others. Thus, it helps explain the different patterns of collaborative activity observed in different watersheds.

Factors Influencing Collaborative Processes

The IAD framework also suggests some additional factors that could influence watershed management programs. The previous section noted that the configurational nature of rules helps to explain why collaboration occurs. The IAD framework also suggests that the underlying physical and biological setting and the nature of the problem may influence the development of collaborative relationships (Imperial 1999a; Ostrom et al. 1994). Another set of factors is the attributes of the community where the actors are located. The term “culture” is often applied to this bundle of variables (Ostrom et al. 1994, 45). Important variables can include: generally accepted norms of behavior; level of common understanding about action arenas; homogeneity of individual preferences; and, the distribution of resources among the members of an action arena.

The IAD framework also suggests that transaction costs may influence collaboration. The IAD framework draws attention to three sets of transaction costs: (1) information costs; (2) coordination costs; and, (3) strategic costs. Transaction costs are likely to increase as you increase the number of bargaining partners and the number of routine interactions (Levi 1990, 403). They can also increase when asymmetries of
information and power exist. Thus, as jurisdictional complexity increases and the actors’ interests become increasingly heterogeneous, transaction costs are likely to increase, which may make collaboration more difficult (Imperial 1999a, 1999b).

**Summary**

The three streams of research provide the theoretical foundation for the conceptual frameworks and testable propositions advanced in subsequent chapters. Consequently, the study contributes to the development of each line of research. It also adds to the small body of research on the six watersheds and contributes to understanding the role collaboration plays in implementing watershed management programs (e.g., Wondolleck and Yaffee 2000). This study also provides useful guidance for practitioners involved in watershed management.

The study also extends previous research on interorganizational policy implementation by building on research on collaboration and other interorganizational processes. The study also contributes to the growing body of collaboration research by improving our understanding of the collaborative activities used to implement watershed management programs. It also improves our understanding of the ways that collaboration creates public value. This is particularly important given the limited comparative research examining network performance (e.g., Milward and Provan 1998; Provan and Milward 1995; Provan and Sebastian 1998). The study also improves our understanding of the factors that create collaborative capacity as well as the processes influencing whether organizations chose to participate in collaborative activities.

Finally, the study extends previous research using the IAD framework. The IAD framework has been used to analyze interorganizational relationships in a variety of settings such as groundwater, common pool resources (CPRs) (e.g., irrigation systems, forests, fisheries, etc.), metropolitan organizations, rural infrastructure development, and macropolitical institutions. This study extends its use to examine watershed management programs and collaborative processes.

**Endnotes**

1 For various perspectives on the concept of ecosystem-based management see: Cicin-Sain and Knecht 1998; Born and Sonzogni 1995; Cicin-Sain 1993; Schramm 1980; Underdal 1980;


For research on the Greater Yellowstone Ecosystem see: Burroughs and Clark 1995; Clark and Minta 1994; Lichtman and Clark 1994.


For research on riverbasin management efforts see: Mathis 1999; Foster 1984.

For research on the Chesapeake Bay see: Costanza and Greer 1995; Hennessey 1994.


For research on Puget Sound see: Healey and Hennessey 1994; Fletcher 1990; Leschine 1990; Bish 1982.

For research on the Inland Bays see: Poole 1998.


For research on Narragansett Bay see: Myers 1991; Scott 1991; Burroughs and Lee 1988; Robadue undated.


For research on Tampa Bay see: Khator 1999; Greening, et al. 1997; Greening and Eckenrod 1995.


For research on stakeholder involvement and public participation see: Lynn and Busenberg 1995; Landre and Knuth 1993; Imperial 1993; and, Godschalk and Stiftel 1981.


For examples of prominent top-down studies see: O’Toole and Montjoy 1984; Mazmanian and Sabatier 1983; Sabatier and Mazmanian 1979, 1983; Nakamura and Smallwood 1980; Montjoy and O’Toole 1979; Van Horn 1979; Van Horn and Van Meter 1976; and, Van Meter and Van Horn 1975. There has been some attempt to test these frameworks and identify relationships among variables (e.g., Lester and Bowman 1989; Davis 1985; Lester 1985; Sabatier and Mazmanian 1979, 1983; and, Mazmanian and Sabatier 1983). However, there is little agreement on the dominant factors.


Other theories explaining the interorganizational relationships involved in collaborative processes include contingency theory and organizational ecology (Alexander 1995) and the jurisdiction-based model of intergovernmental management (Agranoff and McGuire 1998).


For more discussion of competing theories of organizational change see: Amburgey and Dacin 1994; Nadler and Tushman 1990; Wholey and Brittain 1986; Gray and Ariss 1985; Hrebiniak and Joyce 1985; Carrol 1984; Daft and Weick 1984; Astley and Van de Ven 1983; Meyer 1982; Straw, et al. 1981; Miles and Snow 1978; Meyer and Rowan 1976; and, Child 1972. These theories are either voluntaristic (e.g., political economy and strategic choice) or deterministic (e.g., population ecology and contingency theory) in orientation (Astley and Van de Ven 1983). Top-down approaches to implementation research are primarily deterministic while the bottom-up perspective tends to adopt a voluntaristic perspective of organizational behavior. Rather than subscribe to one school of thought, this study follows the advice and lead of Astley and Van de Ven (1983) and others (e.g., Daft and Weick 1984; and, Hrebiniak and Joyce 1985) in arguing that “(1) choice and determinism are not at opposite ends of a single continuum of effect but in reality represent two independent variables, and (2) the interaction or interdependence of the two must be studied to explain organizational behavior (Hrebiniak and Joyce 1985, 337)."
For more discussion of the population or community ecology research see: Amburgey, et al. 1993; Hannan and Freeman 1979, 1984; Wholey and Brittain 1986; Astley 1985; Tushman and Romanelli 1985.


For a discussion of the importance of organizational culture see: Dennison and Mishra 1995; Schein 1985; Ouchi and Wilkins 1985; and, Smircich 1983.


The relatively stable portion of an organization is its core while the flexible part is called the periphery (Majone 1989, 150; and, Meyer and Rowan 1976). Incremental changes tend to only affect selected aspects of the organization’s strategy, structure, and process (Nadler and Tushman 1990). Strategic changes (core) do occur, although much less often. This category of change impacts the whole system by redefining what the organization is or how it functions.

Nadler and Tushman (1990) go further to suggest that four general types of organizational change: incremental (tuning) or strategic (re-orientations) anticipatory changes or reactive changes which are either incremental (adaptation) or strategic (re-creation). In general, strategic changes are more difficult to enact then incremental changes.

Hrebiniak and Joyce (1985) argue that four general organizational types exist: 1) prospectors demonstrate low determinism with respect to the environment and a high level of organizational choice; 2) analyzers have both high determinism and high differentiated choice; 3) defenders have low choice and high determinism; and, 4) reactors have both low determinism and low choice (Hrebiniak and Joyce 1985). This is similar to a typology proposed by Miles and Snow’s (1978) and others.

Benson (1975) notes four general strategies used to try and effect change in interorganizational networks, which share some similarities to Oliver’s (1991a) framework.


Sometimes these informal rules are referred to as “rules-in-use” because they are the rules that individuals refer to when asked to explain and justify their interactions with fellow participants in an action arena (Ostrom et al. 1994, 39).

There are many sources of power within a network such as control over resources, technology, information, expertise, trust or legitimacy (Thorelli 1986; Cook 1977).
CHAPTER THREE
METHODOLOGY

Given the complexity of collaborative processes, the lack of precisely defined theories of collaboration, and the limited research on the role of collaboration plays in implementing watershed management programs, the study is developmental in nature and focuses on answering four research questions:

- What implementation activities resulted from the six watershed management programs?
- How did collaboration aid in implementing the watershed management programs?
- What factors related to a watershed’s institutional setting created collaborative capacity and influenced the ability to utilize these opportunities for collaboration?
- What public value was added as a result of these collaborative activities? Conversely, what costs or problems result from these collaborative activities?

A qualitative, comparative case study research design was used to develop theory grounded in the data and the literature discussed in Chapter Two (Yin 1994; Agranoff and Radin 1991; and, Strauss and Corbin 1990). Qualitative approaches are often recommended when you want to understand how a complicated process like collaboration occurs. This approach can also help explain why a process is or is not effective and describe how different contextual factors influence a complex process or program (Maxwell 1996; Miles and Huberman 1994; Scheirer 1994; and, Patton 1990).

An intense investigative process was used to systematically analyze, compare, contrast, catalogue, and classify objects and events using data from various sources (Denzin and Lincoln 1998a; Denzin and Lincoln 1998b; Caudle 1994; Maxwell 1996; Miles and Huberman 1994, Scheirer 1994; and, Patton 1990). A comparative, cross-case analysis was used to inductively develop conceptual frameworks and testable propositions grounded in the data (Strauss and Corbin 1990; and, Glaser and Strauss 1967). Induction involves extending and refining existing theories by continuously comparing them with crucial instances or typical cases. As nonconforming cases were
discovered, the theory is amended to accommodate the findings. The analysis also resulted in observations and lessons that have implications for policymakers and practitioners involved in watershed management programs (Rose 1993).

This chapter begins with a discussion of the methods used to collect the data followed by a description of the procedures used to analyze the data and a discussion of the criteria used to select the case studies. The methods used to ensure the validity of the findings is then discussed followed by a discussion of the study’s limitations.

**Data Sources**

This study took place over two years and was modified and expanded in February 1999 when funding was received from the Academy as part of its Learning from Innovations in Environmental Protection project [Table 3.1]. This study is based on data collected as a part of this larger project (Imperial and Hennessey 2000a). Data sources include: (1) archival records and program documents; (2) guided discussions conducted in the field; (3) follow-up guided discussions conducted by telephone with selected participants; and, (4) direct and participant observation. Examining different data sources is important because it allowed a strategy of triangulation to be used to improve the validity of the study’s findings (Miles and Huberman 1994; and, Yin 1994).

**Program Documents and Archival Records**

One important source of data was program documents and archival records [Table 3.2]. All six watershed management efforts are well documented. For example, EPA requirements related to CCMP approval required the preparation of numerous reports documenting these efforts while its biennial review process results in comprehensive reports documenting implementation activities. Previous research pertaining to these watershed management efforts was also analyzed, although in most cases these materials did not address my research questions.

These program documents and archival records provided an important source of general information about the contextual conditions in each watershed, the history of watershed management efforts, and the process used to develop and implement the
Table 3.1: Chronology of the Study

<table>
<thead>
<tr>
<th>Dates</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 1998</td>
<td>▪ Dissertation proposal approved</td>
</tr>
<tr>
<td>Summer 1998</td>
<td>▪ Data collection in RI and DE</td>
</tr>
<tr>
<td>December 1998</td>
<td>▪ Submitted a proposal to National Academy of Public Administration</td>
</tr>
<tr>
<td>February 1999</td>
<td>▪ Signed contract with the Academy</td>
</tr>
<tr>
<td></td>
<td>▪ Initial discussion guide is developed</td>
</tr>
<tr>
<td>March 1999</td>
<td>▪ Delaware and Rhode Island site visits</td>
</tr>
<tr>
<td>April 1999</td>
<td>▪ Begin transcribing interviews</td>
</tr>
<tr>
<td></td>
<td>▪ Tampa Bay site visit</td>
</tr>
<tr>
<td>May 1999</td>
<td>▪ Lake Tahoe and Tillamook site visits</td>
</tr>
<tr>
<td></td>
<td>▪ Complete Rhode Island interviews</td>
</tr>
<tr>
<td>June 1999</td>
<td>▪ Finish Tillamook site visit</td>
</tr>
<tr>
<td></td>
<td>▪ Start analyzing data</td>
</tr>
<tr>
<td>July 1999</td>
<td>▪ Detailed outline to guide analysis and preparation of case studies is completed</td>
</tr>
<tr>
<td></td>
<td>▪ Began working on draft case studies</td>
</tr>
<tr>
<td>August 1999</td>
<td>▪ Work on draft case studies</td>
</tr>
<tr>
<td>September 1999</td>
<td>▪ Work on draft case studies</td>
</tr>
<tr>
<td></td>
<td>▪ Complete preliminary cross-case analysis</td>
</tr>
<tr>
<td></td>
<td>▪ Present preliminary results to the Academy</td>
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<tr>
<td>October 1999</td>
<td>▪ Narragansett Bay, Tampa Bay, and Tillamook Bay cases are completed</td>
</tr>
<tr>
<td></td>
<td>▪ Tampa Bay, and Tillamook Bay case studies sent out for review</td>
</tr>
<tr>
<td>November 1999</td>
<td>▪ Present preliminary results at APPAM</td>
</tr>
<tr>
<td></td>
<td>▪ Begin drafting final report</td>
</tr>
<tr>
<td>December 1999 -</td>
<td>▪ Inland Bays and Lake Tahoe cases are sent out for review</td>
</tr>
<tr>
<td>January 2000</td>
<td>▪ Complete first and second drafts of the final report</td>
</tr>
<tr>
<td>February 2000</td>
<td>▪ Narragansett Bay case is sent out for review</td>
</tr>
<tr>
<td></td>
<td>▪ Begin final edits to case studies</td>
</tr>
<tr>
<td></td>
<td>▪ EPA reviews final report</td>
</tr>
<tr>
<td>March - May 2000</td>
<td>▪ Begin putting together draft dissertation chapters</td>
</tr>
<tr>
<td></td>
<td>▪ Revise final report to the Academy</td>
</tr>
<tr>
<td>June 2000</td>
<td>▪ Report reviewed by EPA for the second time</td>
</tr>
<tr>
<td>July 2000</td>
<td>▪ Case studies completed</td>
</tr>
<tr>
<td>August 2000</td>
<td>▪ Final report to the Academy completed</td>
</tr>
<tr>
<td>Fall 2000</td>
<td>▪ Complete dissertation</td>
</tr>
</tbody>
</table>
Table 3.2: Examples of Program Documents and Archival Records Analyzed

- Draft/final management plans
- Regulations
- Characterization/technical reports
- Resource inventories
- Annual report
- Annual work plans
- Web sites
- Annual progress reports
- Management conference agreements
- Biennial reviews
- Correspondence
- Comments on draft management plans
- Minutes of meetings
- Newsletters
- Newspaper articles
- Fact sheets

watershed management plans in each watershed. Materials such as advisory committee lists, management plans, newsletters, and agency websites helped identify the members of each watershed’s interorganizational system and provided descriptive information about organizations. Documents such as annual reports, work plans, management plans, newsletters, and program evaluations often provided important information on implementation activities by describing collaborative activities, the participants in these activities, the contributions of these participants, and the outcomes of these activities. In some cases, evaluation documents (e.g., Biennial reviews) provided information about the factors influencing implementation success.

Guided Discussions During Site Visits

The second source of data was guided discussions with more than 200 participants in the watershed management programs. The structured, open-ended interviews lasted approximately one hour and varied in length between 30 minutes and three hours. Guided discussions were conducted during site visits that lasted two to three weeks. A site visit to meet with EPA officials in Washington, DC also occurred.

A discussion guide was prepared for each watershed and modified over the course of the project based on its use during previous site visits and a preliminary analysis of the program documents and archival records. The discussion guide consisted of open-ended questions and probes designed to produce a structured, open-ended interview that obtained information to develop the Academy’s report and answer this study’s research questions [Appendix A contains the discussion guide for Tillamook Bay, the last site visit]. The questions asked of each respondent varied based on the respondent, their
program, their role, the extent of their organization’s participation in implementation activities, discussions with previous respondents, and the respondent’s answers to previous questions.

Strict confidentiality was maintained both during and after the study. While a rare occurrence, the tape recorder was periodically turned off at the request of respondents to protect the confidentiality of some information. All interviews were recorded on audiotape to ensure the accuracy of the data. Interviews were either fully or partially transcribed depending on the usefulness of the information. This data was supplemented with information recorded in field notes kept during each interview. Follow-up phone conversations and email correspondence were used to clarify responses as necessary.

At least 30 field interviews were conducted for each watershed. The number of respondents varied depending on the complexity of the institutional framework and the issues involved. Prior to conducting the site visit, a principal contact person(s) was identified to help arrange the site visit and select initial respondents, often this was the program director or a key staff member. This information was supplemented with lists of interagency advisory committees.

A snowball sampling technique was then used to identify knowledgeable informants (Kumar, et al. 1993).² Discussions with principal contacts and advisory committee lists were used to identify a core group of individuals knowledgeable about watershed management efforts. Each respondent was also asked to identify additional individuals that should be interviewed. Respondents were then asked to identify respondents that would offer competing perspectives on a controversial issues or incidents when applicable. Respondents were also asked to identify the organizations most actively involved in implementation efforts. Priority was placed on interviewing representatives of these agencies or programs. Particular importance was also placed on interviewing individuals with a long history of involvement or employment with different organizations in the watershed. These individuals were often viewed as leaders or were the repositories of the “institutional memory” for previous watershed management efforts. These individuals were often instrumental in identifying additional respondents and helped identify additional issues and questions to add to the discussion guide.
This snowball sampling technique produced a typical set of respondents in each watershed that included: staff members (both past and present) in watershed management programs; representatives of selected federal, state, and local programs; chairs and other active members of advisory committees; members of interest groups; and, actively involved citizens. However, resource constraints prevented repeat site visits in the Lake Tahoe, Tampa Bay, and Tillamook Bay. In these instances, priority was placed on conducting field interviews with the individuals that were identified most frequently. Cost prohibitions also proscribed interviewing representatives of every member of the interorganizational system in each watershed, however, interviews with representatives of the organizations that were actively involved in implementation efforts did occur.

Moreover, every effort was made to ensure that competing interest groups and perspectives were adequately represented by the sampling technique since identifying and interviewing a wide range of participants is important. An analysis by Leach and others (2000a) indicates that information obtained from watershed coordinators is systematically biased towards success. This appeared to be true in this study as well, particularly in the Inland Bays and Narragansett Bay watershed where the program and EPA staff were often more optimistic about their successes and accomplishments than were other respondents. Leach and others (2000a) also found that the differences between participants and nonparticipants is not nearly as great as the differences between the coordinators and everyone else. This also appeared to be the case in this study as there generally was strong agreement among our respondents regardless of which side of an issue they were on or which agency they worked for.

There was some overlap between respondents, particularly in Rhode Island, which allowed respondents to make comparisons between programs and reduced the overall number of respondents. A small number of individuals were also interviewed more than once in 1998 and 1999 for the Inland Bays, Narragansett Bay, and Salt Ponds. In total, more than 200 formal guided discussions were conducted. This does not include the numerous informal contacts while setting up the site visits plus the discussions and periodic email inquires that occurred during and after site visits. For example, it was common to meet informally during or after a special event or public meeting during the site visit. This provided opportunities for follow-up questions and clarifications.
Guided Discussions by Telephone

Resource constraints and scheduling problems prevented some stakeholders identified by the snowball sample from participating in the guided discussions during the site visits. Guided discussions were conducted with these individuals in a manner similar to the field interviews and were similarly recorded on audiotape and subject to follow-up phone calls or email inquiries.

Participant and Direct Observation

The final source of data was direct and participant observation. An attempt was made to schedule site visits such that members of the research team could attend various events and meetings and interact with participants on an informal basis. Attendance at meetings provided an important source of data on coordination activities and the relationships between organizations. It also provided a glimpse of how these organizations functioned and made decisions. Detailed field notes containing our observations of the meeting(s) and any informal discussions that occurred before and after the meeting and during breaks were prepared.

Direct and participant observation occurred to some degree in all of the cases but was more pronounced in Inland Bays, Narragansett Bay, and the Salt Ponds. This was due to the preliminary dissertation research conducted prior to the Academy’s project. In Narragansett Bay and the Salt Ponds the author has been periodically involved with several of the key organizations in these cases. The author also lived in Rhode Island and the Inland Bays watershed and has conducted research on the EPA’s National Estuary Program (NEP) and the Salt Ponds (Imperial 1999a, 1995; 1993; Imperial and Hennessey 1996; Imperial, et al. 1993; Imperial, et al. 1992).

This involvement had its advantages. It improved access to several research sites. Observational data and firsthand experience improved understanding of the: context within which the watershed management programs operated; institutions involved in addressing watershed problems; how these institutions functioned and interacted; and, the politics surrounding these issues. This enhanced my ability to conduct guided discussions and utilize an inductive, discovery-oriented approach. It also helped me understand the selective perceptions and biases of the respondents and improved
judgments about the validity of responses. Moreover, it provided me with a certain measure of theoretical sensitivity allowing me to use personal knowledge and experience to aid in understanding, interpreting, and explaining events and validating the conclusions drawn (Greene 1998; Singleton, et al. 1993; Patton 1990; and, Strauss and Corbin 1990).

**Data Analysis**

Analysis of these data was an ongoing two-stage process that used widely accepted systematic qualitative procedures (Glaser and Strauss 1967; Miles and Huberman 1994; Yin 1994; Strauss and Corbin 1990). At first, the analysis was oriented towards producing the individual case studies. As Miles and Huberman (1994, 207) observe: “It is crucial to have understood the dynamics of a particular case before proceeding to cross-case explanations. Without that, superficiality sets in [emphasis in original text].” The preparation of each case study was guided by a detailed outline – nearly identical for all six cases – designed to describe the watershed’s contextual conditions and the process used to develop and implement watershed management plan(s) in each case [See Appendix B]. This facilitated the cross-case analysis.

Following a preliminary review of the program documents and transcripts, selected portions of these materials were coded and analyzed in greater detail in order to answer the questions contained in the preliminary case study outline. Codes were derived inductively based on a start list derived from the questions and probes contained in the discussion guide [Appendix A], the questions posed in the case study outline [Appendix B], and previous research on watershed management programs, interorganizational networks, and institutional analysis (see Chapter Two). The codes were then modified as additional cases were analyzed. As coding continued, patterns emerged. Pattern codes were then identified to dimensionalize concepts. “In a more inductive study, it helps to look for recurring phrases or common threads in informants’ accounts or. Alternatively, for internal differences that you or informants have noted (Miles and Huberman 1994, 70).” When coding and recoding data, quotes and short vignettes were identified for inclusion to add context and provide additional support for the observations and conclusions reported in subsequent chapters (Miles and Huberman 1994).
As the analysis of each case study continued, matrices and network displays were generated that identified patterns, trends, and ultimately variables that influenced the development and implementation of the watershed management plans generally and more specifically the use of collaboration as an implementation strategy. These displays also helped provide answers to the questions posed in Appendix A and B and facilitated the process of triangulating the data. Further methods of inquiry were employed to answer the questions generated from the initial round of matrices and displays. Timelines of critical events were also developed to examine potential cause and effect relationships. In this regard, qualitative analysis can be a powerful method for assessing causality. As Miles and Huberman (1994, 147) observe:

> Qualitative analysis, with its close-up look, can identify mechanisms, going beyond sheer association. It is unrelentingly local, and deals well with the complex network of events and processes in a situation. It can sort out the temporal dimension, showing clearly what preceded what, either through direct observation or retrospection. It is well equipped to cycle back and forth between variables and processes – showing that “stories” are not capricious, but include underlying variables, and that variables are not disembodied, but have connections over time [emphasis in original text].”

The single-case analysis produced six detailed draft case studies that answered the study’s first research question and offered partial answers for the remaining three research questions. The drafts also provided full or partial answers to other research questions posed by the Academy (Imperial and Hennessey 2000a). When the draft case studies were completed, the field notes, transcripts, and selected program documents were reread to ensure their accuracy. The draft of each case study was then sent to between six and nine respondents knowledgeable about the program and its implementation activities for factual verification. The case studies were then revised as necessary based on these comments to correct inaccuracies or to incorporate additional information about implementation efforts provided by the respondents. This process resulted in six detailed case studies that provide additional documentation and analysis of the implementation efforts in each watershed (Hennessey and Imperial 2000a; Imperial 2000a, 2000b; Imperial, et al. 2000; Imperial and Summers 2000; Kauneckis, et al. 2000).
A summary of these case studies and the implementation efforts in each watershed is included in the following Chapter.

**Cross-Case Analysis**

Prior to completing the case studies, work began on the cross-case analysis. The cross-case analysis helped increase the study’s generalizability and determined the extent to which the findings extended beyond individual collaborative activities or watersheds. As Miles and Huberman (1994, 173) observe: “Multiple cases not only pin down the specific conditions under which a finding will occur but also help us form the more general categories of how those conditions may be related.” Accordingly, the cross-case analysis deepened understanding of the collaborative activities that occurred in each watershed. The comparative analysis also helped identify lessons and insights that might be transferable to practitioners working in other watersheds (Rose 1993). The cross-case analysis also facilitated the development of the conceptual frameworks and theoretical propositions that provide fuller answers this study’s research questions.

The cross-case analysis focused primarily on analyzing the collaborative implementation activities in each watershed, although the distinction between planning and implementation was somewhat arbitrary as planning was sometimes an implementation strategy. As noted in Chapter Two, and described in more detail in Chapter Five, rather than have a narrow decision rule with respect to what constitutes a collaborative activity, it is defined broadly to include any activity by two or more organizations designed to produce public value. While many organizational and network researchers often treat organizations as unitary actors, for the purposes of this study, organizations included individual programs within large organizations because they often acted autonomously in deciding whether or not to participate in specific collaborative activities (O’Toole 1997; and Hjern and Porter 1981). For example, it was not uncommon for respondents to note that some EPA programs implemented by a state environmental agency would frequently participate in collaborative activities with other federal, state, or local agencies while others would not collaborate with programs within their own agency.
Program documents such as management plans, joint work plans, annual reports, newsletters, web sites, periodic evaluation reports, and other documents often provided detailed descriptions of collaborative activities (or planned activities), the organizations involved, the contributions of various partners, and the outcomes of these activities. Accordingly, program documents and archival records were often the most important source of information on the full scope of collaborative activities in each watershed. They also helped identify the members of the interorganizational system as well as those focal organizations that were involved in a wide range of implementation activities. However, the level of documentation for implementation efforts (collaborative or otherwise) varied among the cases. For example, the most detailed information was available in Lake Tahoe and Tampa Bay and the least detailed information was available in the two Rhode Island cases. In the Inland Bays and Tillamook Bay there was detailed information about some implementation efforts but not others.

The guided discussions also provided a useful source of data on collaborative activities. These data tended to produce rich descriptions of specific collaborative activities since many respondents only had a detailed knowledge of those activities in which they were actively involved. However, these data often provided greater insights into how a specific collaborative activity was initiated, why certain organizations were involved, what the perceived costs of participating in these efforts were, the different factors affecting collaborative processes, and the perceived public value resulting from specific collaborative activities. Thus, while the program documents and archival records often provided more detailed information about the full scope of collaborative activities, the data generated from the guided discussions tended to provide greater context and explanation for why these activities were initiated and how they were implemented.

These data were then coded and analyzed. Codes were derived inductively based on a start list derived from several sources. Collaboration research (e.g., Bardach 1998) and ecosystem management programs (e.g., Wondolleck and Yaffee 2000) both helped to identify some of the ways that collaboration can be used as an implementation strategy. This provided the start list for the coding and analysis reported in Chapter Five. The review of the literature reported in Chapter Two provides the foundation for the coding and analysis reported in Chapter Six and Chapter Seven. Previous research on watershed
management programs, interorganizational networks, and institutional analysis all offered insights on potential factors related to a watershed’s institutional setting that create collaborative capacity or create incentives or constraints on whether organizations can utilize these opportunities. For example, research on watershed management programs often points to contextual factors such as the physical system, nature of problems, regulatory and programmatic context, and situational history as being important factors contributing to the formation or success of watershed partnerships (Leach, et al. 2000a). Research applying the IAD framework to watershed settings reached similar conclusions (Imperial 1999a, 1999b). Other variables frequently found to be important by watershed researchers such as leadership, staffing, financial resources, and government commitment and support are also variables frequently cited by implementation and network researchers. Accordingly, the variables, relationships, and theories noted in Chapter Two provided the start list for the coding and analysis leading to the results reported in Chapters Six and Seven.

The basic approach to coding and analysis was similar to that which generated the case studies. Portions of the program documents, archival records, and transcripts were coded based on the start lists noted above. Codes were modified, as necessary, as additional collaborative activities in each watershed were analyzed and compared with those in other watersheds. As this coding process continued, patterns emerged. Pattern codes were then used to dimensionalize concepts. Where necessary, cross-case displays and matrices were developed to facilitate this cross-case analysis (Miles and Huberman 1994). The data in the cross-case displays was then clustered and partitioned to develop subsequent displays and matrices. This allowed collaborative activities in one case to be compared and contrasted with those in other cases. It also helped identify patterns, themes, and trends while providing an improved understanding of the potential relationships between variables. Specific examples and quotes by respondents were also identified for incorporation into the cross-case analysis in order to add additional context and support for the conclusions presented. Ultimately, the goal of the cross-case analysis was to synthesize interpretations, look for themes that cut across the cases, and, where possible, develop conceptual frameworks and testable propositions that extended beyond these six watersheds (Miles and Huberman 1994).
Chapter Five presents a conceptual framework designed to answer the study’s second research question that examines how collaboration can be used as an implementation strategy. The coding and analysis revealed a wide range of collaborative implementation activities that were often related in complex ways. Further analysis revealed specific patterns of activities and relationships between and across levels of action. Then subsequent analysis resulted in a conceptual framework for classifying collaborative activities that is loosely based on the levels of collective action first proposed by Kiser and Ostrom (1982).

Chapter Six is more ambitious in its attempt to answer this study’s third research question and identify the factors related to a watershed’s institutional setting that create a watershed’s collaborative capacity or influence an organization’s willingness or ability to utilize these opportunities. In this instance, the literature on watershed management, interorganizational networks, and institutional analysis suggests a wide range of variables and potential relationships, some of which are contradictory. This literature provided the starting point for my coding and cross-case analysis. In some cases, my data offered no support for relationships proposed in the literature. In other cases, the data might offer some support or at least did not contradict the findings and conclusions of other researchers. However, in many cases the coding and cross-case analysis revealed patterns and relationships between variables noted in one or more of the three streams of research discussed in Chapter Two. These relationships and patterns were compared and contrasted with other relationships (or the absence of relationships) or counter examples across the different watersheds in an attempt to develop propositions consistent with my data, which in many cases were also supported by previous research.

Chapter Seven examines the study’s final research question by examining the value added by collaboration as well as the implementation problems that occurred. Research in several areas including watershed management programs (e.g., Wondolleck and Yaffee 2000; Born and Genskow 2001; and Leach, et al. 2000a), policy implementation (e.g., O’Toole 1986), and collaboration (e.g., Bardach 1998) provided the starting point for identifying the different ways value was added and the implementation problems that resulted from these activities. The initial coding revealed patterns that eventually were combined into a conceptual framework that identifies the different ways
value is created at the individual, organizational, network, and societal levels as well as the common implementation problems observed in each watershed.

**Case Selection**

To improve the richness of the cross-case comparisons, a purposive sampling strategy was employed to ensure that there was some diversity between the six watersheds terms of their ecological settings, nature of the problems, institutional settings, situational histories, and programmatic context because previous research suggests that these factors influence watershed management programs (Born and Genskow 2001; and, Leach, et al. 2000). An effort was also made to ensure that the watershed management programs utilized a full range of regulatory and nonregulatory approaches to addressing watershed problems in order to examine the full range of opportunities for collaboration. This led to a much richer discussion of the different ways collaboration can be used as an implementation strategy (Chapter Five) as well as helps illustrate the different ways that these activities can generate public value (Chapter Seven). There was also an attempt to ensure that there was a mix of successful and unsuccessful programs. For example, Tampa Bay recently won a Bronze Award from the Environmental Protection Agency (EPA) for its watershed management efforts while the Inland Bays almost failed to have their plan approved by the EPA. An effort was also made to ensure that some of the cases had some history of interorganizational conflicts during planning or implementation activities to see whether these situational histories limited the use of collaboration as an implementation strategy.

Case selection was also guided by practical concerns. The Academy’s funding required a national study and a significant proportion of the cases had to include a high level of EPA involvement, thus the inclusion of four participants in the NEP. An additional concern was keeping the costs down. Cases were selected that were well-documented. This improved the ability to prepare for site visits and helped counter any limitations created by the inability to do follow-up site visits in three watersheds (Lake Tahoe, Tampa Bay, and Tillamook Bay) due to cost considerations. Finally, the case selection involved some negotiation with the Academy to ensure that the watersheds satisfied the needs of their larger research project.
Ensuring the Validity of the Conclusions

Several threats to the study’s validity are apparent. The main threat is the accuracy of the data obtained from archival records, field interviews, telephone interviews, and observations. For example, the data could be biased if accurate records of the interviews were not kept. The data could also be biased if the people interviewed were not knowledgeable of the program’s efforts and activities. Moreover, there is always the possibility that the person being interviewed is not telling the truth.

Several strategies were used to ensure the validity of the data that was collected and analyzed. All data was collected using the procedures recommend in the literature (Miles and Huberman 1994; Maxwell 1996; and, Yin 1994). All sampling decisions and interview procedures were documented as were techniques used in the data analysis. All interviews were recorded on audiotape to ensure that there was an accurate record. Detailed field notes and transcripts were prepared for each interview. Strict confidentiality was maintained both during and after the study. The investigators worked with the principal contacts at each site to identify appropriate interview respondents. Follow-up interviews were conducted as necessary until a complete picture of the implementation efforts emerged. To further ensure that the record of events in each watershed was accurate, the draft case studies were sent to between six and nine respondents for “factual” verification.

Examining different data sources was important because it allowed me to use a strategy of triangulation to improve validity. Triangulation uses independent measures derived from different sources to support, or at least not contradict, a research finding (Miles and Huberman 1994; Yin 1994; Rossi and Freeman 1993; and, Singleton, et al. 1993). In many respects, the approach to data analysis and validation was analogous to doing good detective work. Arguments and alternative explanations were contrasted against one another to identify logical inconsistencies and determine their consistency with the data in each case. Rival explanations were then examined to determine whether they were consistent with the data. The chain of events was then examined to help determine causality. Potential threats to the validity of the study’s conclusions were then analyzed (Yin 1994; Cook and Campbell 1979; and Campbell 1975).
Limitations of the Study

It is important to note that the study has its share of limitations. Time and cost constraints only allowed data collection at one point in time. However, researchers often advocate using a longitudinal perspective when examining the process of policy implementation (e.g., Sabatier and Jenkins-Smith 1999, 1993; Goggin, et al. 1990; Mazmanian and Sabatier 1983; Kirst and Jung 1982). Moreover, collaboration is a dynamic process (Bardach 1998). To compensate for this limitation, watersheds were selected that were subject to previous research and had well documented implementation efforts and I had previously done research in three of the watersheds. This improved my ability to reconstruct the history of the watershed management efforts and allowed me to incorporate it into my analysis.

The second limitation concerns the difficulty in measuring the impacts of collaborative activities. While changes in environmental conditions may be the “ultimate” measure, its application is problematic due to methodological problems that confound the identification of the cause and effect relationships. The lack of good data on changes in environmental outcomes or implementation efforts and the lack of comparison cases made it difficult to discern the true impact of collaborative activities. It was also difficult, if not impossible, to disaggregate the partial effects of the different programs in order to isolate the changes due solely to collaboration compared to those that would have resulted through the implementation of existing federal, state, or local programs. The lack of comparison cases also made it difficult to determine with any degree of certainty whether the hypothesized relationships might be caused by other factors. Accordingly, my analysis focused primarily on examining collaborative activities expected to improve water quality or habitat such as the installation of BMPs and changes in agency decision making. I then relied on respondent’s self reported perceptions of the extent to which they believed that these activities created other types of public value.

Additional documentation of the methods used to collect and analyze the data reported in this study can be found in the report to the Academy entitled Environmental Governance in Watersheds: The Importance of Collaboration to Institutional Performance.
(Imperial and Hennessey 2000a). Further information is also available from the author upon request.

Endnotes

1 In Rhode Island, the interviews lasted over a longer period of time and Delaware allowed repeated site visits that were often of a shorter duration. Due to cost constraints only one site visit occurred in Lake Tahoe, Tampa Bay, and Tillamook Bay.

2 Snowball sampling techniques have often been used to identify the members of an interorganizational system (Burt and Ronchi 1994; Alba 1982; Hanf 1982; Hull and Hjern 1982).

3 Mark T. Imperial worked for the University of Rhode Island’s (URI’s) Coastal Resources Center (CRC) from 1989 to 1991 and the Coastal Resources Management Council (CRMC) from 1991 to 1994. Imperial also worked as a consultant to the CRC on two projects, including a project funded by EPA and the U.S. Agency for International Development (AID) from 1994 - 1995. This project examined the NEP to identify estuary programs that could be used as the basis of a training program for international coastal managers that was designed by the CRC.

4 The selection of two Northeast estuary programs allowed one investigator to drive to the locations and another researcher has access to accommodations in the Delaware Inland Bays watershed.

5 The Academy agreed with five of the six case studies proposed in my original grant proposal. In order to satisfy the Academy’s needs, I ended up dropping the Buzzards Bay Project in Massachusetts and replaced it with the efforts in Lake Tahoe. In retrospect, this was an improvement because it added another case with a strong regulatory focus and strong NGO involvement.

6 For a more detailed analysis of these methodological problems see: Imperial and Hennessey 2000.
CHAPTER FOUR
IMPLEMENTING THE SIX WATERSHED MANAGEMENT PROGRAMS

The six cases used different institutional arrangements to develop and implement watershed management plans. Four watersheds participated in the Environmental Protection Agency’s (EPA’s) National Estuary Program (NEP) (i.e., Inland Bays, Narragansett Bay, Tampa Bay, and Tillamook Bay). Lake Tahoe was the product of a federal-state compact. The Salt Ponds developed a special area management plan (SAMP) pursuant to the National Oceanic and Atmospheric Administration’s (NOAA’s) coastal zone management (CZM) program.

The NEP has 28 programs that entered in five tiers, allowing newer programs to learn from older ones. It is a voluntary program providing federal funds and technical assistance to develop a comprehensive conservation and management plan (CCMP) that addresses: water and sediment quality; living resources; land use and water resources; and, other appropriate environmental problems (EPA 1992a, 1990a). Each program is required to use a management conference to develop a CCMP. While the structure varies, most programs use some combination of policy, management, science and technical (STAC), and citizens advisory committees (CAC) (Imperial and Hennessey 1996) [Figure 4.1]. Collectively, these committees must contain appropriate federal, state, and local officials, industry, interest groups, members of the scientific and academic community, and the general public in order to:

- Stimulate the transfer of scientific, technical, and management experience and knowledge among its participants;
- Enhance awareness of the environmental problems;
- Provide opportunities to discuss solutions to environmental problems;
- Synthesize input to decision-making processes; and,
- Provide a forum to build partnerships and obtain commitments to implement a CCMP (Imperial and Hennessey 1996).

Estuary programs must also use a structured planning process consisting of a series of federally mandated steps that emphasize defining problems and developing action plans.
Figure 4.1: Typical Estuary Program Management Conference Structure

The CCMP contains action plans and other information designed to satisfy EPA requirements. Estuary programs have the flexibility to design an organizational structure to implement their CCMP and must leverage resources from existing federal, state, and local programs to fund these efforts (Imperial and Hennessey 1996; and, EPA 1995, 1993c, 1992a). The EPA provides limited implementation funding, approximately $300,000 per year, to maintain a small core staff to support, coordinate, and monitor CCMP implementation. The EPA monitors progress by approving annual work plans and each program undergoes a biennial review in order to review CCMP implementation.

The watershed management efforts in Lake Tahoe and the Salt Ponds are somewhat different. Each focused primarily on developing regulatory programs rather than nonregulatory implementation activities. Lake Tahoe and the Salt Ponds both utilized a participatory, stakeholder-based planning process. However, the federal government did not mandate these processes. Lake Tahoe’s efforts were guided by a federal-state compact that created a regional planning agency with broad regulatory authority, the Tahoe Regional Planning Agency (TRPA). The Salt Ponds resulted in the development of the first SAMP approved by NOAA.

The following sections describe each watershed management effort. (For more a more detailed discussion see: Hennessey and Imperial 2000a; Imperial 2000a, 2000b; Imperial, et al. 2000; Imperial and Summers 2000; Kauneckis, et al. 2000). The cases
Figure 4.2: The NEP’s Planning Process

Phase 1
- Problem Identification
- Issue Selection
- Establish Committee Structure

Phase 2
- Problem Definition
- Link Causes to Problems

Phase 3
- CCMP Recommendations
- Monitoring Plan
- Financial Strategy
- Federal Consistency Review

Phase 4
- Implementation
- Monitoring
- Biennial Reports
- Continued Research

Identify Problems
Link Causes to Problems
Management Alternatives
CCMP
Goals, Policies & Recommendations
Decision Making Changes
Restoration Projects
Installation of BMPs


vary in their ecological settings, nature of the problems, institutional setting, situational history, and programmatic context. The cases also vary in terms of their implementation structures and use of collaboration as an implementation strategy.

Narragansett Bay

Narragansett Bay lies in the heart of Rhode Island and is the state’s most prominent geographic feature, giving rise to the state’s motto as the “Ocean State” [Figure 4.3]. The bay has a surface area of approximately 165 square miles and five major rivers form a 1,600 square mile drainage basin that includes the urban centers of Providence, Rhode Island and Fall River and Worcester, Massachusetts. Nearly 2 million people live in the watershed’s 100 cities and towns. While sixty percent of Narragansett Bay watershed is located within Massachusetts, CCMP implementation occurred almost exclusively in Rhode Island (RIDEM 1999, 1998a).
Narragansett Bay has long provided the economic base for surrounding communities. Residential development, fisheries, tourism, and industrial activities all rely upon the bay. The watershed is home to a wide range of industrial activities, including many of the largest electroplaters in the country and over 400 industrial dischargers. The bay is relatively deep with well-protected harbors that support
recreational and commercial port facilities including the Ports of Providence and Quonset Point. The region supports a commercial fishing industry with annual revenues estimated at $31 million per year (RIDEM 1999, 1998a). Much of the state’s income is linked to a growing tourism industry with Narragansett Bay generating over $400 million per year and more than 15,000 jobs (RIDEM 1998b).

While the trend is been towards improved water quality and habitat protection, the region experiences important environmental problems. The legacy of the industrial revolution resulted in wetlands loss, altered habitat, and heavy shoreline development. Industrial discharges continue to cause water quality problems and the bay has sediments contaminated by toxics. Sewage treatment plants, combined sewer overflows (CSOs), failing onsite sewage disposal systems (OSDSs), and other types of nonpoint source (NPS) pollution cause water quality problems in many tributaries and embayments, as evidenced by repeated shellfish closures in the Bay’s upper regions (RIDEM 1998b). Not surprisingly, a complex framework of governmental and nongovernmental organizations were involved in planning and implementation activities [Table 4.1].

**Narragansett Bay Project**

The Narragansett Bay Project (NBP) was not the first water quality planning effort. Since 1900, 27 major water quality planning efforts addressed various problems (Robadue Undated). However, the NBP was the first attempt to develop a collaborative watershed management plan addressing a comprehensive set of environmental problems.

The NBP began in 1985 as an effort to “study” the bay and its problems [Table 4.2]. The objective was to take an approach similar to the Chesapeake Bay Program (Hennessey 1994; Imperial, et al. 1993; and, Imperial, et al. 1992). The Clean Water Act (CWA) reauthorization in 1987 created the NEP and the NBP became one of the six Tier I programs. The NBP’s management conference structure differed somewhat from that of subsequent estuary programs and it generally followed the planning process summarized in Figure 4.1. The experiences of early programs such as the NBP largely served to add structure to the NEP’s planning process because the EPA developed many of its planning requirements during the NBP’s planning process.
Table 4.1: Main Actors Involved in Governing the Narragansett Bay Watershed

<table>
<thead>
<tr>
<th>Organizations</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Protection Agency (EPA)</td>
<td>National Estuary Program (NEP) provided funding for planning efforts, approved the CCMP, and provides limited implementation funding. It oversees many of RIDEM’s regulatory programs.</td>
</tr>
<tr>
<td>Rhode Island Department of Environmental Management (RIDEM)</td>
<td>It implements a number of EPA programs such as the Rhode Island Pollutant Discharge Elimination System (RIPDES) and Section 401 water quality certifications. It also implements permit programs for freshwater wetlands and individual sewage disposal systems (OSDSs).</td>
</tr>
<tr>
<td>Coastal Resources Management Council (CRMC)</td>
<td>A 16 member Council administers the agency. It is a legislative agency with authority to preserve, protect, develop and where possible restore coastal resources. It also implements the state’s federally approved CZM program, the Rhode Island Coastal Resources Management Program (RICRMP), and its regulatory authority overlaps with many of the RIDEM’s programs.</td>
</tr>
<tr>
<td>Department of Administration’s Division of Planning (RIDOP)</td>
<td>The RIDOP’s and the Statewide Planning Council (SPC) administer the Statewide Planning Program (SPP). The SPP provides technical assistance to local governments and state agencies and maintains the State Guide Plan, the repository of state policies. State agencies and local comprehensive plans must be consistent with these policies.</td>
</tr>
<tr>
<td>Natural Resource Conservation Service (NRCS)</td>
<td>It implements a wide range of USDA programs and participated in the planning and implementation process. It also implemented a Hydrologic Unit Area (HUA) project that supported CCMP implementation.</td>
</tr>
<tr>
<td>Local Government</td>
<td>More than 100 cities and towns ranging from small rural communities to major cities like Providence.</td>
</tr>
<tr>
<td>University of Rhode Island (URI)</td>
<td>Researchers from various departments conducted a wide range of studies. The Cooperative Extension Service, Sea Grant Program, and Coastal Resources Center were most heavily involved in the CCMP’s development and implementation.</td>
</tr>
<tr>
<td>Save The Bay</td>
<td>It was created in 1970 and has over 20,000 members. It monitors the CRMC and RIDEM and lobbies the Rhode Island General Assembly (RIGA). It represents environmental interests in planning efforts and in recent years has focused on environmental education and in initiating direct actions to improve and protect Narragansett Bay.</td>
</tr>
<tr>
<td>Industry Trade Groups</td>
<td>The Rhode Island Marine Trades Association (RIMTA) represented the recreational boating and ship building industries. The Rhode Island Builder’s Association (RIBA) and the Rhode Island Association of Realtors (RIAR) represented the building industry. The Rhode Island Shellfishermen’s Association (RISA) has strong public and political support indicative of the state’s strong marine heritage.</td>
</tr>
</tbody>
</table>
Management Conference

The NBP’s management conference originally consisted of executive, management, science and technical, policy, and public education committees. Eventually, they were combined into two committees. The executive committee provided the NBP’s general policy direction and included the EPA, RIDEM, and the NRCS. The CRMC and RIDOP were added in early 1990 when it became evident that their lack of inclusion might create problems during the CCMP’s approval process (Imperial and Hennessey 1996, 125). The 45-member management committee was comprised of NGOs (e.g., Save The Bay, RIMTA, RISA, and RIBA), URI scientists, federal agencies (7), RIDEM programs (7), and other state agencies (10). Noticeably absent were representatives from local government (2) and only two agencies from Massachusetts participated. According to one respondent, the committee, “handled all the important business and decisions on which research projects had highest priority. It was the committee to which NBP staff presented technical findings and then presented policy recommendations. The management committee then would referee all the policy recommendations and recommend they be included or not.” As a result, the management committee exercised significantly more control over the content of the CCMP than the executive committee, which rarely debated the content of specific recommendations until the final stages of the CCMP’s approval. This was different than the other three NEP cases where the executive committee exercised greater control throughout the process.

During the planning process, the EPA’s funding was routed through the New England Interstate Water Pollution Control Commission (NEIWPCC), which hired the NBP’s staff. This removed the NBP from Rhode Island’s state personnel system. However, staff were co-located in the RIDEM’s offices to foster improved communication and interaction with its programs.

Unfortunately, problems resulted from the staff’s independence. Some were unaware of the hiring relationship and the perception, albeit incorrect one, was that the NBP staff were RIDEM employees. These perceptions became a problem during the CCMP’s development because some actors assumed that the EPA and RIDEM staff got to review the CCMP before anyone else. The staffing arrangement created accountability
Table 4.2: Selected Activities Related to the Narragansett Bay CCMP

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>Narragansett Bay established as one of four estuary projects</td>
</tr>
<tr>
<td>1985 - 1991</td>
<td>Scientific Assessment of the Bay</td>
</tr>
<tr>
<td>1986 - 1987</td>
<td>Public opinion survey was conducted</td>
</tr>
<tr>
<td>1987</td>
<td>NEP established; NBP conducts public opinion survey and goal setting workshop</td>
</tr>
<tr>
<td>1987</td>
<td>Series of goal setting workshops were held</td>
</tr>
<tr>
<td>1988</td>
<td>NBP officially becomes part of the NEP</td>
</tr>
<tr>
<td>1988</td>
<td>The Land Management Project and the Hazardous Waste Reduction Project started</td>
</tr>
<tr>
<td>1990</td>
<td>CRMC and RIDOP added to the Executive Committee</td>
</tr>
<tr>
<td>1990</td>
<td>Citizens Monitoring Project and Designs for a Better Bay awards program started</td>
</tr>
<tr>
<td>1991</td>
<td>Follow-up public opinion survey was conducted</td>
</tr>
<tr>
<td>Nov. 1991</td>
<td>Prioritization of the CCMP goals by the Management Committee</td>
</tr>
<tr>
<td>Jan. 1992</td>
<td>Draft CCMP released for public review and comment</td>
</tr>
<tr>
<td>Feb. – Apr. 1992</td>
<td>Six public information meetings were held</td>
</tr>
<tr>
<td>Jul. 1992</td>
<td>NBP loses funding; most of the NBP staff leave; small staff finishes the CCMP</td>
</tr>
<tr>
<td>Jul. 1992</td>
<td>Management Committee approves the final CCMP</td>
</tr>
<tr>
<td>Dec. 1992</td>
<td>State Planning Council approves the CCMP</td>
</tr>
<tr>
<td>Jan. 1993</td>
<td>The EPA approves the CCMP</td>
</tr>
<tr>
<td>1993</td>
<td>NBP created as program within RIDEM</td>
</tr>
<tr>
<td>July 1993</td>
<td>Funding is restored and the NBP gets a staff to begin implementation efforts</td>
</tr>
<tr>
<td>May 1995</td>
<td>NBP changed to Narragansett Bay Estuary Program (NBEP)</td>
</tr>
<tr>
<td>1997</td>
<td>NBEP Completes first EPA Biennial Review</td>
</tr>
<tr>
<td>1999</td>
<td>NBEP completes second EPA Biennial Review</td>
</tr>
<tr>
<td>Apr. 2000</td>
<td>Narragansett Bay Summit 2000 Conference</td>
</tr>
</tbody>
</table>

problems with less control over their activities than the other NEP cases. Moreover, the staff were not neutral and in effect became another stakeholder in the process. This became problematic when the staff’s interests diverged from that of other stakeholders, they began advocating specific policy positions, and then became involved in ongoing disputes rather than working to broker agreements.
Planning Activities

Over 75 percent of the $10 million spent between 1985 and 1992 funded over 110 scientific and policy-related research projects on Narragansett Bay and its problems (NBP 1992, 1.4). Some particularly notable efforts included the wet weather study, the habitat inventory program, and upper water quality model, all of which involved collaboration between researchers, consultants, and agency officials.

Unlike the other cases, no focal issue for planning and implementation emerged. Research concluded that the bay suffered from a “low-grade fever” resulting from several smaller interrelated problems rather than one dominant problem (NBP 1992, 2.1 – 2.39). This led the NBP to focus on a wide range of problems that were given equal attention. While a few participants and EPA suggested taking a more strategic approach, NBP staff and most committee members rebuffed these suggestions. As a result, the lack of a focal issue increased demands for stakeholder involvement, made it difficult to prioritize CCMP recommendations, and increased the possibility that conflict would emerge.

While the technical work progressed, the NBP’s staff was busy in other areas. Public outreach and education activities were undertaken. Demonstration projects were used to build support and begin implementation. For example, NBP staff worked with local governments to educate them about alternative land use and growth management strategies through the land management project (LMP) (Myers 1991). Another notable example was the hazardous waste reduction project (HWRP), a collaborative technical assistance project that conducted industrial process audits for specific businesses and found ways to reduce toxic substances, and in some cases save money.

Developing the CCMP

The development of the CCMP began with staff synthesizing available research and presenting recommendations to the management committee in the form of a “briefing paper.” It was an iterative process and portions of briefing papers were often reviewed several times before they were revised and became draft CCMP chapters. The original intention was that these decisions would be made by consensus and result in a CCMP
with broad public and stakeholder support. Unfortunately, a number of problems emerged that created conflict among the stakeholders.

- The lack of a focal problem resulted in an ambitious plan with no implementation priorities.
- There was little public and local involvement until the plan was completed.
- The length of the planning process combined with imposition of deadlines created a sense of urgency. Committee members then became reluctant to rehash old issues even though new participants were involved with different points of view.
- The lack of clear decision-making rules and a murky definition of consensus increased coordination costs.
- The plan’s detailed recommendations lengthened the decision-making process causing participants to debate the details of proposals rather than general goals, policies, and actions.
- The plan focused on contentious issues and recommended changes to legislation, policies, and regulations rather than nonregulatory actions and issues where there was strong agreement.
- The decision to include the CCMP in the State Guide Plan created concerns among some participants that some of the plan’s provisions would be binding.

These problems combined with the legacy of distrust between the RIDEM and CRMC, poor communication among the stakeholders, conflicting personalities, and the inclination for many of the agencies to adhere to traditional policies rather than embrace the recommended policy changes created conflict when the draft CCMP was released for public comment in 1992. As one RIDEM official noted:

“I don’t know that they ever achieved unanimous decisions on the bay project [NBP] though. I don’t recall that on a lot of their recommendations. There were some strong opinions against some of the recommendations that were in that plan, including people here in the department [RIDEM] who didn’t buy into everything that was in it either. I don’t think its fair to say that they really reached consensus. CRMC didn't buy into a lot of what was in there. It was a very difficult process and I think we all learned a lesson from it. If nothing else, how not to do it in the future.”

Many participants also expressed skepticism with the CCMP’s projected implementation costs of over $392 million. Even though this included more than $341 million in expenditures required by the CWA for CSOs, the recommended planning and
The CCMP

The CCMP contained more than 500 recommendations with 41 high priority recommendations. The plan contains vague goals and detailed recommendations. This was different than Tampa Bay and Tillamook Bay, which had measurable goals and general recommendations. Unlike the other NEP cases, the CCMP recommendations tend to focus on legal and regulatory activities rather than nonregulatory activities.

Most informants shared common reflections about the CCMP. First, it lacks focus and is too ambitious. As one respondent noted, “the NBP CCMP looks like the bible. The new ones [other CCMPs] are more like USA Today.” The scope of the CCMP was so broad, one influential participant noted that he was afraid that “we are not going to be able to focus public attention on the most important” issues. Another observed: “We have seen so many plans . . . If they got off the ground at all, they haven’t gotten very far before they crashed for lack of interest or lack of money. I hope that isn’t going to happen here (Coastlines 1991, 9).” The deep recession also reduced public interest and created staffing limitations due to a hiring freeze.

Many participants were also “turned off” by the adversarial nature of the planning process. As one respondent recalled: “There was so much burn out when the CCMP was completed . . . people walked away, never wanting anything to do with this program.
Implementation Activities

Implementation has been an uphill battle and the NBP even died for about a year following the CCMP’s approval. The period of inactivity coincided with the NBP’s reorganization as a program within the RIDEM [Figure 4.4]. An implementation committee consisting of the RIDEM, CRMC, GSO, EPA Region I, RIDOP, NRCS, Save The Bay, and the League of Cities and Towns replaced the executive and management committees. An advisory committee with a broader range of stakeholders was created. The two committees meet infrequently, perhaps once or twice a year, attendance is sporadic, and RIDEM now makes most programmatic decisions.
This was a challenging time. As one EPA official recalled: “The program barely remained alive for several years. There was no way to keep the staff on board, which is another reason it [the NBP] evaporated, there was not a presence . . . It’s been difficult for them to rebuild.” It was a major challenge to survive, let alone implement the CCMP. Funding was restored in July 1993 and implementation efforts improved as EPA funding increased. In May 1995, the program embarked on an effort to “reinvent” itself. Its name was changed to the Narragansett Bay Estuary Program (NBEP) and staff placed a renewed emphasis on partnerships and collaboration (RIDEM 1999).

**Progress Implementing the CCMP**

No respondents outside of the NBEP staff reported using the CCMP as the basis for making decisions. Implementation activities were only loosely-based on CCMP goals and its 41 high-priority recommendations. From 1993 to 1999, the NBEP leveraged approximately $2.2 million in competitive grants, non-federal matching funds, and in-kind services beyond the EPA’s annual funding to implement more than 60 discrete projects (RIDEM 1999). However, no state funds were allocated to support implementation efforts, a source of frustration for many respondents. As one EPA official lamented: “its outrageous that we’ve spent an inordinate amount of time on the phone to come up with a match on a $15,000 grant.”

Implementation efforts focus mostly on habitat restoration and protection. Notable projects included the critical resource mapping project, a habitat restoration charrette, and the development of state legislation to fund habitat restoration projects. All of these involved collaboration between various governmental and nongovernmental organizations (RIDEM 1999). More recently, the NBEP, CRMC, and Save The Bay were jointly awarded a $270,000 grant from NOAA to develop a collaborative coastal habitat restoration program and database.

Progress has been made in implementing the CCMP’s source reduction recommendations. For example, the NBC CSO stakeholder group approved a $385 million CSO abatement system for its facilities and the HWRP continues to achieve notable toxic reductions. Another accomplishment was the designation of all state waters
as a no-discharge zone, a first for any state. Various RIDEM programs collaborated to draft a marina pump-out siting plan. The RIDEM worked with RIMTA to identify marina owners willing to install pumpout facilities and provided grant money to fund construction of enough pumpout facilities to meet EPA’s requirements. The RIDEM then worked with the CRMC to amend its regulations to include new requirements for pumpout facilities to create incentives for marina’s to participate in the program.

The NBEP sponsored a number of workshops and special events. For example, it sponsored a National Estuaries Day and hosted workshops on nutrients and nitrogen removal for wastewater treatment facilities. More recently, the NBEP organized the Narragansett Bay Summit 2000. More than 40 organizations helped plan the Bay Summit, which was attended by high-level federal, state, and local agency officials, various NGOs, and private citizens.

The premier accomplishment is the Greenwich Bay Initiative (GBI). The GBI is a coalition consisting of the City of Warwick, RIDEM, CRMC, NRCS, URI, Save the Bay, Oakland Beach Elementary School, Warwick Vets High School, and the RISA among others. Over $7 million in grant funding was obtained to support implementation efforts. The centerpiece is a $130 million bond referendum to expand sewer service to remove failing OSDSs in Warwick. The RIDEM stepped up efforts to identify failing OSDSs and a program was created that provides grants and loans to homeowners to upgrade or replace OSDSs. Warwick also approved new stormwater regulations, a watershed overlay, and a revised harbor management plan (Warwick 1996).

Future Prospects

While the NBEP achieved some notable accomplishments, it faces formidable challenges. While the NBEP’s location allows it to leverage resources and influence RIDEM programs, it leads to other problems. Delays of several months or more are not unusual when awarding contracts and it has experienced difficulty in recruiting staff, accessing university expertise, and working with potential partners because of administrative impediments. Its location at the bottom of agency’s hierarchy also limits the staff’s ability to take a leadership role and represent the RIDEM in collaborative efforts [Figure 4.4].
Another problem is that the original NBP partners no longer use the CCMP. This makes it difficult to hold the partners accountable or monitor implementation. Instead, implementation activities reflect federal policy initiatives, available grant funds, and efforts to improve existing federal, state, and local programs. This was not surprising because the CCMP has not been amended or revised in the last eight years.

Only time will tell if the NBEP can overcome these problems. Recent efforts to create an internal RIDEM bay committee, attempts to reinvigorate the implementation committee, and using the Narragansett Bay Summit 2000 to gauge interest in revising the CCMP are encouraging. However, most respondents were not optimistic that a revised CCMP would be forthcoming. Many of the Summit’s participants worried that the conference would amount to a lot of talk and no action. In fact, Save The Bay’s director noted that: “We’re in the best economic times of all time, yet nobody has the money to do anything (Lord 2000).” More importantly, these are not “new” problems and the NBEP has consistently had difficulty addressing them. Thus, there is little reason to be optimistic that things will change in the foreseeable future.

**Inland Bays**

The Inland Bays consist of three interconnected bodies of water – Indian River Bay, Little Assawoman, and Rehoboth Bay – that have a surface area of about 32 square miles and drain a 300 square mile watershed [Figure 4.5]. Freshwater enters the bays through tributaries, runoff, and groundwater discharges with residence times of somewhere between 15 and 40 years (CIB 1995a, 1995b). The bays are shallow and poorly flushed, making them particularly susceptible to nutrient loadings. The estuary supports a number of recreational fisheries including flounder, bluefish, menhaden, blue crabs, and hard clams. The bays are fringed by wetlands. It is also home to various species of wildlife, waterfowl, migratory birds, and shore birds.

The watershed occupies the eastern third of Sussex County, a predominantly rural and agrarian community until highway access improved in the 1950s and 1960s. Development consistently outpaces the national average. The county’s population increased from 80,356 in 1970 to 131,000 in 1998 (63 percent) and is expected to increase 55 percent by 2020 (Gaquim, and Littman 1998; and, Sussex County 1997).
Development has mostly been along barrier beaches and shorelines where recreation and tourism generate more than $250 million annually. The watershed’s seasonal population is approximately 120,000 with more than 50,000 year round residents (CIB 1995). In the mid-1990s, development began to shift inland to moderately priced homes and large subdivisions as the watershed begins to fill in.

Agricultural lands still account for 37 percent of the watershed, followed by forest (22 percent), wetlands (14.4 percent), urban (11 percent), water (11.7 percent), and range/barren (3.4 percent) (DNREC 1998). Agriculture remains a dominant industry with half of the county’s jobs directly or indirectly tied to poultry operations where
Table 4.3: Sources of Nutrient Inputs to the Inland Bays

<table>
<thead>
<tr>
<th>Sources</th>
<th>Indian River Bay Nitrogen</th>
<th>Indian River Bay Phosphorus</th>
<th>Rehoboth Bay Nitrogen</th>
<th>Rehoboth Bay Phosphorus</th>
<th>Assawoman Bay Nitrogen</th>
<th>Assawoman Bay Phosphorus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boating</td>
<td>&lt;0.1%</td>
<td>&lt;0.1%</td>
<td>&lt;0.1%</td>
<td>&lt;0.1%</td>
<td>&lt;0.1%</td>
<td>&lt;0.1%</td>
</tr>
<tr>
<td>Forest</td>
<td>11.0%</td>
<td>19.2%</td>
<td>7.4%</td>
<td>9.4%</td>
<td>6.7%</td>
<td>19.5%</td>
</tr>
<tr>
<td>Rainfall</td>
<td>6.2%</td>
<td>8.6%</td>
<td>8.8%</td>
<td>6.9%</td>
<td>12.8%</td>
<td>11.5%</td>
</tr>
<tr>
<td>Septic Tanks</td>
<td>16.0%</td>
<td>9.3%</td>
<td>11.2%</td>
<td>3.8%</td>
<td>14.6%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Urban</td>
<td>9.8%</td>
<td>8.6%</td>
<td>11.7%</td>
<td>5.9%</td>
<td>11.2%</td>
<td>10.8%</td>
</tr>
<tr>
<td>Point Sources</td>
<td>12.5%</td>
<td>15.0%</td>
<td>27.3%</td>
<td>56.9%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>44.6%</td>
<td>39.4%</td>
<td>33.0%</td>
<td>17.0%</td>
<td>54.7%</td>
<td>52.6%</td>
</tr>
</tbody>
</table>


approximately 82 million broiler hens are produced annually. Development and agricultural activities continue to cause problems. Wetlands have been lost or degraded as a result of logging, dredging, filling, and other activities. Sewage treatment plants and stormwater runoff contribute nutrients to surface waters while OSDSs and the use of poultry manure as fertilizer causes nitrogen to enter groundwater [Table 4.3] (Goodman 1999; Williams 1998; and CIB 1995b). More than 23 percent of wells have nitrate levels exceeding federal drinking water standards (10 mg/l) while nutrient laden groundwater enriches surface waters (DNREC 2000). Excessive nutrient loadings cause algae blooms, fish kills, loss of submerged aquatic vegetation (SAV), and phytoplankton blooms. Pfiesteria has been detected, although not in its harmful life stages (DNREC 1998; Horsey and Whitten 1998; Price 1998; CIB 1995b). Only 19 of 30 square miles are approved or conditionally approved for shellfishing (CIB 1995a). The seasonal influx of boaters and other resources users degrade habitat, increase turbidity, and cause user conflicts (Falk, et al. 1999; Falk, et al. 1992; and, DNREC 1987).

The first efforts to address these problems occurred in the late 1960s when the state developed a county comprehensive land use plan and the governor directed state agencies to prepare a report on the region’s problems, both of which were released in 1969 [Table 4.4] (State Planning Office 1969, and, Delaware 1969). These initiatives and the passage of the 1972 CWA stimulated a series of planning efforts focused on sewage treatment involving Department of Natural Resources and Environmental Control
Table 4.4: Selected Events in the Inland Bays Watershed

<table>
<thead>
<tr>
<th>Date</th>
<th>Events/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1923</td>
<td>Cecile Steele begins the modern broiler industry in Ocean View</td>
</tr>
<tr>
<td>1940-1945</td>
<td>WW II stimulates demand for chicken; Black market creates opportunities for profit</td>
</tr>
<tr>
<td>1959</td>
<td>Townsends is the first vertically integrated company in the region and is in the watershed</td>
</tr>
<tr>
<td>1967</td>
<td>280 million chickens grown on the Delmarva Peninsula</td>
</tr>
<tr>
<td>1970</td>
<td>Sussex County adopts the Comprehensive Development Plan; population is 80,356</td>
</tr>
<tr>
<td>1975</td>
<td>Sussex County River Basin Water Quality Management Plan completed</td>
</tr>
<tr>
<td>1976</td>
<td>South Coastal Land Use Plan adopted</td>
</tr>
<tr>
<td>1977</td>
<td>380 million chickens grown on the Delmarva Peninsula</td>
</tr>
<tr>
<td>1978</td>
<td>Coastal Sussex Water Quality Management Plan is completed</td>
</tr>
<tr>
<td>1980</td>
<td>Population of Sussex County is 98,000</td>
</tr>
<tr>
<td>1981</td>
<td>Inland Bays Study Group is established</td>
</tr>
<tr>
<td>1983</td>
<td>Sea Grant issues its report Decisions for Delaware: Sea Grant Looks at the Inland Bays; Governor’s Task Force on the Inland Bays (GTFIB) is established by Executive Order</td>
</tr>
<tr>
<td>1984</td>
<td>Governor’s Inland Bays Monitoring Committee (GIBMC) implements GTFIB’s plan</td>
</tr>
<tr>
<td>1987</td>
<td>490 million chickens grown on the Delmarva Peninsula; The Delaware Inland Bays are designated an estuary of national significance</td>
</tr>
<tr>
<td>1988</td>
<td>DIBEP officially becomes a member of the NEP; Sussex County adopts the Coastal Sussex Land Use Plan</td>
</tr>
<tr>
<td>1989</td>
<td>Governor’s Inland Bays Monitoring Committee ends; CAC is formed</td>
</tr>
<tr>
<td>1990</td>
<td>Population of Sussex County is 113,229; Inland Bays Recovery Initiative; HUA project</td>
</tr>
<tr>
<td>1991</td>
<td>Sussex Conservation District begins regulating stormwater in addition to erosion control</td>
</tr>
<tr>
<td>1992</td>
<td>James Farm is donated to Sussex County; Review of a draft CCMP begins</td>
</tr>
<tr>
<td>1994</td>
<td>CIB is established by the DGA; Final CCMP is prepared and generates conflict</td>
</tr>
<tr>
<td>1995</td>
<td>CCMP is approved by the EPA; CIB hires its first Executive Director</td>
</tr>
<tr>
<td>1996</td>
<td>TMDL lawsuit filed against the EPA and DNREC; summer Algae blooms</td>
</tr>
<tr>
<td>1997</td>
<td>CIB participates in its first EPA Biennial Review; algae blooms; Pfiesteria found; Sussex County Comprehensive Land Use Plan is adopted</td>
</tr>
<tr>
<td>1998</td>
<td>Population of Sussex County is 131,000; 609 million chickens grown on the Peninsula; DNREC begins developing a Whole Basin Management Plan for the Inland Bays; TMDL for the Inland Bays is promulgated; work begins on Tributary Strategies</td>
</tr>
<tr>
<td>1999</td>
<td>CIB participates in its Second EPA Biennial Review; Restoration work at James Farm; Water Use Plan adopted by CIB; Implementation begins</td>
</tr>
<tr>
<td>2020</td>
<td>Population of Sussex County is projected to be over 181,000</td>
</tr>
</tbody>
</table>

73
Continued deterioration of environmental conditions led to the formation of the Inland Bays Study Group (IBSG) in 1981, which was relatively informal and comprised mainly of staff from DNREC and other state and local agencies.

In 1983, the University of Delaware’s Sea Grant Program (SGP) issued a report recommending strategies for addressing the watershed’s problems (Scotto 1984; and, Scotto, et al. 1983). In response, the Governor’s Task Force on the Inland Bays (GTFIB) was created, which subsequently issued its report in 1984. The governor then created an Inland Bays Monitoring Committee (IBMC) to oversee its five-year implementation (DNREC 1989; and, IBMC 1988, 1986, 1985). These implementation activities involved numerous governmental and nongovernmental organizations that provided the foundation for the Delaware Inland Bays Estuary Program (DIBEP) [Table 4.5].

**Delaware Inland Bays Estuary Program**

The 1987 CWA reauthorization designated the Inland Bays as an estuary of national significance and Delaware requested its inclusion in the NEP (DNREC 1987). Over $2 million was spent between 1988 and 1995 to create a CCMP (CIB 1995). The DIBEP generally followed the planning process summarized in Figure 4.1. DNREC staffed the DIBEP in a manner similar to the GTFIB and IBMC.

**Management Conference**

The management conference consisted of executive, implementation, science and technical (STAC), and citizen advisory committees (CAC), which collectively involved over 200 individuals (Poole 1998; CIB 1995a, 1995b; and, DNREC 1987). The executive committee consisted of what respondents characterized as the “big boppers:” the Secretaries of the DNREC and the Delaware Department of Health and Social Services (DHSS); an EPA Region III representative; and, the Sussex County administrator. The implementation committee evaluated the results of research projects, approved annual work plans, and worked to develop consensus on the DIBEP’s priorities and objectives. Its 32-members consisted of the “movers and shakers” or mid-level
Table 4.5: Main Actors Involved in Governing the Inland Bays Watershed

<table>
<thead>
<tr>
<th>Organizations</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA</td>
<td>NEP provided funding for planning, approved the CCMP, and provides limited implementation funding. It oversees DNREC regulatory programs.</td>
</tr>
<tr>
<td>NRCS</td>
<td>Funds efforts to install BMPs. Funded the HUA program in the watershed.</td>
</tr>
<tr>
<td>Department of Natural Resources and</td>
<td>Implements a full range of EPA programs and state programs regulating OSDSs and marinas. Erosion and stormwater programs have been</td>
</tr>
<tr>
<td>Environmental Control (DNREC)</td>
<td>delegated to DelDOT and Conservation Districts. Developed a TMDL for the Inland Bays. Its whole basin management program has an internal effort for the Inland Bays.</td>
</tr>
<tr>
<td>Delaware Department of Agriculture (DDA)</td>
<td>Administers regulatory and nonregulatory programs and administers a farmland preservation program. It also administers programs to manage and protect state forests.</td>
</tr>
<tr>
<td>Sussex Conservation District (SCD)</td>
<td>Administers programs designed to address NPS problems. Implements DE’s erosion and stormwater control regulations in Sussex County.</td>
</tr>
<tr>
<td>University of Delaware</td>
<td>Faculty and programs affiliated with the Cooperative Extension System (CES), the Sea Grant Program (SGP), and other departments are actively involved in planning and implementation.</td>
</tr>
<tr>
<td>Agricultural Organizations</td>
<td>Several NGOs including the Grange, Farm Bureau, and Delmarva Poultry Industry, Inc. (DPI) and individual farmers were involved. DPI set aside $1 million to study water quality problems and is co-located with the CES.</td>
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<tr>
<td>Environmental Organizations</td>
<td>State chapters of the Sierra Club and Audubon Society were involved, however, the Sierra Club withdrew from implementation efforts. A number of citizens and community groups also represented environmental interests.</td>
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<td>Local Government</td>
<td>The entire watershed is in Sussex County. The county has little capacity for environmental planning or natural resource management. All or portions of 12 incorporated municipalities are in the watershed. Local governments tend to be surrounded by unincorporated areas. Most have only a few full-time staff and no planners. The Sussex County Association of Towns (SCAT) represents local governments.</td>
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</table>

managers from DNREC (8), DDA (3), federal agencies (5), SCD (2), Sussex County (3), General Assembly (4), and the chairs of the STAC and CAC. It

Some referred to the STAC as the “brain train.” It consisted of scientists and technical experts from various agencies. It continues to meet regularly and serves as a forum for state and local officials to discuss research results and environmental problems. The CAC was active during the planning process and its members were often referred to
as the “loose cannons”. The IBMC initially served as the CAC. When it ended in 1989, its members joined the CAC or other committees. The new CAC has broader public and interest group representation. The CAC has been less effective during the implementation process because it has no clear mission.

Planning Activities

Previous planning efforts identified excessive nutrients and habitat loss as the primary issues. The DIBEP’s early years were largely oriented towards researching these problems while later years focused on developing the CCMP, getting the plan approved, and developing the Center for the Inland Bays (CIB), its implementation structure.

While the technical work progressed, the DIBEP was busy in other areas. A volunteer water quality monitoring program was established with the SGP recruiting and training volunteers to collect data. The SGP analyzes the samples and works with DNREC to provide the data in a useful form. Several demonstration projects involving various partners were implemented in the areas of: improved nutrient management on farms; manure applicators; alternative poultry house flooring; artificial wetlands; stormwater BMPs; and, alternative shoreline stabilization.

The DIBEP’s partners also undertook two sustained efforts to install BMPs and change decision making that built on previous planning efforts. The first was the governor’s Inland Bays Recovery Initiative (IBRI), which began in early 1990. The second initiative was the Natural Resource Conservation Service’s (NRCS’s) hydrologic unit area (HUA) project for the Inland Bays, which lasted between 1990 and 1998 and spent $2.5 million on BMPs. Collectively, the two efforts:

- Developed nutrient management plans for 48,000 acres (78 percent);
- Developed 436 nutrient management budgets;
- Calibrated 35 manure spreaders;
- Developed the “We C.A.R.E.” technical assistance program;
- Hired four conservation planners to work with farmers;
- BMPs installed as part of the HUA project reduced nitrogen loading by approximately 2,700 tons;
- Developed new erosion and stormwater management regulations and established a training and certification program;
- Promulgated new marina regulations in DNREC;
• Worked to encourage the county to provide central sewers and by 1992 replaced 4,000 OSDSs;
• Organized a Save Our Bays (SOB.) team to promote public education;
• Replanted SAV, although with varying degrees of success; and,
• Updated the Natural Heritage inventory (NRCS 1998, Undated; DNREC 1995a, 1995b).

Various federal, state, and local officials and NGOs participated in each effort. As one respondent recalled: “It was one of the neat galvanizing activities we had during that time. We had a sector of the department that was 150 percent behind the NEP.” It also demonstrated that the DIBEP was more than just a planning effort.

**Developing the CCMP**

The six-year planning process was time-consuming and involved countless committee meetings, educational seminars, vision workshops, and public meetings involving more than 300 citizens. As one respondent recalled: “We ran around like chickens with our heads chopped off because it is so difficult to try and do everything by committee.” Essentially, the planning process involved an iterative process involving a series of draft plans where each new version was modified based on stakeholder input.

Two conflicts emerged. First, the poultry industry questioned whether agriculture was a major source of nutrients. As one respondent noted: “They [Farm Bureau] had some genuine concerns about how agriculture was being portrayed. It was not what agriculture was being asked to do.” In fact, as late as 1998, the Delmarva Poultry Industry (DPI) questioned whether nutrients from agriculture were a problem and set aside $1 million to study water quality problems. DNREC staff then worked with industry officials to rewrite the controversial section of the CCMP. As one participant recalled: “There were 2 – 3 meetings on the issue. I won’t use his name, but when the so-called ‘godfather of the farming community’ was brought in and his words were ‘I can live with this’ there was relief.”

Respondents had strong feelings about these events. Some were angry and critical that DNREC “caved in” and “watered down” the plan. As one participant noted: “The only negative comment I would have [about the planning process] is that a lot of the
plan got changed in the final hours.” The Sierra Club withdrew its support and joined American Littoral Society in suing the EPA and DNREC to force the development of a total maximum daily loading (TMDL) for the watershed in 1998 (American Littoral Society, et al. V. United States Environmental Protection Agency, et al. Civil Action No. 96-5920). Others reported being surprised: “[I]t was surprising to find out that the farm people were upset with what was in there [CCMP]. . . . I found it hard to understand because they had representatives there every meeting. It isn’t like we shunned them or kept them out. They were there every meeting and should have been reporting back to the respective organization what was going on. Evidently, that wasn’t done.”

The second controversy occurred when EPA headquarters staff recommended rejecting the CCMP. The EPA believed that the CCMP failed to satisfy its approval requirements. As one EPA staff member noted: “The DIB, we came close to flunking them. They had to work hard to get their CCMP up to our standards.” Another EPA official described it as a “tortuous process between EPA headquarters, the EPA region, and the DIBEP to document minimal consistency with key program requirements such as financing and monitoring plans.” This was the latest in a series of conflicts between EPA and the DIBEP. As one state official noted: “it was all just bumps and scrapes with the EPA the whole way because they wanted the seven purposes and we didn’t want to do the purposes because we had already been there and done that.”

It was clear to the DIBEP that EPA headquarters was ready to reject the CCMP so they mounted an offensive to pressure the agency to approve the CCMP. The CCMP’s fate hung in the balance up until the morning of the signing ceremony in June 1995. A personal phone call from the governor to the EPA administrator the morning of the ceremony triggered a flurry of activity that culminated in EPA approving the CCMP later that day. Interestingly, the conflict became a galvanizing event. As one participant recalled: “Despite all of the differences between DNREC staff, the farmers, our two secretaries, the environment and whatever, despite all of those differences and approaches and attitudes and political status and everything else, it just brought us together. And it was like we had found the enemy.” All of the stakeholders put aside their differences to work towards a common objective for the first time.
**The CCMP**

The CCMP contains 17 action plans in five areas of concern: education and outreach (1); agricultural sources (5); industrial, municipal, and septic systems, sources (2); land use (2); and, habitat protection (7). The tactics have various time frames, although none extends beyond 2000. The tactics were designed to achieve nine goals, which are really specific implementation activities rather than measurable goals. Full implementation of the tactics was estimated to cost over $39 million between 1996 and 2000, excluding infrastructure investment (CIB 1995a).

**Implementation Activities**

Participants explored several implementation structures. These discussions led to the 1994 Inland Bays Watershed Enhancement Act, which established the CIB. The CIB is administered by a board consisting of the Secretaries of DNREC and the Department of Agriculture (DDA), the SCD, SCAT, Sussex County, the STAC and CAC chairs, and two Sussex County residents. The EPA serves as a non-voting member. The CIB is a 501(c)(3) nonprofit organization that supports educational, restoration, and land acquisition efforts. It is designed to be a neutral forum to discuss issues and the CIB works to build, maintain, and foster partnerships to implement the CCMP. These activities are supported by a STAC, a CAC, and a finance committee.

**Progress Implementing the CCMP**

Since the CCMP was not written with the CIB in mind, board members undertook an effort to prioritize implementation efforts (CIB 1999, 1997). Early implementation efforts were hampered by the lack of funding, inadequate staff resources, and issues related to developing a new organization (e.g., liability concerns, hiring procedures, etc.). Implementation activities expanded when funding stabilized and the CIB’s staff expanded. The CIB has leveraged more than $782,000 from various sources in addition to NEP funding and resources allocated by DIBEP partners to support a wide range of implementation activities [Tables 4.6 and 4.7].

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### Table 4.6: Implementation of the DIBEP CCMP

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<td>Examine pesticide regulations/improve enforcement</td>
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### Table 4.6: Implementation of the DIBEP CCMP (Cont.)

<table>
<thead>
<tr>
<th>Full/Ongoing</th>
<th>Substantive</th>
<th>Moderate</th>
<th>Some</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>- Educate public &amp; industry regarding waste</td>
<td>- Provide education programs statewide</td>
<td>- Protect groundwater recharge areas</td>
</tr>
<tr>
<td>D</td>
<td>- Educate public &amp; industry regarding waste</td>
<td>- Address nitrates and other contaminants</td>
<td>- Address nitrates and other contaminants</td>
</tr>
<tr>
<td>U</td>
<td>- Educate public &amp; industry regarding waste</td>
<td>- Develop policy for use of riprap &amp; vegetation for shoreline protection</td>
<td>- Develop policy for use of riprap &amp; vegetation for shoreline protection</td>
</tr>
<tr>
<td>C</td>
<td>- Educate public &amp; industry regarding waste</td>
<td>- Encourage recycling</td>
<td>- Encourage recycling</td>
</tr>
<tr>
<td>A</td>
<td>- Educate public &amp; industry regarding waste</td>
<td>- Establish speakers bureau</td>
<td>- Establish speakers bureau</td>
</tr>
<tr>
<td>T</td>
<td>- Educate public &amp; industry regarding waste</td>
<td>- Coordinate mgt. decisions among all levels of government</td>
<td>- Coordinate mgt. decisions among all levels of government</td>
</tr>
<tr>
<td>I</td>
<td>- Educate public &amp; industry regarding waste</td>
<td>- Explore financing alternatives for implementation</td>
<td>- Explore financing alternatives for implementation</td>
</tr>
<tr>
<td>O</td>
<td>- Educate public &amp; industry regarding waste</td>
<td>- Utilize and build on monitoring committee (CAC)</td>
<td>- Utilize and build on monitoring committee (CAC)</td>
</tr>
<tr>
<td>N</td>
<td>- Educate public &amp; industry regarding waste</td>
<td>- Ensure accountability for implementation</td>
<td>- Ensure accountability for implementation</td>
</tr>
<tr>
<td>A</td>
<td>- Coordinate mgt. decisions among all levels of government</td>
<td>- Identify user groups and their leadership</td>
<td>- Identify user groups and their leadership</td>
</tr>
<tr>
<td>L</td>
<td>- Coordinate mgt. decisions among all levels of government</td>
<td>- Develop programs involving senior citizens and other special interest groups</td>
<td>- Develop programs involving senior citizens and other special interest groups</td>
</tr>
<tr>
<td>L</td>
<td>- Coordinate mgt. decisions among all levels of government</td>
<td>- Ensure planning &amp; management activities involve public participation, information, &amp; education</td>
<td>- Ensure planning &amp; management activities involve public participation, information, &amp; education</td>
</tr>
<tr>
<td>A</td>
<td>- Coordinate mgt. decisions among all levels of government</td>
<td>- Examine feasibility of biological resource atlas for use in management decisions</td>
<td>- Examine feasibility of biological resource atlas for use in management decisions</td>
</tr>
</tbody>
</table>

**Source:** Center for the Inland Bays (CIB), Center for the Inland Bays: 1999 EPA Biennial Review Document (Nassau, DE: CIB, April 1999)

Since 1990, three point source discharges have been removed. Sussex County and DNREC agreed to remove the point source discharge at Delaware Seashore State Park. Rehoboth is exploring options for removing its point source discharge. Sussex County and local governments stepped up their efforts to extend central sewers to remove OSDSs. Since 1988, sewer systems expanded by almost 200 percent and more than $158 million will have been spent by 2001 to remove more than 14,000 OSDSs (DNREC 2000; and, CIB 1999, 1998). The TMDL developed by DNREC recommends removing all point source discharges, reducing nonpoint nutrient loadings by 40 to 85 percent, and reducing the atmospheric deposition of nitrogen by 20 percent (DNREC 1998).

A number of planning efforts implemented CCMP recommendations. Sussex County revised its comprehensive plan in 1997 to strengthen its land use policies and referenced the CCMP’s nine goals. The SGP used a participatory process to develop a
**Table 4.7: No Progress Reported or Progress is Unknown by the CIB**

<table>
<thead>
<tr>
<th>No Progress/Progress Unknown</th>
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<tbody>
<tr>
<td><strong>Agriculture</strong></td>
</tr>
<tr>
<td>• Develop &amp; implement groundwater management program</td>
</tr>
<tr>
<td><strong>Land Use</strong></td>
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<tr>
<td>• Form critical environmental areas checklist</td>
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<tr>
<td>• Identify existing use patterns and develop preferred use areas</td>
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<tr>
<td>• Determine use capacities based on public safety &amp; environmental concerns</td>
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<tr>
<td><strong>Habitat</strong></td>
</tr>
<tr>
<td>• Establish &amp; implement shoreline protection program</td>
</tr>
<tr>
<td>• Develop regulations to protect non-tidal wetlands</td>
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<tr>
<td>• Strengthen enforcement of wetland protection regulations</td>
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<tr>
<td><strong>Industrial</strong></td>
</tr>
<tr>
<td>• Ban solid and industrial waste disposal and non-biodegradable products</td>
</tr>
<tr>
<td>• Mitigate damage from superfund sites in Inland Bays region</td>
</tr>
<tr>
<td>• Identify, evaluate, and consolidate emergency response capabilities and plans</td>
</tr>
<tr>
<td><strong>Education</strong></td>
</tr>
<tr>
<td>• Not applicable</td>
</tr>
<tr>
<td><strong>All</strong></td>
</tr>
<tr>
<td>• Explore financing strategies with user fees and other innovative methods</td>
</tr>
</tbody>
</table>

**Source:** Center for the Inland Bays (CIB), *Center for the Inland Bays: 1999 EPA Biennial Review Document* (Nassau, DE: CIB, April 1999)

Water use plan for the CIB that addresses user conflicts (Falk, et al. 1999). Conservation plans were developed for 60,000 acres of farmland (CIB 1998). More recently, DNREC and the CIB recently created three tributary teams to develop strategies to implement the TMDL’s recommendations. The CES and SGP facilitate these meetings.

Steps were taken to address NPS problems on agricultural lands. DNREC’s BMP cost-share program continues with funding supplemented by other NRCS and EPA funding. In 1999, the EPA promulgated standards to begin regulating some poultry growers while the General Assembly passed legislation requiring the DDA to begin regulating the poultry industry. More recently, Purdue committed to building a plant to pelletize 80,000 tons of manure annually while the governors of Maryland and Delaware announced plans to explore burning manure at a regional power plant. Research is underway to examine the possibility of genetically modifying broiler hens or corn and whether enzymes could be added to food to reduce phosphorus levels in manure. Others are exploring whether adding alum to poultry house litter will reduce nutrient loadings.
DNREC’s Open Space Program preserved approximately 1,592 acres at a cost of over $13 million while NGOs such as the Nature Conservancy also acquired significant land holdings (CIB 1997). DDA’s farmland preservation program preserved more than 37,594 acres in Sussex County from future development. The CIB sponsored projects to restore SAV and worked with other actors to conduct restoration projects. The most notable project is located at James Farm, a 150-acre tract donated to Sussex County abutting a 475-acre parcel purchased by the state.

The CIB maintains an active research agenda and the STAC continues to serve as a forum to help DNREC and the local governments determine how to deal with problems. For example, the STAC helped state and local officials determine how to deal with costly algae blooms in 1996 and 1997. More recently, it helped Rehoboth explore options for removing its point source discharge. The volunteer monitoring program also continues to provide much needed water quality data.

The CIB also serves an important public education function. Its meetings and activities are well attended and covered by the local media. It distributes numerous educational materials (e.g., newsletter, website, etc.), organizes or participates in special events, works with local schools to improve curricula related to environmental issues, and takes students into the field to learn about environmental problems. The CIB also works to incorporate citizen volunteers into planning and implementation efforts.

**Future Prospects**

The DIBEP is a complicated case. On the one hand, the DIBEP made progress implementing their CCMP and the CIB expanded the capacity for public education, scientific research, and habitat restoration. The CIB also helped various governmental and nongovernmental organizations identify opportunities to work together. On the other hand, the CIB serves as a neutral forum to discuss issues. While this improves communication and elevates issues on state and local policy agendas, it also limits the CIB’s ability to address controversial issues related to agricultural and land development.

This was a source of frustration for many respondents. One environmental advocate observed: “The thing that’s been the most upsetting for me is the setting up of the Center for the Inland Bays. I thought it would be the once thing that would take over
all of the things that I was doing. . . . They are the biggest waste of taxpayers’ money I’ve ever heard of in my life. . . . It has not been effective at all because of the way they are set up. They are set up with a board appointed by the state that is there to protect their own turf and they don’t give a continental damn about the Inland Bays.” Many respondents also viewed progress on these controversial issues as their main measure of success and frequent criticisms were “all we do is talk and there is no action” or “everybody is spinning their wheels.” Others were supportive of the CIB and recognized that it likely could not function if it focused primarily on controversial issues.

The CIB faces other challenges. The CCMP lacks specific measurable goals for monitoring progress. One respondent noted the danger this can cause: “We’ve never been able to follow one issue to completion to anyone’s satisfaction.” Another respondent noted that implementation efforts lack focus and include “every issue you can imagine.” The CCMP has also become dated with efforts such as the TMDL now influencing implementation decisions. Collectively, these problems make it increasingly difficult to hold the partners accountable. The CIB’s efforts to monitor implementation and link these activities to changes in environmental conditions could also be improved.

There are also significant challenges to addressing the region’s environmental problems. It is unclear how costly it will be to remove all of the point sources. There are no BMPs that will cost-effectively achieve the TMDL’s recommendations for reducing agricultural nutrient loadings. Development continues at a rapid pace fueled by low property taxes, the installation of sewer lines, structure of political representation on the county council, and the profits resulting from development activity are widely dispersed. As a result, other social (e.g., traffic) and environmental problems (e.g., habitat loss, stormwater, etc.) problems are emerging. Community demographics and the local culture is increasing demands for county services, which turn increases the likelihood that the county will approve additional development to finance new services.

Despite these problems, it is questionable whether it is appropriate to blame the DIBEP for failing to “solve” problems that other federal, state, and local programs have been unable to address over the last three decades. Rather, the CIB is best viewed as the latest step in the evolutionary process of developing institutions to address watershed
problems. Future planning efforts and institutions will be needed. Nevertheless, the implementation efforts are notable even if not entirely satisfactory to all stakeholders.

**Tampa Bay**

Tampa Bay covers nearly 398 square miles extending nearly 35 miles inland from the Gulf of Mexico [Figure 4.6]. The 2,300 square mile watershed is relatively flat and is formed by four rivers and 40 smaller creeks and streams, the major source of the bay’s freshwater. The estuary is home to hundreds of recreationally and commercially important species of fish, crabs, shrimp, and shellfish. Sizable populations of bottle-nose dolphins and the endangered Florida Manatee also feed in the bay. Marsh grass and mangrove trees provide critical, feeding, nesting, and sheltering habitat for a variety of birds, making it one of the country’s most productive nesting habitats (TBEP 1996c).

The region has undergone explosive population growth since the 1950s and is home to more than 2 million people with a 17 percent projected increase (2.34 million) by 2010 (TBEP 1996a; TBRPC 1995). Urban lands account for approximately 25 percent of the watershed, while agricultural lands, wetlands, and undeveloped lands account for 35, 13, and 27 percent respectively (TBEP 1996c). The bay is also an economic asset, contributing more than $10 billion annually (TBEP 1996a, 41).

Between 1950 and 1990, development expanded dramatically resulting in a net loss of 5,128 acres (or 21 percent) of emergent wetlands (TBEP 1996a, 1996b). Water quality problems were most severe between the late 1960s and the early 1980s when excessive nutrient loadings and fish kills were common and nearly 40 percent of the bay’s seagrass beds disappeared.10

The first major study of these problems occurred in the late 1960s (FWPCA 1969) and grass-roots efforts in the early 1970s led to a series of efforts to upgrade sewage treatment plants in the late 1970s and early 1980s [Table 4.8]. Legislation also passed requiring that all sewage treatment plants discharging to the bay meet advanced waste treatment (AWT) standards (TBEP 1991). In 1983, the legislature created the Tampa Bay Study Commission (TBSC), which produced a report entitled The Future of Tampa Bay. Although few recommendations were adopted, the report led to the creation of the nonregulatory advisory body, the Agency on Bay Management (ABM), within the Tampa
Figure 4.6: Annual Nitrogen Loadings to Tampa Bay (1992 – 1994 Average)

Table 4.8: Timeline of Selected Activities Related to the TBEP

<table>
<thead>
<tr>
<th>TBEP Activities</th>
<th>Other Related Activities</th>
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<tr>
<td>• 1990 – Tampa Bay added to NEP</td>
<td>• 1961 – SWFWMD is formed</td>
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<tr>
<td>• 1991 – State-EPA Management Conference agreement is signed</td>
<td>• 1962 – TBRPC is created</td>
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<tr>
<td>• 1991 – Second BASIS symposium</td>
<td>• 1972 – EPC of Hillsborough County begins monitoring program</td>
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<tr>
<td>• 1993 – TBEP releases Status and Trends report</td>
<td>• 1979 – Tampa upgrades sewage treatment plant</td>
</tr>
<tr>
<td>• 1993 – 1996 – TBEP works to establish specific goals for Tampa Bay</td>
<td>• 1982 – Revised stormwater rules adopted</td>
</tr>
<tr>
<td>• 1994 – 1996 – Committees review management actions</td>
<td>• 1982 – First BASIS symposium</td>
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<td>• 1996 – CCMP is approved</td>
<td>• 1984 – <em>The Future of Tampa Bay</em> report is issued</td>
</tr>
<tr>
<td>• 1996 – Third BASIS symposium</td>
<td>• 1988 – SWIM plan for Tampa Bay approved</td>
</tr>
<tr>
<td>• 1998 – Interlocal Agreement Signed</td>
<td>• 1993 – FDEP created by merging agencies</td>
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<tr>
<td>• 1999 – Five-year action plans approved</td>
<td>• 1993 – Tampa Bay Watch is incorporated</td>
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<td>• 1994 – FDEP starts new ecosystem management initiative</td>
</tr>
</tbody>
</table>

Bay Regional Planning Council (TBRPC) in 1985. It also provided the foundation for the Southwest Florida Water Management District’s (SWFWMD’s) surface water improvement management (SWIM) plan.

A complex overlapping set of programs now manages the watershed [Table 4.9]. Based on FY 94-95 budgets, more than $250 million was spent annually by federal, state, and local agencies to manage the watershed (TBEP 1996a). Local governments spent roughly $170 million on sewage collection, treatment, and reuse. Another $35 million was spent on stormwater management. Habitat restoration, preservation, and management totaled about $7 million not including the cost of land acquisition.

Significant progress has been made in addressing the watershed’s environmental problems. Just 30 years ago, Tampa Bay was so polluted that many considered it beyond salvage. Fortunately, efforts such as the $100 million upgrade Tampa’s sewage treatment plant reversed water quality declines; nitrogen and phosphorus loadings decreased by 33 and 68 percent, respectively (EPC 1998a, 1998b). By the early 1980s, consistent measurable gains in seagrass coverage were observed with an additional 4,000 acres of coverage between 1982 and 1992, an 18.5 percent increase (EPC 1998b; and, TBEP 1996a, 1996b).
<table>
<thead>
<tr>
<th>Organizations</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental Protection Agency (EPA)</strong></td>
<td>Provided funding for planning efforts, approved the CCMP, and provides limited implementation funding. It oversees many FDEP and EPC regulatory programs.</td>
</tr>
<tr>
<td><strong>Department of Environmental Protection (FDEP)</strong></td>
<td>Implements a full range of EPA programs and state programs regulating wetlands and stormwater. It conducts research, planning and management, land management (152 state parks), and is responsible for overseeing five water management districts (WMDs). Many of its programs are delegated to the FDEP’s six district offices, WMDs, or county-level environmental programs such as the EPC.</td>
</tr>
<tr>
<td><strong>Southwest Florida Water Management District (SWFWMD)</strong></td>
<td>Implements programs designed to: 1) protect and manage groundwater and surface water quality and quantity; 2) control stormwater and reduce flooding; 3) restore and protect wetlands and other natural systems. Some programs have been delegated to it by the FDEP. An eleven-member board governs the agency and its jurisdiction covers over 10,000 square miles. The district has ad valorem taxing authority. It is further divided into nine districts, eight of which have basin boards that allocate funding.</td>
</tr>
<tr>
<td><strong>Environmental Protection Commission (EPC) of Hillsborough County</strong></td>
<td>Implements several delegated EPA and FDEP programs across the county. It also implements its own air, water, waste, and wetlands programs and maintains a comprehensive environmental monitoring program.</td>
</tr>
<tr>
<td><strong>Tampa Bay Regional Planning Council (TBRPC)</strong></td>
<td>It is an association of local governments that coordinates planning efforts and other programs. It administers a wide range of programs, organizes and hosts workshops, and is home to the Agency on Bay Management (ABM). The ABM is an advisory committee comprised of 65 voting members representing various federal, state, local agencies, and NGOs. It serves a coordination function and often comments on controversial projects or policy proposals.</td>
</tr>
<tr>
<td><strong>Local Governments</strong></td>
<td>Hillsborough County, Pinellas County, and Manatee County and the cities of Tampa, St. Petersburg, and Clearwater. Smaller cities and towns are not actively involved. The local governments maintain active programs to manage stormwater and restore habitat.</td>
</tr>
<tr>
<td><strong>Tampa Port Authority (TPA)</strong></td>
<td>Operates a large port facility, has permitting authority over submerged lands in Hillsborough County, and conducts dredging and restoration.</td>
</tr>
<tr>
<td><strong>Environmental Groups</strong></td>
<td>The main organization is Tampa BayWatch, a nonprofit organization incorporated in 1993. To date, over 7,072 volunteers have been involved in restoration and education activities.</td>
</tr>
<tr>
<td><strong>Florida Marine Research Institute (FMRI)</strong></td>
<td>Moved from the FDEP to the Florida Fish and Wildlife Conservation Commission in 1999. It conducts applied research and provides information used in managing resources. Research is often done in collaboration with other governmental and nongovernmental organizations.</td>
</tr>
</tbody>
</table>
Tampa Bay Estuary Program

The Tampa Bay Estuary Program entered the NEP through the EPA’s governor’s nomination process in 1990 (EPA 1994b, 1990d). The planning process generally followed the process summarized in Figure 4.1.

Management Conference

Since its inception, the TBEP has been a partnership consisting of six local governments (Hillsborough County, Pinellas County, Manatee County, Tampa, St. Petersburg, and Clearwater) and three regulatory agencies (EPA, FDEP, SWFWMD). Other organizations such as the TBRPC, ABM; U.S. Army Corps of Engineers (COE), Environmental Protection Commission of Hillsborough County (EPC), Tampa Port Authority (TPA), the Florida Marine Research Institute (FMRI), and other ABM members also participated.

The TBEP utilized a management conference structure consisting of policy, management, technical advisory (TAC), and citizens advisory (CAC) committees. The policy committee comprised of politicians and high-ranking agency officials representing six local governments and three regulatory agencies because the participants recognized that implementation would primarily be a local responsibility.

The policy committee set the direction, made administrative and budgetary decisions, and supervised the TBEP staff, which were located in the TBRPC. The management committee consisted of upper-level managers from governmental and nongovernmental organizations and the co-chairs of the CAC and the TAC [Table 4.10]. The CAC was appointed by the policy committee and included representatives of many of the major industry and public interest groups. The TAC was larger with an open membership consisting of more than 200 individuals and a core group of 50 to 60 environmental professionals from federal, state, regional, and local agencies, and academia. The TAC provided objective assessments of scientific and technical information for the policy and management committees.
### Table 4.10: Membership in Various Interorganizational Committees

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>TBEP</td>
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<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>EPA</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X a</td>
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<tr>
<td>COE</td>
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<td>X a</td>
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<tr>
<td>NMFS</td>
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<tr>
<td>US FWS</td>
<td>X</td>
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<tr>
<td>USGS</td>
<td>X</td>
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<tr>
<td>FDEP b</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SWFWMD</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>EPC</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hillsborough County</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Pinellas County</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Manatee County</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>City of Tampa</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>City of St. Petersburg</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>City of Clearwater</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Other Incorporated Local Govts.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TBRPC</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FMRI</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FL Fish and Wildlife Con. Com.</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>FDOT</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Tampa Port Authority</td>
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<td>X</td>
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</tr>
<tr>
<td>Manatee Port Authority</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Manatee County Ext. Service</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Eckerd College</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University of South Florida</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tampa BayWatch</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X d</td>
</tr>
<tr>
<td>Audubon Society</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sierra Club</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Center for Marine Conservation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Chevron Products Corporation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida Phosphate Council</td>
<td>X</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Easter Assoc. Term. Company</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Florida Power and Light</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Florida Power Corporation</td>
<td>X</td>
<td></td>
<td></td>
<td>X c</td>
</tr>
<tr>
<td>Tampa Electric Company</td>
<td>X</td>
<td></td>
<td></td>
<td>X c</td>
</tr>
<tr>
<td>FL Strawberry Growers Assoc.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMC-Agrico</td>
<td>X</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>CSX Transportation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cargill Fertilizer, Inc.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CF Industries, Inc.</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pakhoed Dry Bulk Terminals</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Citizen members</td>
<td>X</td>
<td></td>
<td></td>
<td>X d</td>
</tr>
</tbody>
</table>

*a Signed an MOU rather than the Interlocal Agreement; b Southwest District Office represents the FDEP; c Not a formal signatory but it has participated in discussions; d As Co chair of the CAC
Planning Activities

Early technical work examined gaps in research and synthesized technical information on the bay’s problems. Gradually, the technical work shifted to developing measurable goals for nutrient reduction, seagrass restoration, and habitat restoration. Planning efforts then shifted to developing action plans, getting the CCMP approved, and developing the Interlocal Agreement (IA) creating the TBEP’s implementation structure.

While technical work progressed, the TBEP secured nearly $1 million for demonstration projects to demonstrate that they were “doing something” during the years dominated by technical work. The TBEP was engaged in several notable public outreach efforts. For example, the TBEP, the Sarasota Bay NEP, and Florida Cooperative Extension Service (CES) established the Florida Yards and Neighborhoods Program, which has since been expanded to 18 counties. The program educates homeowners about how to reduce NPS runoff (Nonpoint Source News-Notes 1998, 13).

The TBEP also involved volunteers in planning and implementation efforts (Clark, et al. 1997). The TBEP and Tampa BayWatch worked together to establish the Bay Conservation Corps in order to recruit volunteers for restoration activities. More than 3,000 citizens have since participated in projects such as salt marsh plantings and island cleanups (Nonpoint Source News-Notes 1998, 13). The TBEP provided over $50,000 in mini grants of up to $5,000 to more than a dozen organizations to build community partnerships for bay restoration. Partnerships with local school districts and the Florida Aquarium have resulted in numerous field trips and workshops for area students. A partnership between the FMRI and TBEP also resulted in an annual “Bay Day” where thousands of area students are exposed to information about Tampa Bay and its resources and environmental problems.

A collaborative environmental monitoring program was created to coordinate the watershed’s 36 environmental monitoring programs [Table 4.11]. Previously, there was little coordination such that some areas were not monitored while other sites were duplicated. Data was stored in various forms and the agencies often used different quality assurance/quality control (QA/QC) procedures (TBEP 1996b). This new collaborative effort allowed the partners to reach agreement on the monitoring program’s
### Table 4.11: Environmental Monitoring Programs

<table>
<thead>
<tr>
<th>Agency</th>
<th>Environmental Monitoring Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPC</td>
<td>Water quality, benthos, baywide monitoring report</td>
</tr>
<tr>
<td>Tampa</td>
<td>Water quality, seagrass, baywide monitoring report</td>
</tr>
<tr>
<td>Manatee County</td>
<td>Water quality, benthos, seagrass, baywide monitoring report</td>
</tr>
<tr>
<td>Pinellas County</td>
<td>Water quality, benthos, seagrass, baywide monitoring report</td>
</tr>
<tr>
<td>Hillsborough County</td>
<td>Atmospheric deposition</td>
</tr>
<tr>
<td>SWFWMD – SWIM</td>
<td>Seagrass mapping</td>
</tr>
<tr>
<td>SWFWMD</td>
<td>Land use mapping, sets PLRGs, water quality and loading models, coordinate and produce baywide environmental monitoring report after 1999</td>
</tr>
<tr>
<td>FMRI</td>
<td>Critical fisheries monitoring program</td>
</tr>
<tr>
<td>TBEP</td>
<td>Atmospheric deposition, coordinate and produce progress reports and action plans, track progress towards CCMP goals</td>
</tr>
<tr>
<td>EPA</td>
<td>Atmospheric deposition</td>
</tr>
</tbody>
</table>

*Source:* TBEP. 1998c. *Partnership for Progress,* St. Petersburg, FL: TBEP.

Water quality, benthic, fisheries, and habitat components. Data collection and storage was standardized so that it could readily be synthesized by the TBEP into a biennial report. Sampling sites were coordinated with nearly 70 percent of the 126 monitoring stations incorporated into a statistically valid sampling design based on the EPA’s Environmental Monitoring and Assessment Program (EMAP) protocols. The partners also agreed to QA/QC procedures advocated by the EPA and FDEP whereby they regularly exchange samples and compare lab results. Participants even exchange and borrow equipment when needed. The effort proved so successful that the TBEP joined forces with the Sarasota Bay and Charlotte Harbor NEPs to form the Florida West Coast Regional Ambient Monitoring Program (RAMP) and respondents reported that the program might soon expand statewide.

There were also efforts to restore habitat. By 1996, 24 habitat restoration projects were completed by various federal, state, and local organizations that restored 85.6 acres. The SWFWMD also targeted 40 additional sites for restoration between 1995 and 1999 (TBEP 1996b). Local governments, in part due to EPA’s municipal separate storm sewer
systems (MS4) permits, expanded efforts to manage stormwater problems (e.g., Moores 1997). The three counties are developing watershed management plans at the sub-basin level to address stormwater problems. The cities of Tampa, St. Petersburg, and Clearwater are also involved in numerous implementation activities. For example, Clearwater developed watershed management plans for 8 sub-basins and $23 million in restoration projects are included in the city’s capital improvement program (CIP) with future expenditures estimated at between $93 and $117 million (Clearwater 1997).

**Developing the CCMP**

Early efforts to develop the CCMP focused on developing “preliminary action plans.” An iterative process was used to review each draft and they were eventually combined into a draft CCMP. Once the committees approved the CCMP, it was subject to a series of public meetings and public comment while a series of smaller focus groups with different interest groups was held to solicit their feedback. In general, the plan was well received and little controversy surrounded its approval in December 1996. However, the process did take a long time and many respondents characterized it as a “painstaking consensus-building process.” However, the same respondents felt strongly that the process was necessary because it allowed them to build the relationships and interpersonal trust that allowed them to develop the Interlocal Agreement (IA).

**The CCMP**

The CCMP contains 41 action plans addressing: water and sediment quality; bay habitats; fish and wildlife; dredging and dredged material management; and, spill prevention and response. There was no expectation that action plans would be implemented as specified in the CCMP. Instead, action plans were to serve as a starting point for determining how to achieve the CCMP’s 11 goals.

The CCMP’s goals for nutrient reductions and habitat restoration are particularly important because they drive implementation efforts [Tables 4.12 and 4.13]. Nutrients are capped at existing levels (1992 – 1994 average), which equates to reducing nitrogen by roughly 17 additional tons per year or 84 tons per year by 2000 (TBEP 1998c; TBEP 1996a; and, Greening and Eckenrod 1995). These reductions are expected to allow
Table 4.12: TBEP’s Goals for Water and Sediment Quality

<table>
<thead>
<tr>
<th>Goal</th>
<th>Environmental Indicators</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce or preclude additional nitrogen loadings by 17 tons per year to ‘hold the line’ at 1992 – 1994 levels. This will provide water clarity suitable for the recovery of 12,350 acres of seagrass.</td>
<td>Nitrogen loadings to the bay are scheduled to be updated with 1995 – 1999 data in the year 2000</td>
<td>1995 – 1999 reduction goals for all bay segments are expected to be met by the end of 1999</td>
</tr>
<tr>
<td>Interim target: Maintain segment specific chlorophyll a concentrations at the lower of the annual average of 1992 – 1994 or that which supports the seagrass restoration goals</td>
<td>Average annual chlorophyll a levels for each bay segment have fluctuated above and below specific targets since 1994. No trends are evident.</td>
<td></td>
</tr>
<tr>
<td>Reduce toxic chemicals in contaminated bay sediments and protect clean areas from contamination</td>
<td>“Hot spots” of contaminated sediments occur in relatively concentrated areas around large marinas, ports, and urban stormwater outfalls. To date, no trends have been observed.</td>
<td>Baywide sediment quality monitoring was initiated in 1993. Work towards numeric targets is underway as are action plans to address “hot spots”</td>
</tr>
<tr>
<td>Gain a better understanding of the role that atmospheric deposition plays in bay water quality and identify and address the sources of air pollution</td>
<td></td>
<td>Ten research and monitoring projects are ongoing</td>
</tr>
<tr>
<td>Reduce bacterial contamination to levels safe for swimming and shellfish harvesting</td>
<td>Number of beach closures and percent shellfish beds open (not yet compiled)</td>
<td>Project to identify appropriate indicators for human health in a subtropical area initiated in 1998. Coordination between local health units to standardize “beach closure” conditions is underway</td>
</tr>
</tbody>
</table>


seagrass beds to return to 1950 levels, an increase of 12,350 acres over 1992. In October 1996, the Tampa Bay Nitrogen Management Consortium (NMC) was established to develop a plan to achieve these nutrient reductions (TBEP 1998c). The NMC contains a wide range of governmental and nongovernmental organizations that committed to an
Table 4.13: TBEP’s Goals for Bay Habitats

<table>
<thead>
<tr>
<th>Goal</th>
<th>Environmental Indicators</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recover an additional 12,350 acres of seagrass over 1992 levels, while preserving the bay’s existing 25,600 acres and reduce propeller scaring of seagrass.</td>
<td>Since 1992, seagrass acreage is increasing at about 500 acres per year. At this rate, the goal will be reached in 25 years.</td>
<td>Nitrogen management goals are being met. Channels have been marked in heavily scarred areas. Aerial photos and mapping occurs every 2 years and biennial seagrass monitoring was initiated in 1998.</td>
</tr>
<tr>
<td>“Restore the historic balance” of coastal wetland habitats in Tampa Bay by restoring at least 100 acres of low-salinity (oligohaline) tidal marsh every five years, with a total increase of 1,800 acres.</td>
<td>Approximately 250 acres of oligohaline habitat will be restored by 2000, exceeding the 1995 – 1999 goal by 150 acres. Oligohaline restoration will occur in all bay segments.</td>
<td>20 restoration projects, which include creating or restoring oligohaline habitat, are ongoing or scheduled to be completed by 2000. When completed, a total of 250 acres of oligohaline habitat will be restored, exceeding the goal by 150 acres.</td>
</tr>
<tr>
<td>Preserve and enhance the bay’s 18,800 acres of mangrove/salt marsh habitats, including the 28 coastal sites designated as priorities, through purchase or conservation easements.</td>
<td>A total of 1,833 of the 13,434 acres identified have been acquired for preservation and restoration between 1995 - 1997</td>
<td>All 28 priority sites have been given the highest priority for the state’s land acquisition programs by SWFWMD.</td>
</tr>
<tr>
<td>Establish and maintain adequate freshwater flows to Tampa Bay and its tributaries to increase low salinity habitat</td>
<td></td>
<td>Developed a salinity regime and dissolved oxygen criteria for the Hillsborough River below the dam, based on needs of estuarine-dependent species. Th criteria are being considered in the determination of minimum flows by SWFWMD (not yet finalized).</td>
</tr>
</tbody>
</table>


action plan to achieve the non-local government portion of the CCMP’s required nitrogen reductions [Table 4.10].

The CCMP also includes the goal of restoring 100 acres of wetlands every five years, roughly equivalent to the rate of current restoration activities [Table 4.13] (TBEP 1996a, 1996b). The partners also agreed to a set of policies designed to help restore the
historic balance of wetland types. To assist in these efforts, the TBEP identified and ranked 138 restoration sites and recommended 28 land acquisition sites (TBEP 1996b).

**Implementation Activities**

Once the CCMP was approved, the partners turned their efforts towards making it more than just a “plan”. Several options were explored. Due to the leadership of several influential committee members, agreement was reached to develop an independent alliance of government entities pursuant to Chapter 163 of the Florida Statutes, which required developing an Interlocal Agreement (IA) (Khator 1999).

Developing an IA with a binding commitments involved a complicated and time-consuming process of negotiation facilitated by a team from the University of South Florida (USF). Two overarching issues framed the debate. Regulators were concerned with accountability and wanted local governments to specify projects and provide information on funding, outcomes, and implementation schedules. Local governments were concerned with this level of detail but were willing to develop five-year work plans and use annual supplements to specify details and changes. Local governments also wanted more flexibility in the regulatory process and efforts to expedite permit reviews for implementation efforts (Imperial 2000; and, Khator 1999).

After numerous drafts and endless meetings, an IA was signed in February 1998 (TBEP 1998a).¹³ The “Chapter 163” organizational form provided the freedom to construct an organization and define its responsibilities and limitations without the complicated financial reporting requirements associated with creating a Section 501 (c)(3) organization. Once the TBEP was created, it assumed responsibility for personnel administration and grants management, although the TBRPC still provides administrative support on a contractual basis. Its staff are directed by a policy board (i.e., board of directors), which is a modified version of the policy committee comprised of 8 voting members (Tampa, St. Petersburg, Clearwater, Hillsborough County, Pinellas County, Manatee County, FDEP, and SWFWMD) and one nonvoting member (EPA). The IA also established a management board, CAC, and TAC similar to the ones during the planning process (TBEP 1998a).
Table 4.14: TBEP Annual Funding Contributions for 1998 to 2000

<table>
<thead>
<tr>
<th>Organization</th>
<th>Funding Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA</td>
<td>CWA, Section 320</td>
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</tr>
<tr>
<td>Clearwater</td>
<td>City Appropriation</td>
<td>$8,406</td>
</tr>
<tr>
<td>St. Petersburg</td>
<td>City Appropriation</td>
<td>$20,072</td>
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<tr>
<td>Tampa</td>
<td>City Appropriation</td>
<td>$23,694</td>
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<td>Manatee County</td>
<td>County Appropriation</td>
<td>$19,373</td>
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<tr>
<td>Pinellas County</td>
<td>County Appropriation</td>
<td>$44,327</td>
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<tr>
<td>Hillsborough County</td>
<td>County Appropriation</td>
<td>$50,496</td>
</tr>
<tr>
<td>SWFWMD – Alafia River Basin Board</td>
<td>Basin Board Appropriation</td>
<td>$33,273</td>
</tr>
<tr>
<td>SWFWMD – Manasota Basin Board</td>
<td>Basin Board Appropriation</td>
<td>$33,273</td>
</tr>
<tr>
<td>SWFWMD – Hillsborough River Basin Board</td>
<td>Basin Board Appropriation</td>
<td>$33,273</td>
</tr>
<tr>
<td>SWFWMD – NW Hillsborough Basin Board</td>
<td>Basin Board Appropriation</td>
<td>$33,273</td>
</tr>
<tr>
<td>SWFWMD – Pinellas-Anclote Basin Board</td>
<td>Basin Board Appropriation</td>
<td>$33,273</td>
</tr>
</tbody>
</table>


The IA commits the signatories to the CCMP’s goals, all of which are to be achieved collectively with the exception of the nitrogen reductions allocated to local governments. Each signatory was required to submit a five-year action plan and annual supplements describing the actions taken to achieve these goals (TBEP 1999). The regulatory partners agreed to extend, as appropriate, certain forms of regulatory flexibility and to expedite permits reviews for projects in approved action plans. The IA also includes provisions for a sunset review every five years and each partner is required to provide financial support for the TBEP [Table 4.14] (TBEP 1998a).

**Progress Implementing the CCMP**

The EPA contributed approximately $861,000 for implementation and oversight, which was matched by $665,000 in cash from local governments and the SWFWMD (TBEP 1998b). These expenditures do not include the costs of in-kind services associated with the implementation actions undertaken by the IA’s partners. While these expenditures have not been estimated in a systematic manner, they are substantial. For example, the costs associated with completing habitat restoration projects by SWFWMD,
FDEP, and local government partners easily exceeds $3 million while the EPC’s environmental monitoring costs annually exceed $550,000 (TBEP 1998b).

Significant progress has been made in achieving the CCMP’s goals [Tables 4.12 and 4.13]. The five-year work plan contains commitments for more than 200 activities (TBEP 1999). The 105 projects contained in the NMC’s action plan are expected to remove or prevent the discharge of approximately 120 tons of nitrogen per year with half of the reductions coming from industry (TBEP 1998b, 1998c). These efforts are expected to exceed the CCMP’s goal by 60 percent or 30 tons per year (TBEP 1999). In terms of habitat restoration, the SWFWMD, FDEP, local governments, and other organizations are expected to restore 1,600 acres of habitat including 250 acres of low-salinity habitat, exceeding the five-year goal of 150 acres (TBEP 1999).

Some of the partners incorporated CCMP goals into other programs. The FDEP and EPA used the IA’s nitrogen reductions to satisfy the requirements for developing a TMDL for Tampa Bay, making it one of the first in the state. The SWFWMD incorporated the nitrogen goals into its revised SWIM plan and the EPA agreed to incorporate them into MS4 permits. In March 1998, Manatee County incorporated applicable goals, objectives, and actions into its comprehensive land use plan. Other local governments incorporated their action plans into CIPs. The TBEP’s priority restoration and land acquisition sites have been adopted by various agencies such as the SWFWMD, local governments, Florida Fish and Wildlife Commission (FWCC), and the United States Fish and Wildlife Service (USFWS). The state’s land acquisition programs (e.g., Preservation 2000) also adopted their priorities.

The partners are involved in a wide range of research, public outreach, and technical assistance activities. Most research is focused on three priority issues: 1) atmospheric deposition of nitrogen compounds and toxic contaminants; 2) developing numeric targets for sediment quality; and, 3) identifying public health indicators suitable to subtropical areas. The TBEP maintains a website, supports the Florida yards and neighborhoods program, and continues to distribute popular educational materials such as the Boaters Guide to Tampa Bay and Tampa Bay Repair Kit. The TAC is also an important forum for scientists, technocrats, and decisionmakers to discuss issues.
Less progress has been made in other areas. On-water enforcement of fishing and environmental regulations has not occurred. Work on the dredged material management plan, development of sediment quality goals, and seagrass monitoring are behind schedule. It was also unclear if the requirements for regulatory flexibility and expedited permit reviews have been fully implemented because few requests have been made.

**Future Prospects**

While these accomplishments are notable, the TBEP faces challenges. The TBEP focuses on making the nutrient reductions necessary to offset continued growth. There has been little effort to integrate Florida’s complex framework of land use and water quality programs (Wade and Tucker 1996). It is questionable if this strategy will be effective over the long term. Moreover, effective growth management might serve to reduce the costs associated with reducing nitrogen loadings in the future.

Nutrient reduction and restoration goals may become harder to achieve in the future. As one respondent noted: “We’re in it for the long haul. The next five years will be harder and the ones after that even more so. We’ve done the easy part.” Accordingly, there may be diminishing returns and higher costs associated with future nitrogen reductions and habitat restoration projects. It is also questionable whether it will be possible to “hold the line” given current growth projections. As one respondent noted: “You have got to bring in the private sector and they have to figure out how to do that effectively . . . It has got to be more of a feature because EPA is decreasing their funding which means everybody else has to increase their funding.” However, it may prove challenging to incorporate additional local government and industry partners that were not party to the years of interaction and negotiation that resulted in current agreements.

A few CAC members reported being frustrated because the TBEP is reluctant to take stands on controversial issues such as a recent proposal to use of Orimulsion fuel at a local power plant. For some community and environmental activists this was a particularly disappointing aspect of the TBEP. However, as was the case with the CIB, it is likely necessary for the TBEP to function effectively.
Despite these concerns, the respondents were hard-pressed to identify substantive problems with the planning process, the CCMP, or the IA. All praised the program, often in glowing terms like the following comments by a local official:

“[TBEP Director] did not pay me to say this either . . . but this has been the most impressive, and I have been in government for more than 20 years, and I have never seen anything like this where you had the support of politicians and scientists and even the commercial side and the residential side, the citizens, actually wanting to do something so much that they were willing to sit around a table and work it out. I mean it was incredible.”

Given the strong political commitments and success in implementing the first five-year action plan, there is reason to be optimistic that the TBEP will continue making progress towards the CCMP’s goals.

**Tillamook Bay**

The Tillamook Bay watershed encompasses approximately 570 square miles with elevations ranging from sea level to 3,461 feet [Figure 4.6]. It is located in a coastal, temperate rainforest and the lower basin and upper basin receive around 90 and 200 inches of rain annually, respectively (TBNEP 1998b). The bay is shallow but well flushed due to tidal fluxes and heavy rainfall. The watershed is located in Tillamook County, which is large, rural, and sparsely populated. About 17,000 people live in the watershed (ANEP Undated). The population is dramatically skewed toward retirees and its per capita income is well below the national average (Gaquin and Littman 1998).

Agriculture, forestry, fishing, and tourism give rise to the county’s slogan: “the land of cheese, trees, and ocean breeze.” There are 150 dairy farms supplying milk to the Tillamook County Creamery Association (TCCA), a cooperative that is one of the region’s largest employers generating $128 million in revenue in 1995. The cheese factory also attracts over 800,000 visitors annually (Plummer 1995).

Eighty-nine percent of the watershed is forested. The Tillamook State Forest was once a scorched landscape after a series of fires in 1933, 1939, 1945, 1951 burned over half of the watershed. Salvage logging lasted decades and the forest was denuded of trees and undergrowth. When the rains came, mudslides and erosion increased sedimentation.
Reforestation began in 1949 on a scale never before attempted and lasted over 20 years (Wells 1999). The forest's current value is estimated at more than $8 billion.

The fishing industry remains important to the culture and economy. The bay is home to bay clams, dungeness crabs, oysters, and various salmonids. The mid-1970s and early 1980s were boom years, but the fishing industry has since declined. However, the shellfish industry is thriving and the bay is a large producer of cultured oysters while recreational fishing and shellfishing is important to the tourism industry (Plummer 1995).

Three environmental problems affect Tillamook Bay and its resources. The watershed's 25,000 dairy cows produce about 322,500 tons of manure annually and are the main source of bacterial contamination causing many areas in the bay to be closed to shellfishing. Bacterial contamination has also been linked to OSDSs and wastewater
treatment systems. Nutrients are not a concern because the bay is well flushed (Busse 1998; TBNEP 1998b; and, Gale, et al. 1993).

Tillamook Bay is susceptible to sedimentation because it is relatively shallow and over 50 percent of the bay is mudflats at low tide. Human activities (e.g., harvest activities, forest roads, development) and catastrophic events (e.g., floods and forest fires) exacerbated sedimentation, which hinders navigation, smothers eelgrass, and clogs gravel beds used for spawning. Over time, salmon habitat was also degraded by forestry operations, agriculture activities, hydromodifications, and development activities. This led to declines in coho salmon, steelhead trout and chum salmon stocks and their subsequent listings under the Endangered Species Act (ESA) in 1998 (TBNEP 1998b).14

The first efforts to address these problems occurred in 1979 when the Department of Environmental Quality (DEQ) began to identify sources of bacterial loadings [Table 4.15]. In 1981, Tillamook Bay became one of 21 watersheds in the NRCS’s Rural Clean Water Program (RCWP) [Table 4.16].15 Approximately $6 million was spent over 15 years to install agricultural BMPs and Tillamook Bay had the highest landowner participation in the RCWP (Gale, et al. 1993). The TCAA’s support was pivotal because it created financial incentives for dairy farmers to participate by paying a lower price for milk to farmers that failed to adopt certain BMPs. This effort decreased fecal coliform levels by 50 percent, although they have since increased (Busse 1998).

In 1987, local officials created the Tillamook Bay Sanitation Committee because the State Health Division was doing a poor job addressing water quality problems. That same year and again in 1990, Oregon’s Combined Animal Feeding Operations (CAFO) regulations were strengthened. In 1992, Senate Bill (SB) 1010 was passed requiring the Department of Agriculture (ODA) to develop water quality management plans for rural and agricultural areas failing to meet water quality standards (e.g., Tillamook Bay). In 1995, the governor initiated the Oregon Plan for Salmon and Watersheds (OPSW) and the Oregon Watershed Enhancement Board (OWEB) created over 83 citizen-led watershed councils. Tillamook’s watershed council is young and is not at the implementation stage yet. Collectively, these efforts resulted in a complex framework of federal, state, and local programs to manage the Tillamook Bay watershed [Table 4.17].
<table>
<thead>
<tr>
<th>Date</th>
<th>Program/Regulation/Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>State adopts Forest Practices Act. Oregon Department of Forestry (ODF) begins regulating forestry activities</td>
</tr>
<tr>
<td>1974</td>
<td>COE says sedimentation makes dredging of upper Bay infeasible</td>
</tr>
<tr>
<td>1979</td>
<td>Department of Environmental Quality (DEQ) conducts Tillamook Bay Bacteria Study to identify sources and extent of fecal coliform pollution occurring in the watershed.</td>
</tr>
<tr>
<td>1981</td>
<td>NRCS begins the RCWP project and begins installing BMPs to address NPS from agricultural operations in Tillamook Bay.</td>
</tr>
<tr>
<td>1987</td>
<td>New CAFO law prescribes stricter penalties for violators; ODA given authority to inspect CAFOs for non-compliance even without a complaint being filed.</td>
</tr>
<tr>
<td>1987</td>
<td>Tillamook County Bay Sanitation Technical Advisory Committee is created to identify, monitor and address the causes and extent of pollution in the County’s rivers and bays; water quality monitoring strategy was developed to classify and monitor commercial shellfish growing areas</td>
</tr>
<tr>
<td>1989</td>
<td>Tillamook County begins requiring agricultural building permits.</td>
</tr>
<tr>
<td>1990</td>
<td>CAFO requirements amended.</td>
</tr>
<tr>
<td>1991</td>
<td>Oregon State University’s (OSU’s) Department of Bioresource Engineering completed a methane plant feasibility study for the county’s Methane Energy and Agricultural Development (MEAD) committee.</td>
</tr>
<tr>
<td>1991</td>
<td>Cooperative Extension Service (CES) begins a study of nutrient uptake to develop adequate manure utilization specifications.</td>
</tr>
<tr>
<td>1992</td>
<td>Senate Bill (SB) 1010 requires ODA to implement water quality management plans for agricultural and rural area where water quality standards are not met including Tillamook Bay.</td>
</tr>
<tr>
<td>1992</td>
<td>Governor’s Nomination submitted to the EPA requesting to join the NEP</td>
</tr>
<tr>
<td>1993</td>
<td>Work on the Tillamook Bay National Estuary Program (TBNEP) begins</td>
</tr>
<tr>
<td>1995</td>
<td>Oregon Plan for Salmon and Watersheds (OPSW) begins; Oregon Watershed Enhancement Board (OWEB) begins supporting watershed councils, including one in Tillamook Bay</td>
</tr>
<tr>
<td>1996</td>
<td>RCWP ends; TBNEP releases Preliminary CCMP; Major flood causes $53 million in damage</td>
</tr>
<tr>
<td>1997</td>
<td>Public meetings generate citizen actions for CCMP; OPSW submitted to NMFS</td>
</tr>
<tr>
<td>1998</td>
<td>Draft CCMP; Tillamook Coastal Watershed Resource Center and Tillamook County Performance Partnership are created; coastal coho listed under the ESA</td>
</tr>
<tr>
<td>1999</td>
<td>TBNEP’s CCMP is completed in June and approved by EPA in December; TCPP begins implementing CCMP; GWEB becomes OWEB</td>
</tr>
</tbody>
</table>
### Table 4.16: Differences Between the USDA’s RCWP and the EPA’s NEP

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>RCWP</th>
<th>NEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Mission</td>
<td>Federally-sponsored program designed to control agricultural nonpoint source pollution in rural watersheds with the goal of improving water quality.</td>
<td>Federally-sponsored program with a mission to protect and restore the health of estuaries while supporting economic and recreational activities.</td>
</tr>
<tr>
<td>Federal Agency</td>
<td>NRCS</td>
<td>EPA</td>
</tr>
<tr>
<td>Funding Emphasis</td>
<td>Implementation</td>
<td>Planning</td>
</tr>
<tr>
<td>Funding Commitment</td>
<td>Long-term</td>
<td>Annual</td>
</tr>
<tr>
<td>Duration (in Tillamook)</td>
<td>1980 – 1996</td>
<td>1993 - Present</td>
</tr>
<tr>
<td>Participants and Partners</td>
<td>▪ EPA</td>
<td>▪ EPA</td>
</tr>
<tr>
<td></td>
<td>▪ CES</td>
<td>▪ CES</td>
</tr>
<tr>
<td></td>
<td>▪ OWEB</td>
<td>▪ OWEB</td>
</tr>
<tr>
<td></td>
<td>▪ ODFW</td>
<td>▪ ODFW</td>
</tr>
<tr>
<td></td>
<td>▪ SWCD</td>
<td>▪ SWCD</td>
</tr>
<tr>
<td></td>
<td>▪ DEQ</td>
<td>▪ DEQ</td>
</tr>
<tr>
<td></td>
<td>▪ TCCA</td>
<td>▪ TCCA</td>
</tr>
<tr>
<td></td>
<td>▪ NRCS</td>
<td>▪ NRCS</td>
</tr>
<tr>
<td></td>
<td>▪ ODF</td>
<td>▪ ODF</td>
</tr>
<tr>
<td></td>
<td>▪ Agricultural Research Service</td>
<td>▪ ODA</td>
</tr>
<tr>
<td></td>
<td>▪ Economic Research Service</td>
<td>▪ Tillamook County Dept of Community Development</td>
</tr>
<tr>
<td></td>
<td>▪ Farmers Home Administration</td>
<td>▪ Tillamook County Board of Commissioners</td>
</tr>
<tr>
<td>Primary Activities</td>
<td>▪ Install BMPs</td>
<td>▪ Install BMPs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Public Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Scientific Research</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Restoration Projects</td>
</tr>
</tbody>
</table>

### Tillamook Bay National Estuary Program

The Tillamook Bay National Estuary Program (TBNEP) entered the NEP through the EPA’s streamlined governor’s nomination process in 1993 (EPA 1994b, 1994d). The TBNEP generally followed the planning process depicted in Figure 4.1. Oregon State University’s (OSU’s) CES served as the hiring entity but a number of organizational and staffing problems ended up extending the planning process by more than a year. The
Table 4.17: Main Actors Involved in Governing the Tillamook Bay Watershed

<table>
<thead>
<tr>
<th>Organizations</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Protection Agency (EPA)</td>
<td>Provided funding for planning efforts, approved the CCMP, and provides limited implementation funding. Oversees many DEQ programs.</td>
</tr>
<tr>
<td>Department of Environmental Quality (DEQ)</td>
<td>Implements a full range of EPA programs, many are delegated to district offices. There is a branch office in Tillamook County to support local watershed efforts. It is developing TMDLs for the watershed.</td>
</tr>
<tr>
<td>Oregon Department of Forestry (ODF)</td>
<td>Manages approximately 786,000 acres of state-owned forest. Its funding comes from timber revenue rather than tax dollars. The rest of the $12 million generated annually from timber harvests goes to the county and local tax districts. Implements a long-range forest management plan, habitat conservation plan, and implements BMPs.</td>
</tr>
<tr>
<td>Oregon Department of Agriculture (ODA)</td>
<td>Implements a regulatory program for confined animal feeding operations (CAFOs). Implements Senate Bill (SB) 1010, which requires ODA to develop and implement water quality management plans for agricultural and rural area where water quality standards are not met, which includes Tillamook Bay. Provides oversight for the SWCD.</td>
</tr>
<tr>
<td>Natural Resource Conservation Service (NRCS)</td>
<td>Provides funding for BMPs. It was active in implementing the Rural Clean Water Program (RCWP), which provided significant funding for installing agricultural BMPs.</td>
</tr>
<tr>
<td>Tillamook County Soil and Water Conservation District (SWCD)</td>
<td>Implements BMPs and restoration projects. It was active in implementing the RCWP.</td>
</tr>
<tr>
<td>Oregon Watershed Enhancement Board (OWEB)</td>
<td>Implements the Oregon Plan for Salmon and Watersheds (OPSW) that was developed in response to the listing of salmon under the Endangered Species Act (ESA). It provides funding and technical support to over 80 local watershed councils, one of which is in Tillamook Bay</td>
</tr>
<tr>
<td>Local Government</td>
<td>Entire watershed is in Tillamook County. County government has been active and is home to the Tillamook County Performance Partnership (TCPP), which implements the CCMP. Severe flood damage limits the county’s ability to fund implementation efforts. Other local governments and special districts such as the port authority are less active. It implements a local comprehensive land use and estuary management plans. Approximately 22 percent of the county budget is from timber harvest revenue passed through ODF.</td>
</tr>
<tr>
<td>Oregon State University (OSU)</td>
<td>The Cooperative Extension Service (CES) and Sea Grant Program (SGP) are active in planning and implementation. The CES was the TBNEP’s hiring entity. Other university researchers were active as well.</td>
</tr>
<tr>
<td>Tillamook Creamery Association (Creamery)</td>
<td>It has long been involved in efforts to address water quality problems and was active in the RCWP where it provided incentives for farmers to implement BMPs. Its cheese factory is one of the state’s biggest tourist attractions. It is one of the county’s largest employers.</td>
</tr>
</tbody>
</table>
program is currently on its third director (including two interim directors) and its third set of core staff. The policy committee made a poor choice selecting its first director, which had virtually no experience managing staff, contracts, or a $1 million budget. As one respondent observed: “When I first became involved with the NEP, I remember telling someone that it looked like a graduate school bullpen. The attitude was that I’ve got my project and I don’t need anyone to tell me what to do. These were people that didn’t lend well to supervision and they didn’t understand the concept of teamwork.” There were also interpersonal conflicts and moral problems that spilled over to committee meetings.

Using CES as the hiring agent also meant that the TBNEP was subject to an “unwieldy” hiring process that moved at a “glacial” pace; a direct contrast to the NEP that moves at a frenetic pace with tight deadlines. Staff were located a two-hour drive from the OSU, which led to poor staff oversight and personnel problems. As one respondent observed: “It seems like everybody thought somebody else was providing oversight so in the end, it wasn’t done.” This created unclear lines of authority and staff did not know where to go to file a grievance. There was also high turnover because staff worked off annual contracts, tight deadlines caused burnout, and interpersonal conflicts reduced morale. As one respondent noted: “The money is soft and people bail as soon as they find a permanent job. It’s just a personal reality. Working year to year is hard. If they had secure funding, they would have some of the original team members. . . . It leads to a lot of wasted time and money when this turnover happens.” These problems ended up prolonging the planning process and increasing participant’s transaction costs.

Management Conference

Tillamook Bay used a management conference structure consisting of policy, management, science and technical (STAC), citizens advisory (CAC), and financial strategy advisory (FSAC) committees. There was a lot of cross-pollination in their membership with previous advisory committees created pursuant to the RCWP and the Bay Sanitation Task Force. As one respondent noted: “the NEP wasn’t an immaculate conception; we’ve been dealing with these issues for a long time.”

The nine-member policy committee consisted of representatives of EPA, OWEB, DEQ, CES, chair of the management committee, and elected officials from Tillamook
County, a local city, the SWCD, and a port commissioner. It established the program’s objectives, priorities, and direction. It also appointed the 20-member management committee consisting largely of federal agencies (2), state agencies (6), Tillamook county (4), the port district (1), and OSU (1). It also included representatives from the commercial fishing and shellfishing industries, the dairy industry, and the general public. The management committee appointed members to the three subcommittees. The STAC consisted mostly of state officials and OSU faculty. The CAC was a small group of local citizens that assisted in developing the CCMP and various public education efforts. The FSAC developed funding strategies to support implementation (TBNEP undated).

Planning Activities

Previous planning efforts identified bacterial contamination, sedimentation, and degraded salmon habitat as priority issues. Flooding emerged as an issue in 1996 when a devastating flood caused over $53 million in damage. This was followed by a series of flooding events in subsequent years. This occurred early enough in the characterization phase such that flooding was eventually added as a priority issue. This did not occur immediately because there was some concern that it would raise controversial issues (e.g., dredging) and dominate the process to the detriment of other priority issues. The EPA also forced participants to limit the CCMP’s focus to actions demonstrating a linkage between flooding and improved environmental conditions (TBNEP 1998b).

While technical work was progressing, the TBNEP was busy in other areas. A number of partners continued efforts to install BMPs and conduct restoration projects. The TBNEP conducted numerous public outreach efforts such as fact sheets, a newsletter, an internet site, interpretive signs around the bay, organized or participated in special events, and organized a speaker series for schools and NGOs. It developed a “challenge grant” program awarding small grants to schools, educators, and community groups to do educational and scientific research. A volunteer water quality monitoring program was created and the TBNEP worked with local stewardship groups involved in restoration projects. More recently, the TBNEP collaborated with the Economic Development Council of Tillamook County (ECDTC), Tillamook County Soil and Water Conservation
District (SWCD), and Tillamook Bay Community College (TBCC) to establish the
Tillamook Coastal Watershed Resource Center (TCWRC). The TCWRC is home to the
TBNEP’s GIS system and provides training to citizens and local officials involved in
OWEB’s watershed management efforts.

Developing the CCMP

The CCMP’s development began in late 1995 when a group of ten individuals
representing land owners and dairy operators developed what would become the
Preliminary CCMP (TBNEP 1996). This document provided the basis for discussion
during 1996 and 1997. The TBNEP held 14 public meetings in early 1997 to get public
input. With the CAC’s assistance, more than 300 recommended actions were identified.
By July 1997, the CAC refined this list to 24 broadly supported, high priority citizen
actions, which were forwarded to the management committee. Subcommittees were then
created for each CCMP chapter. An iterative process involving numerous drafts of each
action plan finally resulted in a draft CCMP that was released for public comment in
September 1998. Most comments were supportive in nature.

The major frustration concerned the CCMP’s approval process. The EPA made
the TBNEP go through a second public notice period, putting the process further behind
schedule. The participants were unaware that the governor was going to make the
agencies sign the CCMP. This caused additional delay as the CCMP worked its way
through various chains of command. The partners signed the CCMP in June 1999 at one
of the Tillamook County Performance Partnership’s (TCPP’s) first meetings. However,
the participants had to wait until December 1999 for EPA’s final approval. This
frustrated many respondents because implementation efforts were delayed while staff
continued editing the plan and making the changes required to obtain EPA’s approval.

Despite these delays and the “endless meetings,” most respondents felt that the
time spent was crucial to the CCMP’s widespread acceptance and the development of the
TCPP. As one participant noted, the process was “a little more painful, but it’s worth it
because at the end you have a better product and better buy in. . . . I think you have to go
through the building of relationships and have the committees wrestle with the issues.”
The CCMP

The CCMP contains 21 policies and 63 actions designed to achieve three goals. Respondents reported being more concerned with achieving goals and targets than implementing the action plans specified in the CCMP. Collectively, the actions are intended to result in a strategy to improve habitat, reduce sedimentation, improve water quality, reduce flooding, and strengthen education and community institutions [Table 4.18]. Implementation timeframes range from 2000 to 2010 and a system to monitor and report on implementation progress is under development.

Implementation Activities

Once agreement on the goals and substance of the CCMP was reached, efforts turned to making the CCMP more than just a “plan”. As one respondent recalled, early in the process people were saying: “Oh my god, you’re going to do another government plan, spend millions of dollars, and put it on the shelf.” Various implementation structures were analyzed (TBNEP 1996), however, two policy committee members became the advocates for using a “performance partnership” to implement the CCMP.

The Tillamook County Performance Partnership (TCP) was established in July 1998 by a resolution of the Tillamook County Board of Commissioners. It has a two-tiered administrative structure. An executive board comparable to an expanded version of the policy committee provides overall guidance and direction for the TCP’s staff, which are now county employees. The executive board is a subset of the 61-member performance partnership, which consists largely of federal (11 representatives), state (11), county (7), and local officials (7), special districts, industry representatives, environmental interest groups, and citizens.

The performance partnership concept was derived from Vice President Al Gore’s National Partners for Reinventing Government (NPRG). The objective was to “reinvent” government by developing an organization to coordinate the implementation of various plans [Table 4.19]. As one policy committee member put it: “Our concept is focus on what you want to achieve, get people around the table, and do something. Quit planning.” The TCP also allowed the TBNEP to reinvent itself. Near the end of the
Table 4.18: Goals and Targets in the TBNEP’s CCMP

<table>
<thead>
<tr>
<th>Goal</th>
<th>Targets in the CCMP</th>
</tr>
</thead>
</table>
| **Critical Habitat**         | - Enhance 200 miles of forested riparian habitat by 2010  
- Manage 90% of upland riparian zones to meet state forest HCP requirements  
- Enhance 100 miles of upland instream habitat by 2010  
- Enhance 500 miles of continuous riparian habitat in the 0 – 500 ft elevation band to healthy condition by 2010  
- Upgrade 50% of all tide gates by 2010  
- Conserve and restore 750 acres of tidal wetland by 2010  
- No decline in eelgrass beds due to degradation or loss  
- Achieve an improved climate for fisheries practices and regulatory actions  
- Achieve wild fish production and spawner escapement goals set by the Oregon Department of Fish and Wildlife for Tillamook Basin rivers |
| **Erosion & Sedimentation**  | - Upgrade 1,400 miles of forest roads by 2010 on state and private lands  
- Decommission 50 miles of forest management road by 2010  
- Conduct road maintenance activities on all 2,000 miles of forest management roads annually  
- Limit the amount of forested lands in clearcuts to no more than 1/8th of the total forest lands in the watershed  
- Conduct risk analysis on 95% of proposed high risk timber harvesting sites on slopes of 80% or greater  
- Manage 67% of the watershed’s privately-held, forested riparian areas under HCP standards  
- Assess 90% of upland county and state roads, both paved and unpaved, for their sediment contribution  
- Control erosion from all development in urban areas by 2003 |
| **Water Quality**            | - Achieve at least a 25% reduction in bacteria and sediment loads to rivers (apparent decreasing trends by 2005. Statistically significant results by 2010)  
- Achieve SB 1010 Plan compliance among 100% of livestock operations by 2010  
- Achieve routine annual inspections of 100% of the CAFOs by 2004  
- Achieve at least a 25% reduction every 4 years in the number of days that the rivers are not in compliance with water quality standards for bacteria  
- Achieve total compliance with NPDES permits for wastewater treatment facilities by 2002  
- Reevaluate commercial shellfish harvest area classifications and closure criteria on an annual basis |
| **Flooding**                 | - Develop a hydrologic model by 2000  
- Complete 20 projects within 2 years of developing the hydrologic model that: 1) reduce runoff rate in uplands; 2) alleviate drainage problems in lowlands; 3) increase floodplain storage in lowlands; and 4) improve the capacity to withstand or benefit from flood events  
- Raise at least 55 houses to at least 3 ft above the 100-year flood elevation by 2010  
- Construct 18 cow pads in flood prone areas to protect livestock by 2000  
- Increase the percentage of compensated damages from flood events |
Table 4.19: TCPP Strategies and Plans that Recommend the Strategies

<table>
<thead>
<tr>
<th>TCPP Strategy</th>
<th>Plans Referenced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve Degraded Roads</td>
<td>▪ Oregon Plan for Salmon and Watersheds</td>
</tr>
<tr>
<td></td>
<td>▪ Oregon Northwest Forest Management Plan</td>
</tr>
<tr>
<td></td>
<td>▪ Western Oregon State Forests Habitat Conservation Plan</td>
</tr>
<tr>
<td></td>
<td>▪ Draft Federal Clean Water Action Plan</td>
</tr>
<tr>
<td></td>
<td>▪ TBNEP CCMP</td>
</tr>
<tr>
<td>Restore Riparian Zones</td>
<td>▪ Oregon Plan for Salmon and Watersheds</td>
</tr>
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<td>▪ Draft Federal Clean Water Action Plan</td>
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<td>▪ NRCS North Coast Basin Strategic Plan</td>
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<td></td>
<td>▪ Senate Bill 1010</td>
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<td>▪ TBNEP CCMP</td>
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<tr>
<td>Enhance In-Stream Conditions</td>
<td>▪ Oregon Plan for Salmon and Watersheds</td>
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<td>▪ Draft Federal Clean Water Action Plan</td>
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<td>▪ Tillamook County SWCD Annual Work Plan 1997 - 98</td>
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<td>▪ TBNEP CCMP</td>
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<tr>
<td>Improve Floodplain Condition</td>
<td>▪ Army Corps of Engineers Challenge 21</td>
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<td></td>
<td>▪ Tillamook County Flood Mitigation Plan</td>
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<td></td>
<td>▪ TBNEP CCMP</td>
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<tr>
<td>Apply ‘State of the Art’ Technology</td>
<td>▪ Tillamook County Economic Development Council Strategic Plan</td>
</tr>
<tr>
<td></td>
<td>▪ Tillamook Bay Community College Five Year Strategic Plan</td>
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<tr>
<td></td>
<td>▪ TBNEP CCMP</td>
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</tbody>
</table>


planning process it received bad press as characterized by one participant: “We didn’t have a local director, we brought in all of these outside scientists, and we spent $5 million. All we have is a plan.” The TCPP garnered stronger community support and positive press coverage.

The TCPP’s implementation strategy is to improve communication among stakeholders, coordinate existing programs using shared goals and targets, and then leverage existing federal and state resources to pay for recommended actions. The TCPP chose to focus initially on five strategies common to a number of resource management plan that coincide with the CCMP’s priorities [Table 4.19] (TBNEP 1998a; and, Trenholm 1998). However, it is questionable whether implementation efforts will proceed as envisioned. As one respondent noted: “The naivete I see is people saying
‘let’s have the agencies pool their resources and we’ll have enough to do what we need to.’ The idea that this organization and this one have pots of money and we’ll throw it together and they’ll be happy with how it’s being used – well, we’ll just see about that.”

Other respondents noted that the complex nature of federal and state grant programs with different priorities, grant restrictions, and cost-share requirements creates challenges. Tillamook County’s poor financial situation also makes it difficult to match grants.

**Progress Implementing the CCMP**

Considerable progress has been made in addressing Tillamook Bay’s environmental problems since the late 1970s. As one respondent noted: “We’ve come a long way. In 1977 there were only two manure stacks under roofing in the basin. Now you won’t find any that aren’t.” Nevertheless, significant problems remain and it will take a sustained effort over many years to achieve the CCMP’s goals and targets. Implementation efforts over the next ten years alone are expected to cost between $80 and $160 million and obtaining this funding will be a major challenge. The EPA has committed to four years of implementation funding at approximately $300,000 per year to support the TCPP.

Because the EPA approved the CCMP in December 1999, it is difficult to do more than speculate about the likelihood of implementation success. However, Table 4.20 describes some of the implementation activities related to CCMP implementation that began prior to the CCMP’s approval (Trenholm 1998). Since 1994, the ODF spent in excess of $21.4 million on road improvements designed to reduce erosion and sedimentation. Over 2,142 culverts and 17 bridges were built, 776,000 cubic yards of rock was spread, 30.3 miles of new road was built, 515 miles of road was improved, and 11.3 miles of road was closed. In 1998 alone the ODF installed 20 boulder weirs, 11 off-channel alcoves, 8 jump pools, and 429 root wads weighing between 1,000 and 9,500 lbs. in headwater streams to improve salmon habitat. The ODF plans to continue these efforts and leverage additional funding from future timber harvests to expand these activities.

Expenditures by the USFWS, the TCCA, the SWCD, and private contributors were more modest. For example, in three years, the USFWS invested $260,000 in on the
Table 4.20: TCPP’s Strategies, Five-Year Local Actions, and Implementation

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Local Action</th>
<th>Leveraged Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve Degraded Roads</td>
<td>1) Complete road surveys and improve 360 miles of road built to salvage Tillamook Burn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Implement OPSW using Road Inventory Protocol on all forest lands ($16,000/year)</td>
<td>▪ Since 1994, the ODF has surveyed 1133 miles ($120,000 – 70% federal, 30% state)</td>
</tr>
<tr>
<td></td>
<td>- Bring roads up to present day standards ($18 million/year)</td>
<td>▪ Since 1994, the ODF closed 7 miles of road ($200,000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Since 1994, the ODF improved 469 miles of road ($15,077,000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Since 1994, the FEMA ($2,623,000 – 75% federal, 25% state)</td>
</tr>
<tr>
<td>Restore Riparian Zones</td>
<td>1) ODF, BLM, watershed councils, and private landowners will stabilize 200 miles of streambanks ($1 million/yr.)</td>
<td>▪ Since 1996, the US F&amp;W and others converted 7,571 ft of alder to mixed conifer and released 6 miles of conifer from competition ($118,175)</td>
</tr>
<tr>
<td></td>
<td>2) SWCD, TCCA, and others will install 130 miles of streamside fencing, off-channel watering facilities on 75 farms, and replant 130 miles degraded streambanks ($2.5 million)</td>
<td>▪ Since 1991, the TCAA and SWCD fenced 53 miles of streambank, built 3 cattle bridges, and 100 alternative watering sites ($214,000)</td>
</tr>
<tr>
<td>Enhance In-Stream Conditions</td>
<td>1) ODFW will work with land owners to install in-stream and off channel habitat structures</td>
<td>▪ Since 1996, the ODF completed 24 in-stream restoration projects ($1,262,561 - $644,220 federal, $563,934 state, $54,407 private)</td>
</tr>
<tr>
<td></td>
<td>2) SWCD will install 90 stream barbs treating 18 miles of eroding streambanks ($900,000)</td>
<td>▪ Since 1996, the SWCD constructed 34 barbs protecting 4,200 ft of streambank ($95,000)</td>
</tr>
<tr>
<td></td>
<td>3) ODFW, watershed councils, and DEQ will place hatchery carcasses in streams to increase productivity ($5,000 per year)</td>
<td>▪ Since 1996, the TCAA and SWCD fenced 53 miles of streambank, built 3 cattle bridges, and 100 alternative watering sites ($214,000)</td>
</tr>
<tr>
<td>Improve Floodplain Conditions</td>
<td>1) Develop structural flood mitigation requirements</td>
<td>▪ COE (Reconnaissance Study) ($100,000)</td>
</tr>
<tr>
<td></td>
<td>2) Reopen, unclog, and maintain sloughs and where necessary modify river segments ($2,250,000)</td>
<td>▪ FEMA (Project Impact) ($250,000)</td>
</tr>
<tr>
<td></td>
<td>3) Projects based on COE Reconnaissance Study and FEMA’s Project Impact</td>
<td>▪ Installation of cow pads</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Houses raised</td>
</tr>
<tr>
<td>Apply State of the Art Technology</td>
<td>GIS Development and Unified Watershed Assessments:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1) Sustain TCWRC ($900,000 over 3 years)</td>
<td>▪ Tillamook County Economic Development Council ($35,000)</td>
</tr>
<tr>
<td></td>
<td>2) TCWRC should develop Tillamook County land use information system and GIS repository ($400,000 per year)</td>
<td>▪ Tillamook Bay Community College (faculty and staff) ($10,000)</td>
</tr>
<tr>
<td></td>
<td>3) TCWRC maintain a real time and interactive tracking system</td>
<td>▪ TBNEP (hardware) ($42,500)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ GWEB ($10,000)</td>
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<tr>
<td></td>
<td></td>
<td>▪ TBNEP (software) ($250,000)</td>
</tr>
</tbody>
</table>

**Note:** Costs are estimates that indicate commitments, expenditures, and their timeframes.

ground projects and the TCCA spent around $30,000 to $40,000 per year on projects. The SWCD spends hundreds of thousands of dollars each year on BMPs and restoration efforts. The partners have had some success in leveraging funding from federal and state agencies. In 1998 and 1999, over $534,532 in Section 319 funds was obtained for watershed projects and the TCPP was recently awarded a Section 319 grant for $162,115. The TBNEP and the TCPP have also had some success in leveraging OWEB funding, including $43,000 to help fund the TBNEP’s volunteer water quality program.

Future Prospects

While this progress is reason to be optimistic, the TCPP is a new organization and faces important challenges. The TCPP has a great deal of flexibility built into its organizational structure. The danger, as one respondent noted, is that: “You have to keep focus, because you can get so wrapped up in the bureaucracy of keeping the staff employed, keeping the GIS stuff up to date, that you begin to lose the real intent. The real intent of the TCPP is to help agencies, land owners, interest groups implement the CCMP and other goals.” The TCPP may ultimately prove to be too adaptive, get captured by changing political issues, or become unable to sustain the long-term commitments to a consistent set of implementation activities making it difficult to achieve its targets.

The TCPP may experience decision-making problems. It has a large, unwieldy size and includes stakeholders that were not part of the TBNEP. There are also status differences among its members. It includes supervisors (e.g., county commissioners) and subordinates (e.g., department heads), state officials and their federal counterparts, competing interest groups, and private citizens. It is unclear if its vague decision-making rules will enable it to resolve disputes or if a healthy group dynamic will result.

The TCPP is relatively informal, based primarily on personal relationships, and is dependent on the leadership of local political officials and agency officials. It is unclear what will happen when leadership changes due to local elections or staff turnover. While these issues may be resolved as the TCPP evolves, its long-term success may depend on institutionalizing personal relationships and social norms that guide decision making.
One way to accomplish this would be by giving the TCPP some form of legal existence and adopting more detailed by-laws.

Successful implementation will also require ongoing commitments by the ODF. However, implementation efforts are funded by timber revenue and some respondents expressed a concern that environmental interest groups outside the watershed might be effective in their efforts to halt timber sales. This would eliminate ODF’s implementation funding and place additional financial pressure on Tillamook County and local governments, which rely on this revenue to fund county services.

Other factors create uncertainty about the TCPP’s ability to achieve its goals and targets. The TCPP may never be able to achieve its goals for reducing bacterial loadings. Several respondents noted that if you removed all of the people and all of the cows, the heavy rainfall levels combined with the population of birds and other indigenous “critters” may still produce bacteria levels exceeding FDA standards. Changes in the population dynamics of cows and humans could also affect success. The population of dairy cows remains relatively stable but another growth period similar to that in the 1970s and 1980s would increase bacterial loadings. Tillamook County’s population is relatively stable and did not experience the increases that other coastal areas such as Newport did. A substantial change in population demographics could also impede progress because the TBNEP has little focus on managing residential and commercial development.

Despite these challenges, there is reason to be optimistic. The TCPP enjoys strong political support. Almost all of the respondents overwhelmingly supported the CCMP and the TCPP. Accordingly, the data suggests that the TCPP will continue to make progress implementing the CCMP, albeit subject to its ability to leverage the necessary funding from federal and state agencies.

**Lake Tahoe**

Lake Tahoe is renowned for its crystalline blue waters. The lake is 22 miles long, 12 miles wide, and covers 192 square miles, making it the largest alpine lake in North America [Figure 4.8]. It is also the third deepest lake in the United States with a depth of 1,636 feet. The watershed spans 506 square miles with approximately two-thirds of it in
Figure 4.8: Lake Tahoe Watershed, California and Nevada

California and one-third in Nevada. Sculpted peaks with elevations from 6,200 to 10,800 feet surround the lake providing a visual watershed boundary.

The watershed remained relatively undeveloped until the 1950s when population increased as a result of casino development, improved highway access, year round snow removal, and the development of ski areas and winter resorts triggered by the 1960 Winter Olympics (Smidt 1979). The lake is a short drive from more than 8 million people and tourism is a $1 billion industry employing more than 20,000 people with annual visitor days exceeding 23 million (Boughton, et al. 1997; and, Sierra Nevada Ecosystem Project 1996). There are now approximately 60,000 permanent residents with a summer population estimated at 102,000 (Sierra Nevada Ecosystem Project 1996). Because most of the basin has slopes greater than 20 percent, development is limited primarily to the flat shoreline areas (Ingram and Sabatier 1987).

The combination of steep slopes, erodible soils, and the lake’s low algal growth make the watershed extremely sensitive to human disturbance. Sedimentation and nutrient loadings have increased as a result of many factors including artificially high lake levels, logging, commercial and residential development, wetland loss, habitat alteration, erosion, stormwater runoff, and atmospheric deposition [Table 4.21] (SWQCB 1995; and, Sierra Nevada Ecosystem Project 1996). Further exacerbating these problems is the lake’s 700-year residence time. Approximately 67,000 tons of sediment now enter the lake annually, a 1,900 percent increase over natural levels (USFS undated). Increased sedimentation and nutrient loadings are the main cause of declining lake clarity (SWQCB 1995, 5 – 2 ). In 1968, clarity was measured at 100 feet. It is currently around 70 feet (Lake Tahoe Federal Interagency Partnership 1999, 2).16

**Tahoe Regional Planning Agency**

Given the unique nature of Lake Tahoe, it should not surprising that there is a long history of regional planning [Table 4.22]. There is also a complex framework of programs managing the watershed [Table 4.23].17 One of the first regional planning efforts occurred when the five counties created the Tahoe Regional Planning Commission (TRPC). In 1964, the TRPC’s [Lake Tahoe 1980 Regional Plan](#) was released recommending a divided four-lane highway around the lake, a bridge over Emerald Bay...
Table 4.21: Sources of Water Quality Problems in Lake Tahoe

<table>
<thead>
<tr>
<th>Cause</th>
<th>Environmental Problems</th>
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</thead>
<tbody>
<tr>
<td>Roads (construction and maintenance)</td>
<td>- Land disturbance increases soil susceptibility to erosion</td>
</tr>
<tr>
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<td>- Sand applied to roads during winter maintenance contributes to</td>
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<td>sediment load into the lake, including loading of small colloidal particles which</td>
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<td></td>
<td>suspend in the water column</td>
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<td>- Flat, smooth surfaces allow runoff to travel at higher velocities which</td>
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<td>results in increased sediment loading and increased flooding</td>
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<tr>
<td>Stream Environment Zone (SEZ) Destruction</td>
<td>- Increased nutrient and sediment loading to the lake due to removal of a</td>
</tr>
<tr>
<td>and Disturbance</td>
<td>very effective filtering mechanism</td>
</tr>
<tr>
<td></td>
<td>- Source of nutrients and sediment when disturbed</td>
</tr>
<tr>
<td></td>
<td>- Increased flooding</td>
</tr>
<tr>
<td>Vegetation Removal</td>
<td>- Increased nutrient loading to the lake from sediments and precipitation,</td>
</tr>
<tr>
<td></td>
<td>of which natural vegetation removes significant quantities of both</td>
</tr>
<tr>
<td></td>
<td>- Increased velocities of runoff</td>
</tr>
<tr>
<td>Fertilizer Use</td>
<td>- Nutrient loading to surface water and groundwater</td>
</tr>
<tr>
<td>Leaking Sewer Systems</td>
<td>- Nutrient loading to ground and surface water</td>
</tr>
<tr>
<td>Industries Located West of the Basin</td>
<td>- Atmospheric deposition of nutrients into the watershed and directly into the lake</td>
</tr>
<tr>
<td>Impervious Surface/Urbanization</td>
<td>- Increases runoff; increases yields of sediments and dissolved nutrients</td>
</tr>
</tbody>
</table>

(now an International Natural Heritage Site), and projected that over 313,000 people would live in the watershed by 1980 (TRPC 1969). Development continued at a rapid pace during the 1960s, with almost 20,000 building permits issued, more than half of which were for high-density hotels and motels, and large tracts of land were subdivided to nearly double the number of parcels (Pepper and Jorgensen 1974).

The 1969 Compact

In response, the California and Nevada created the Lake Tahoe Joint Study Committee, which recommended a new bi-state agency. After two years of negotiation, a federal-state compact was approved (P.L. 91-148) creating the Tahoe Regional Planning Agency (TRPA), a regional planning agency with broad regulatory authority to preserve
Table 4.22: History of the TRPA’s Development

The Technical Fix (1960 ~ 1967)
- Sewering viewed as the solution
- Tahoe Keys and Incline Village development projects
- 1960 – Tahoe Regional Planning Commission (TRPC) created
- 1964 – TRPC approves “1980 Plan” which recommends heavy development
- 1965 – Lake Tahoe Joint Study Committee (LTJSC) created
- 1965 – CA and NV pass resolutions banning sewage discharges

Development of a Regional Agency (1967 ~ 1974)
- 1967 – LTJSC recommends creating TRPA
- 1967 – California and Nevada create their own versions, the CTRPA and NTRPA
- 1969 – TRPA Established by a federal-state compact

Disillusionment with the TRPA (1974 ~ 1980)
- New Casino and Mall Construction approved
- Environmental Groups, both State Legislators and the TRPA itself conclude the 1969 compact is fundamentally flawed.
- 1978 – All sewage is exported our of the basin

The Decade of Negotiation (1980 ~ 1989)
- 1980 – TRPA Compact revised
- 1982 – TRPA adopts environmental thresholds
- 1984 – Court Injunction on development in Basin and Implementing the Regional Plan
- 1984 – Nevada Threatens to putout of Interstate compact
- 1985 – California Tahoe Conservancy established
- 1985 – Consensus Workshop Group (CWG) implemented by TRPA
- 1987 – Regional plan includes IPES and TDRs

The Era of Collaboration (1989 ~ 1999)
- 1989 – The Tahoe Transportation Coalition formed
- 1996 – TRPA five-year threshold review is released without significant opposition
- 1997 – Presidential Summit
- 1998 – EIP Released

Unfortunately, the TRPA was largely ineffective at limiting development. The compact had been weakened from original proposals, local interests dominated the TRPA, and the agency’s budget was capped at $150,000. Projects were “deemed approved” if not acted upon within 60 days and a majority vote of each state’s representatives on the governing board to deny a project. During this period, the TRPA was accused of being either too stringent or too lax. Some filed takings lawsuits against the TRPA totaling $260 million. Others complained that during the first 15 months of its
<table>
<thead>
<tr>
<th>Organizations</th>
<th>Brief Description</th>
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</thead>
<tbody>
<tr>
<td>Tahoe Regional Planning Agency (TRPA)</td>
<td>It is bi-state regional planning and regulatory agency with a staff of over 50 people. It maintains environmental standards, issues permits, has enforcement powers, and is charged with attaining state and federal water and air quality standards. It is directed by a 15 member governing board of various federal, state, and local officials and a 19 member Advisory Planning Commission (APC) comprised of highly educated professionals.</td>
</tr>
<tr>
<td>United States Department of Agriculture (USDA) Forest Service (USFS) Lake Tahoe Basin Management Unit (LTBMU)</td>
<td>It manages 77 percent of the land in the watershed. Unlike many USFS plans that emphasize resource extraction, the LTBMU plan emphasizes water quality protection. It spends $500,000 per year to correct erosion problems. It is also involved in the acquisition of ecologically sensitive private parcels through the Santini-Burton Act (P.L. 96-586), which has provided $100 million for land acquisition.</td>
</tr>
<tr>
<td>State Water Quality Agencies</td>
<td>The California State Water Resources Control Board (SWRCB), Lahontan Regional Water Quality Control Board (LRWQCB)/Nevada Department of Environmental Protection (NDEP). They implement state water quality laws and the CWA. The LRWQCB has been more involved than the NDEP in the and still implements the watershed’s Section 208 plan pursuant to the CWA.</td>
</tr>
<tr>
<td>California Tahoe Conservancy (CTC)</td>
<td>It is an independent state agency. A board of state and local officials makes decisions. To date, the CTC funded more than $175 million on land acquisition and restoration projects. More than 5,450 undeveloped and environmentally sensitive private parcels covering more than 6,000 acres have been acquired.</td>
</tr>
<tr>
<td>Local Governments</td>
<td>There are six local governments: Placer County (CA); Douglas County (CA); City of South Lake Tahoe (CA); Washoe County (NV); El Dorado County (NV); and, Carson City (NV).</td>
</tr>
<tr>
<td>The Gaming Alliance</td>
<td>Formed in the early 1980 in response to the TRPA’s re-organization, it represents the gaming industry’s interests and was instrumental in helping form the Tahoe Transportation and Water Quality Coalition.</td>
</tr>
<tr>
<td>The League to Save Lake Tahoe</td>
<td>It was created in 1957 and is the oldest environmental organization dedicated to protecting Lake Tahoe. It serves as a “watchdog” and scrutinizes every project brought before TRPA.</td>
</tr>
<tr>
<td>Tahoe-Sierra Preservation Council</td>
<td>It was formed in 1981 to represent the rights of private property owners and has filed numerous lawsuits against TRPA.</td>
</tr>
<tr>
<td>Tahoe Transportation and Water Quality Coalition</td>
<td>A coalition of basin actors including The League to Save Lake Tahoe, Tahoe Gaming Alliance, The Tahoe-Sierra Preservation Council, and other NGOs focused on finding creative solutions to transportation and water quality problems. It also prepares the Lake Tahoe Joint Federal Legislation Agenda.</td>
</tr>
<tr>
<td>Tahoe Research Group (TRG)</td>
<td>It coordinates the Lake Tahoe Interagency Monitoring Program (LTIMP), established in 1979 to collect and analyze water and air quality data.</td>
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</tbody>
</table>
existence, the TRPA approved 99 percent of development applications resulting in 13,500 additional housing unit while other controversial casino and commercial development projects were approved in the early 1970s (Ingram and Sabatier 1987). Dissatisfaction with the TRPA propelled the basin’s actors to reexamine the original Compact. By 1975, California and Nevada passed separate state legislation amending the compact. The next 5 years involved much controversy and disagreement over the amendments (Ingram and Sabatier 1987; and, Strong 1984).

**1980 Compact**

The 1980 Compact resulted in a number of significant changes (P. L. 96-551). It established a unique system of environmental threshold carrying capacities (ETCCs). The TRPA adopted nine ETCCs for scenic, recreational, water quality, air quality, noise, wildlife, soil conservation, fisheries, and vegetation issues in 1982. The TRPA is required to review all projects to “ensure that the project under review will not adversely affect implementation of the Regional Plan and will not cause the adopted environmental threshold carrying capacities of the region to be exceeded (P.L. 96-551).”

Changes were also made to the governing board. It is now a 15-member collection of federal, state, and local officials [Table 4.24]. The board sets policy and approves major projects. A 19-member advisory planning commission (APC) consisting
of professionals with scientific or technical backgrounds and lay members representing the general public advises the board [Table 4.25].

The TRPA was also required to develop a new Regional Plan. The TRPA’s first attempt met with tremendous resistance and lawsuits by both environmental and development interests. A federal court injunction was issued in 1984 preventing the TRPA from implementing the plan or approving development projects. The TRPA then undertook an effort to resolve these conflicts using a consensus-building workshop (CBW) that brought together the major stakeholders.

The product of the consensus building process was a series of compromises that formed the foundation of the revised 1987 Regional Plan. While controversial, the past president of The League to Save Lake Tahoe noted: “Although this was a low point in Tahoe Basin relationships, it led to a process of consensus which resulted in a new Tahoe Regional Plan which enforces these critical environmental regulations such as SEZ protection, coverage limitations, and urban boundaries” (Design Workshop 1995).

Implementing the Regional Plan

The Regional Plan contains a number of provisions reflecting the tradeoffs that emerged from the consensus building process (TRPA 1999, 1986). These included:

- The individual parcel evaluation system (IPES) ranking all residential lots in the basin in terms of environmental sensitivity;
- A transferable development rights (TDR) program;
- Bans on all new subdivisions;
- Limiting commercial development to 400,000 square feet over the first 10 years and allocating commercial development rights;
- Only 200 additional tourist accommodation units over the first 10 years;
- All new development projects must offset these impacts by 150 percent.
- Single and multiple-family houses limited to 350 per year for six years.

A new Code of Ordinances was then adopted to implement the Regional Plan. The resulting regulatory framework is complex and includes some of the country’s most stringent growth controls.

Interestingly, during the last decade implementation efforts have increasingly emphasized collaborative nonregulatory activities involving many of the same
Table 4.25: Selected Representation in TRPA Decision-Making Processes

<table>
<thead>
<tr>
<th>California Local Government</th>
<th>Governing Board</th>
<th>APC&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Consensus Workgroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of South Lake Tahoe</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>El Dorado County</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>Placer County</td>
<td>X</td>
<td>X</td>
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<table>
<thead>
<tr>
<th>California State Representatives</th>
<th>Governing Board</th>
<th>APC&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Consensus Workgroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Assembly</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>California Senate Rules Committee</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Governor of California</td>
<td>X&lt;sup&gt;b&lt;/sup&gt;</td>
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<tr>
<td>California Air Resources Board</td>
<td></td>
<td>X</td>
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<tr>
<td>Regional Water Quality Control Board,</td>
<td>X</td>
<td>X</td>
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<tr>
<td>California Attorney General’s Office</td>
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<thead>
<tr>
<th>Nevada Local Government</th>
<th>Governing Board</th>
<th>APC&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Consensus Workgroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carson City</td>
<td>X</td>
<td>X&lt;sup&gt;c&lt;/sup&gt;</td>
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<tr>
<td>Douglas County</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Washoe County</td>
<td>X</td>
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<thead>
<tr>
<th>Nevada State Representatives</th>
<th>Governing Board</th>
<th>APC&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Consensus Workgroup</th>
</tr>
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<tbody>
<tr>
<td>Dept. of Conservation and Natural Resource</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>Governor of Nevada</td>
<td>X</td>
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<tr>
<td>Nevada At-Large Member</td>
<td>X</td>
<td></td>
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<tr>
<td>Nevada Secretary of State</td>
<td>X</td>
<td></td>
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<tr>
<td>Nevada Division of Environmental Protection</td>
<td>X&lt;sup&gt;d&lt;/sup&gt;</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Nevada Attorney General’s Office</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nevada Bureau of Water Quality Planning</td>
<td></td>
<td>X&lt;sup&gt;c&lt;/sup&gt;</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>Federal Agencies</th>
<th>Governing Board</th>
<th>APC&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Consensus Workgroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Forest Service</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Natural Resources Conservation Service</td>
<td>X</td>
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<tr>
<td>Environmental Protection Agency</td>
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<table>
<thead>
<tr>
<th>Non-government Actors</th>
<th>Governing Board</th>
<th>APC&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Consensus Workgroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Association of University Women</td>
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</tr>
<tr>
<td>Incline/Crystal Bay Advisory Board</td>
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<td></td>
</tr>
<tr>
<td>North Tahoe Advisory Council</td>
<td>X</td>
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<td></td>
</tr>
<tr>
<td>Tahoe Sierra Board of Realtors</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chambers of commerce</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tahoe Sierra Preservation Council</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sierra Club</td>
<td>X</td>
<td></td>
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</tr>
<tr>
<td>Tahoe Basin Association of Governors</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>League to Woman Voters</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>League to Save Lake Tahoe</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Gaming Alliance</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility Districts</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Notes: <sup>a</sup> The 18 members of the APC during the creation of the 1986 regional plan included 8 Lay Members; <sup>b</sup> Governor of California has two Appointees on the board; <sup>c</sup> Member in 1999, but not in 1986; <sup>d</sup> Not a member in 1999
governmental and nongovernmental actors at “war” during the 1970s and 1980s. Rather than emerging from a formal planning process, collaboration resulted from the overlapping governance structures and interactions of the various actors. The TRPA is the lead agency or participates in over 34 workgroups organized around different issues. These interactions increased trust and communication. They also allowed the actors to explore opportunities for collaboration. As one interest group leader reported: “after several years of working together, we started building up some level of trust amongst the executive directors of various groups”. This doesn't imply that former ideological divisions disappeared. What developed was a mutual understanding that cooperation will be pursued in some areas, while disagreement remains on other issues. As one interest group leader reported, “On some issues we agree and on others we sue.”

One local business representative summed up the shift towards collaboration this way: “Alright TRPA, you are not going to go away, we can't sue you out of existence, we can't go to the Nevada or California legislatures and legislate you out of business, we can't go to the feds and have them do away with you, so we will work with you. Ok. That message got into the community by '92 – That cooperation was the way to go.” Another participant observed: “If you have this process where everyone can veto, what it becomes is an understanding that in order to get 'A' you have to give up 'B'. As a whole we are going to get consensus because everybody needs something, everybody wants something and everybody is afraid of something.” There was also a growing understanding that: “there are few projects that can be done by just one agency.” Moreover, as one of the groups active in litigation reported: “we don't want to go back to the days of conflict. From our point of view it is better to accept some things than go back to fighting . . . there is more to be gained from cooperation . . .”

Most respondents attributed this shift in attitudes to the leadership of two TRPA directors. Others attributed it to the directors of The Gaming Alliance and The League to Save Lake Tahoe and their efforts to create the Tahoe Transportation and Water Quality Coalition in 1989. After a typical TRPA meeting, the League, Gaming Alliance, and Tahoe-Sierra Preservation Council found themselves opposed to a TRPA decision, albeit for different reasons. Reportedly, the director of The Gaming Alliance called the other directors together and asked if there was an issue they could agree upon.
Transportation emerged because it was supported by casino and ski resorts for economic reasons, the League for environmental reasons, and the Tahoe-Sierra Preservation Council for quality of life reasons. Initially known as Tahoe Transportation Alliance, local press immediately dubbed it the “unholy alliance.” The Coalition has since expanded its scope to address water quality issues and membership includes actors representing the ski industry, chambers of commerce, property rights groups, environmental groups, visitor bureaus, and casino groups. While important differences remain, the participants respect these differences and have learned how to work together.

These early efforts set the stage for a wide range of collaborative activities. Competing casino operators, Heavenly Ski Resort, South Lake Tahoe, private redevelopment interests, and the TRPA reached agreement on a Coordinated Transit System (CTS). A number of collaborative redevelopment projects have also been undertaken. For example, the Park Avenue Redevelopment Project calls for redeveloping aging lodging facilities and small, scattered motels. It includes a gondola to pick up skiers in a central entertainment plaza and transport them to ski runs at both sides of the Heavenly Ski Resort. It also includes scenic improvements and a number of wetlands and stream restoration projects (South Tahoe Redevelopment Agency 1999).

The TRPA has devolved and streamlined permitting by entering into over 30 MOUs with local governments, public utility districts, and other federal and state agencies. For example, the TRPA and LRWQCB signed an MOU deferring the LRWQCB’s review of residential and some commercial development projects to the TRPA. However, the LRWQCB assists the TRPA in enforcement because it has broader authority. The TRPA has also delegated permitting authority for selected activities to local governments. Alternatively, El Dorado County recently placed a planner in the TRPA to review projects for local and TRPA requirements. Several respondents also reported that the MOUs increased trust and communication. As one local planner characterized it: “the confidence level is increasing on both sides.” It also increased the capacity of local planning departments, reduced costs for permit applicants, and allowed the TRPA to focus on regional issues.

The Coalition also began an effort to get additional federal support for basin projects by creating the Lake Tahoe Joint Federal Legislation Agenda to coordinate
efforts to lobby Congress and federal agencies. One result was obtaining $2.5 million to coordinate public transportation along the South shore. The increased spirit of collaboration and the Coalition’s efforts also led to the Lake Tahoe Presidential Forum in 1997.\footnote{The Presidential Forum was a series of events and community workshops attended by the President and other high ranking federal and state officials that focused federal attention on Lake Tahoe and educated the public about declining water quality (TRPA 1998a, 1997; and, Tahoe Federal Interagency Partnership 1997).}

The Presidential Forum also focused attention on the $908 million Environmental Improvement Program (EIP) (Lake Tahoe Federal Interagency Partnership 1999). Two previous threshold reviews indicated that water quality problems were due primarily to existing development, which caused the TRPA and other actors to increasingly focus on nonregulatory restoration efforts. The EIP is a partnership aimed at coordinating restoration efforts to achieve the ETCCs within a ten-year period. Thirty-five different organizations will be involved in implementing more than 1,018 regulatory, scientific, and restoration projects [Table 4.26] (Lake Tahoe Federal Interagency Partnership 1999; and, TRPA 1998b). The TRPA will help coordinate these efforts.

Future Prospects

The TRPA set the lofty goal of attaining the ETCCs by 2007. According to the 1996 threshold review, 15 of the 34 sub-elements improved, 13 stayed the same, and six declined. None of the nine ETCCs was met [Table 4.27] (TRPA 1996a, 1996b). The scientific community has given Lake Tahoe a 10-year period to reduce nutrients before declining lake clarity become irreversible. This time-frame was repeated like a mantra and most respondents appeared to accept that they were nearing the point of no return.

The ability to achieve the ETCCs is likely to depend on whether the funding necessary to implement the $900 million EIP is obtained. Efforts at this point are promising (Tahoe Federal Interagency Partnership 1997). The respondents reported a great deal of success in obtaining federal and state funding commitments. It is less clear how local governments will pay for their share of the costs.

It is also unclear if the EIP’s implementation will reduce declining lake clarity. The specific causes of the declines remain largely unknown. Many respondents also
Table 4.26: Entities Participating in the TRPA’s EIP

| Participant | Improvement | Area of Participation | | | |
|-------------|-------------|------------------------|---|---|---|---|---|
| **Regional Agencies** | | | | | | | |
| • TRPA | X | | | | | | |
| • Tahoe Transport. District | X | X | | | | | |
| • S. Shore Trans. Mgt. Assoc. | X | X | | | | | |
| • Truckee N. Tahoe Transport. Mgt. Assoc. | X | X | | | | | |
| **Federal Agencies** | | | | | | | |
| • EPA | | X | | X | | | X |
| • USFS | | X | | X | | | X |
| • NRCS | | | | X | | | |
| • COE | X | | | | | X | |
| • U.S. Postal Service | X | X | | | | | X |
| **State Agencies** | | | | | | | |
| • Caltrans | X | X | | | | | X |
| • CA SWQCB | | X | | X | | | X |
| • CA State Lands | X | X | | X | | | X |
| • CA State Parks | X | X | | | | | |
| • CTC | X | | | | | X | |
| • NB Dept. of Transport. | X | X | | | | | X |
| • NV Div. of State Parks | X | X | | | | | |
| • NDEP | | X | | X | | | X |
| • NV Div. of State Lands | X | X | | X | | | X |
| • LRWQCB | | X | | X | | | X |
| **Local Governments** | | | | | | | |
| • South Lake Tahoe | X | X | | X | | | X |
| • Douglas County | X | X | | X | | | X |
| • Carlson County | X | X | | X | | | X |
| • El Dorado County | X | X | | X | | | X |
| • Placer County | X | X | | X | | | X |
| • Washoe County | X | X | | X | | | X |
| **Other Local Agencies** | | | | | | | |
| • Incline Village Imp. Dist. | X | | | | | | X |
| • N. Tahoe Pub. Util. Dist. | X | | | | | | X |
| • S. Tahoe Pub. Util. Dist. | X | | | | | | X |
| • Tahoe City Pub. Util. Dist. | X | | | | | | X |
| • Nevada Tahoe Cons. Dist. | X | X | | | | | |
| • Tahoe Resource Cons. Dist. | X | X | | | | | |
| **Private Entities** | | | | | | | |
| • Heavenly Ski Resort | X | | | | | | X |
| • Homeowner Assoocs. | X | | | | | | X |
| • Dev. Project Proponents | X | | | | | | X |
| • Property Owners | X | | | | | | X |

**Figure 4.27: Summary Results of 1996 Threshold Review**

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Air Quality</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO</td>
<td>N</td>
<td>A</td>
<td>+</td>
</tr>
<tr>
<td>O₃</td>
<td>N</td>
<td>N</td>
<td>+</td>
</tr>
<tr>
<td>Particulate</td>
<td>N</td>
<td>N</td>
<td>+</td>
</tr>
<tr>
<td>Visibility</td>
<td>A</td>
<td>N</td>
<td>=</td>
</tr>
<tr>
<td>U.S. 50 Traffic Volume</td>
<td>N</td>
<td>A</td>
<td>+</td>
</tr>
<tr>
<td>Wood Smoke</td>
<td>N</td>
<td>N</td>
<td>=</td>
</tr>
<tr>
<td>Vehicle Miles Traveled</td>
<td>N</td>
<td>N</td>
<td>--</td>
</tr>
<tr>
<td>Atmospheric Nutrient Loading</td>
<td>A</td>
<td>A</td>
<td>+</td>
</tr>
<tr>
<td><strong>Water Quality/Soil Conservation</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Turbidity (shallow)</td>
<td>A</td>
<td>A</td>
<td>=</td>
</tr>
<tr>
<td>Clarity (winter)</td>
<td>N</td>
<td>N</td>
<td>--</td>
</tr>
<tr>
<td>Phytoplankton PPr</td>
<td>N</td>
<td>N</td>
<td>--</td>
</tr>
<tr>
<td>Tributary Water Quality</td>
<td>N</td>
<td>N</td>
<td>=</td>
</tr>
<tr>
<td>Runoff Water Quality</td>
<td>N</td>
<td>N</td>
<td>=</td>
</tr>
<tr>
<td>Groundwater</td>
<td>N</td>
<td>N</td>
<td>+</td>
</tr>
<tr>
<td>Other Lakes</td>
<td>U</td>
<td>A</td>
<td>=</td>
</tr>
<tr>
<td>Impervious Coverage</td>
<td>N</td>
<td>N</td>
<td>=</td>
</tr>
<tr>
<td>Naturally Functioning SEZs</td>
<td>N</td>
<td>N</td>
<td>+</td>
</tr>
<tr>
<td><strong>Vegetation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative Abundance and Pattern</td>
<td>N</td>
<td>N</td>
<td>+</td>
</tr>
<tr>
<td>Uncommon Plant Communities</td>
<td>A</td>
<td>A</td>
<td>+</td>
</tr>
<tr>
<td>Sensitive vegetation</td>
<td>N</td>
<td>N</td>
<td>=</td>
</tr>
<tr>
<td><strong>Fisheries</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Lake habitat</td>
<td>N</td>
<td>N</td>
<td>=</td>
</tr>
<tr>
<td>Stream habitat</td>
<td>N</td>
<td>N</td>
<td>+</td>
</tr>
<tr>
<td>In-stream flows</td>
<td>A</td>
<td>A</td>
<td>=</td>
</tr>
<tr>
<td><strong>Wildlife</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special interest species</td>
<td>N</td>
<td>N</td>
<td>+</td>
</tr>
<tr>
<td>Habitats of special significance</td>
<td>A</td>
<td>N</td>
<td>--</td>
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<tr>
<td>Scenic resources</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Travel route ratings</td>
<td>N</td>
<td>N</td>
<td>+</td>
</tr>
<tr>
<td>Scenic quality ratings</td>
<td>N</td>
<td>N</td>
<td>--</td>
</tr>
<tr>
<td>Public recreation area scenic quality</td>
<td>Not in Effect</td>
<td>A</td>
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</tr>
<tr>
<td>Community design</td>
<td>U</td>
<td>N</td>
<td>+</td>
</tr>
<tr>
<td><strong>Noise</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single event (aircraft)</td>
<td>U</td>
<td>N</td>
<td>+</td>
</tr>
<tr>
<td>Single event (other)</td>
<td>A</td>
<td>A</td>
<td>=</td>
</tr>
<tr>
<td>Community noise</td>
<td>N</td>
<td>N</td>
<td>=</td>
</tr>
<tr>
<td><strong>Recreation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High quality recreation experience</td>
<td>U</td>
<td>U</td>
<td>=</td>
</tr>
<tr>
<td>Capacity available to the general public</td>
<td>A</td>
<td>A</td>
<td>--</td>
</tr>
</tbody>
</table>

Positive Trend (+), Negative Trend (–), No Trend (=), N = Nonattainment, U = Unknown, A = Attainment

characterized the EIP as a “wish-list” of projects without much effort to prioritize projects or systematically determine the environmental improvements resulting from the proposed projects. Once the implementation becomes a reality, other interests affected by the projects that have not been part of the process may also voice opposition. Nevertheless, recent efforts are encouraging and there is reason to be optimistic that progress in addressing Lake Tahoe’s environmental problems will continue.

**Salt Ponds**

The Salt Ponds consist of nine brackish coastal lagoons separated from the ocean by a low narrow strip of barrier beach islands located along the southern coast of Rhode Island. The watershed covers approximately 32 square miles and includes in the towns of Westerly, Charlestown, South Kingston and Narragansett [Figure 4.8]. The watershed boundary follows coastal highway US 1 giving it a somewhat distinct boundary and regional identity (Lee 1980).

Much of the watershed is fringed by wetlands and the ponds serve as nursery ground for various fisheries as well as clams, oysters, and scallops. The ponds are shallow and poorly flushed with freshwater input coming mostly from groundwater and surface runoff. These conditions make the ponds susceptible to eutrophication and bacterial loading as a result of NPS pollution and nutrient discharges from groundwater.

Until a four-lane highway provided easy access in the 1950s, the region remained relatively undeveloped. Between 1950 and 1980 residential development increased threefold and it increased 69 percent between 1981 and 1992 (CRMC 1999). The region also attracts more than 165,000 people a day in the summer.

By the late 1970s, the stabilization of inlets, dredging of channels, and development activities resulting in OSDSs and other alterations in the quality and quantity of freshwater inflow began to cause a number of environmental problems:

- Loss of habitat and impacts due to development in and adjacent to critical habitat;
- Declining fish and shellfish stocks;
- Increased shellfish closures due to bacterial contamination;
- Excessive nitrogen loadings and pathogens from OSDSs;
Stormwater runoff increased sedimentation and nutrient loading to the ponds;
Stabilized breachways changed salinity regimes and caused sedimentation problems
Storm damage from hurricanes and winter storms (i.e., Nor'easters); and,
Conflicts among resource users.
There was also a general belief that the framework of government programs managing the watershed summarized in Table 4.28 was unresponsive and agency decision-making was cumbersome, contradictory, and time-consuming (Imperial 1999; Ernst 1995; Olson and Lee 1993, 1991; and Lee 1980).

Salt Ponds SAMP

The development of the Salt Ponds special area management plan (SAMP) was closely tied to the development of the Coastal Resources Management Council (CRMC) and the Rhode Island Coastal Resources Management Program (RICRMP), the state’s federally approved coastal zone management (CZM) program [Table 4.29] (Imperial 1999; Olson and Lee 1993, 1991; and, Robadue, et al. 1986). Public concerns about the Salt Ponds were first expressed at a series of public hearings on the draft RICRMP. When the RICRMP was approved in 1978, the CRMC called on the University of Rhode Island’s (URI’s) Coastal Resources Center (CRC) to help develop a SAMP.

Planning Activities

The development of the SAMP involved a partnership between state and local officials, representatives of NGOs, and researchers at the URI. From 1979 to 1984 federal funds received by the CRMC, the CRC, and the Sea Grant Program (SGP) were combined to support an ambitious interdisciplinary research program similar in nature to the one employed by the Chesapeake Bay Program some years later.

The CRC used a participatory planning process that was effective at building constituency support. Several factors contributed to the planning process’ effectiveness. First, an ecological history, which became a local best seller, was prepared to help the public and decisionmakers understand the issues (Lee 1980). Second, the CRC coordinated scientific research on a wide range of issues but it remained focused on issues important to decisionmakers. Third, the CRC identified one integrating problem – water quality – to develop the SAMP’s management strategy around. Research suggested that OSDS density had to be managed to limit the nitrogen loadings to groundwater and prevent shellfish closures due to bacterial contamination.
Table 4.28: Main Actors Involved in Governing the Salt Ponds Watershed

<table>
<thead>
<tr>
<th>Organizations</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Oceanic and Atmospheric Administration (NOAA)</td>
<td>Approved the CRMC’s state coastal zone management (CZM) program and SAMP and provides implementation funding for the RICRMP and SAMP.</td>
</tr>
<tr>
<td>Coastal Resources Management Council (CRMC)</td>
<td>A 16 member Council administers the agency. It is a legislative agency with authority to preserve, protect, develop and where possible restore coastal resources. It also implements the state’s federally approved CZM program, the Rhode Island Coastal Resources Management Program (RICRMP), and its regulatory authority overlaps with many of the RIDEM’s programs.</td>
</tr>
<tr>
<td>Rhode Island Department of Environmental Management (RIDEM)</td>
<td>It implements a number of EPA programs such as the Rhode Island Pollutant Discharge Elimination System (RIPDES) and Section 401 water quality certifications. It also implements permit programs for freshwater wetlands and individual sewage disposal systems (OSDSs).</td>
</tr>
<tr>
<td>Department of Administration’s Division of Planning (RIDOP)</td>
<td>The RIDOP’s and the Statewide Planning Council (SPC) administer the Statewide Planning Program (SPP). The SPP provides technical assistance to local governments and state agencies and maintains the State Guide Plan, the repository of state policies. State agencies and local comprehensive plans must be consistent with these policies.</td>
</tr>
<tr>
<td>Local Government</td>
<td>The municipalities of Narragansett, South Kingston, Charleston, and Westerly. Prior to the SAMP’s development, local officials lacked the technical expertise and information necessary to adequately review the impacts of development projects resulting from OSDSs, erosion, stormwater runoff, and habitat alteration. The communities also had relatively unsophisticated zoning ordinances that didn’t consider how land use impacted water quality and habitat. Moreover, there was little integration of local policies concerning the extension of sewer lines, the protection of habitat, and the acquisition of open space.</td>
</tr>
<tr>
<td>University of Rhode Island (URI)</td>
<td>Researchers from various departments conducted a wide range of studies. The Cooperative Extension Service, Sea Grant Program, and Coastal Resources Center (CRC) were most heavily involved.</td>
</tr>
<tr>
<td>Nongovermental Organizations (NGOs) and Industry Trade Groups</td>
<td>Several NGOs were involved in the SAMP including Save The Bay, the Salt Pond Watchers (a volunteer water quality monitoring organization), and the Salt Ponds Coalition (a local advocacy group. The Rhode Island Marine Trades Association (RIMTA) represented the recreational boating and ship building industries. The Rhode Island Builder’s Association (RIBA) and the Rhode Island Association of Realtors (RIAR) represented the building industry.</td>
</tr>
</tbody>
</table>
Table 4.29: Major Events in the Salt Ponds

<table>
<thead>
<tr>
<th>Events in the Development of the RICRMP</th>
<th>Events in the Development of the SAMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971 CRMC State Enabling Legislation</td>
<td>1975 Public Hearing on the RICRMP</td>
</tr>
<tr>
<td>1972 Federal Coastal Zone Management Act</td>
<td>1979 Ecological History Conducted</td>
</tr>
<tr>
<td>1975 RICRMP Adopted</td>
<td>1979 – 1984 Multi-Disciplinary Research Study</td>
</tr>
<tr>
<td>1983 RICRMP Substantially Revised</td>
<td>1984 SAMP Adopted by the CRMC</td>
</tr>
<tr>
<td>1988 Harbor Management Program Adopted</td>
<td>1986 Westerly Added to the SAMP</td>
</tr>
<tr>
<td>1990 RICRMP Revised Again</td>
<td>1994 Denitrification Requirements for a Sub-Watershed Added to the SAMP</td>
</tr>
<tr>
<td>1994 New Buffer Zone Requirements</td>
<td>1999 Revised SAMP</td>
</tr>
<tr>
<td>1997 CNPCP gets a preliminary approval</td>
<td></td>
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<tr>
<td>2000 CNPCP is approved by EPA and NOAA</td>
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</tbody>
</table>

Finally, the CRC built constituency support using two forms of participatory decision-making designed to build trust and develop a shared understanding of environmental problems and necessary management actions. One involved an informal process among those concerned with the policy implications of the research findings. The second consisted of a formal process of negotiation between public interest groups, municipal officials, and state agencies concerning the proposed policies. This involved a stakeholder advisory committee as well as an informal effort to convince municipal officials that they had the authority and capacity to manage development impacts.

The final SAMP met with limited opposition and the CRMC adopted the plan in November 1984 (CRMC 1985). The trust CRC developed enabled them to negotiate zoning changes in South Kingston, Charlestown, and Narragansett that adopted the SAMP’s policies (Olson, et al. 1982a, 1982b). Westerly was initially reluctant to participate but decided to join the SAMP in 1986 (Collins 1985).

**Implementation of the 1984 SAMP**

The SAMP was envisioned to be a “collaborative constitution” binding state and local decisionmakers to a set of shared policies to integrate resource management decisions made by municipalities, CRMC, and various RIDEM programs involved in reviewing projects and minimize the cumulative and secondary impacts of
development. At the plan’s core are its policies to control the density of OSDSs, the largest contributor of nitrogen to groundwater (Gold, et al. 1990). Instead of sewering out the watershed, as occurred in Lake Tahoe and the Inland Bays, the participants recognized that important tradeoffs existed. While sewers would reduce nitrogen loadings, they also remove an important development restriction and open up new areas to development and potentially increase densities (Paterson, et al. 1991). This can result in additional habitat loss, higher NPS loadings, and change the hydrology by diverting freshwater out of the system. Accordingly, sewers were only recommended in heavily developed areas where downzoning could not achieve necessary nutrient reductions.

Much of the original SAMP was implemented [Table 4.30]. Local governments changed their zoning to be consistent with plan’s density overlays. They also prioritized sewer extensions and other infrastructure investment to limit the density of development. These policies were subsequently incorporated into municipal comprehensive plans.

The CRMC implements the SAMP’s density policies for all development adjacent to coastal features, subdivisions of six units or more, and large development projects with an acre of impervious surface. The SAMP’s requirements for buffer zones, setbacks, habitat protection, stormwater, and erosion control are also implemented through the CRMC’s permit process, some of which were incorporated into the RICRMP and applied statewide. The SAMP also became part of the State Guide Plan, which required future decisions by federal, state, and local agencies to be consistent with its policies.

RIDEM’s participation has been mixed. It adopted new requirements for siting and design for OSDSs statewide with more stringent requirements in the Salt Ponds and other regions. The Section 319 NPS management program made funding alternative OSDSs a high priority (RIDEM 1995). RIDEM also provided funding to support the Salt Pond Watchers, a volunteer water quality monitoring program created during the planning process. However, implementation of other recommendations such as those pertaining to fisheries management and denitrification has been limited.

It was not surprising that the complexity of the institutional setting prompted a move to centralize or “coordinate” the permit processes. However the review process was not implemented as envisioned. As originally conceived, the CRMC would have
Table 4.30: Actions Contained in the Salt Ponds SAMP

<table>
<thead>
<tr>
<th>Problem</th>
<th>Actions Recommended/Adopted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision-making</td>
<td>- Coordinated permitted review process(^b)</td>
</tr>
<tr>
<td>Nonregulatory initiatives are ad hoc and uncoordinated</td>
<td>- Recommends an action committee chaired by the CRMC to identify annual priorities and coordinate non-regulatory initiatives(^c)</td>
</tr>
<tr>
<td>Water quality problems from residential &amp; commercial development</td>
<td>- SAM plan establishes density overlays(^a)</td>
</tr>
<tr>
<td>Water quality problems from excessive OSDS loadings</td>
<td>- Municipalities changed zoning(^a)</td>
</tr>
<tr>
<td>Water quality problems from excessive OSDS loadings</td>
<td>- Established priorities for sewering(^a)</td>
</tr>
<tr>
<td>Water quality problems from excessive OSDS loadings</td>
<td>- Improved stormwater and erosion controls(^a)</td>
</tr>
<tr>
<td>Loss of habitat</td>
<td>- Limit further dredging(^a)</td>
</tr>
<tr>
<td>Loss of habitat</td>
<td>- Maintain catchment basins at each inlet</td>
</tr>
<tr>
<td>Loss of habitat</td>
<td>- Promotes use of tide gates where practicable</td>
</tr>
<tr>
<td>Overfishing and habitat degradation</td>
<td>- Proposed modifications in catch limits</td>
</tr>
<tr>
<td>Overfishing and habitat degradation</td>
<td>- Proposed creation of fishing stewards to monitor stocks</td>
</tr>
<tr>
<td>Overfishing and habitat degradation</td>
<td>- Habitat protection and water quality measures(^a)</td>
</tr>
<tr>
<td>Hurricane and severe storm damage</td>
<td>- Construction setbacks on barrier beaches(^a)</td>
</tr>
<tr>
<td>Hurricane and severe storm damage</td>
<td>- Prohibit construction on undeveloped and moderately developed barrier beaches(^a)</td>
</tr>
<tr>
<td>Hurricane and severe storm damage</td>
<td>- Prohibits expansion of public infrastructure in many barrier beach areas(^a)</td>
</tr>
<tr>
<td>User conflicts and loss of open space</td>
<td>- Water use zoning to protect critical areas and priority uses(^a)</td>
</tr>
<tr>
<td>User conflicts and loss of open space</td>
<td>- Proposed improving public access(^f)</td>
</tr>
<tr>
<td>User conflicts and loss of open space</td>
<td>- Identified priority sites for preservation and restoration(^g)</td>
</tr>
</tbody>
</table>

\(^a\) Implemented; \(^b\) Different review process adopted; \(^c\) Operated initially but then gradually faded out when most of the recommendations were implemented or it was determined that they either couldn’t be implemented or were not a good idea; \(^d\) Only implemented by Narragansett; \(^e\) Limited by unavailable technology. Denitrification requirements are now starting to be added to the SAMP; \(^f\) Implemented by the Harbor Management Planning initiative and changes in how public access sites are reviewed by the Council; \(^g\) Used permit stipulations to preserve and restore sites (e.g., Coastal America project near the Port of Galilee)
been the permit coordinator sending all applications to appropriate agencies. However, the CRMC had limited slack resources (e.g., staff, funding, technical expertise, etc.) and relied on RIDEM and RIDOP staff to review its own permits at the time and would have had to coordinate a number of development activities with little coastal impact.

Instead, the CRMC entered into MOUs with each municipality. When a major project was proposed, CRMC staff or local officials arrange joint meetings with the developers to discuss projects and applicable regulations. RIDEM’s staff are invited but their participation has been mixed. These efforts improved communication and trust between participants and often saves developers time and money by allowing them to incorporate state and local concerns into development projects at an earlier stage of the permit review process. This saves state and local officials time when reviewing subsequent permit applications. Local officials can also access the technical expertise of state agencies allowing them to make better decisions. The informal review process proved to be so successful that it was incorporated into statewide requirements for subdivision review (R.I.G.L. §45-23).²⁸

**Evolution of the Salt Ponds SAMP**

The SAMP’s implementation was also a catalyst for other policy changes. The CRMC substantially revised its stormwater and erosion control requirements, adopted formal wetland mitigation requirements, and substantially revised their buffer zone policies in response to its experience implementing the SAMP (Desbonnet, et al. 1995; and, CRMC 1990). The effort inspired the development of a SAMP for the Narrow River watershed adjacent to the Salt Ponds (CRMC 1986). The SAMP’s efforts to address recreational boating and public access issues led the CRMC to create a new program to encourage local governments to develop and enforce harbor management plans (HMPs) subject to the CRMC’s approval (Amaral 1990; and, CRMC 1988). The CRMC also underwent major organizational changes and hired its first Executive Director and acquired its own technical staff in 1986. Today, it has its own staff and has taken over the policy development work previously done by the CRC.
In 1993, the RIDEM, CRMC, and URI researchers created a denitrification taskforce. The effort resulted in an MOU between the RIDEM and CRMC to implement a pilot project requiring denitrification OSDSs in a small portion of the watershed. In 1994, the CRMC amended the SAMP to incorporate these policies as well as others designed to strengthen policies related to buffer zones, stormwater, and erosion and sediment controls. Unfortunately, RIDEM did not implement the MOU.

The SAMP also acted as a catalyst for developing capacity at the local level. For example, municipalities stepped up their efforts to make sewer extensions, adopted conservation ordinances to protect habitat and address NPS problems, conservation and harbor management commissions were created, and local comprehensive plans were amended to be consistent with the SAMP’s density requirements.

1999 Revisions to the SAMP

By the early 1990s, it was apparent that water quality had improved in some areas, while declining or remaining the same in others. In 1994, the CRMC obtained funding from NOAA to evaluate the SAMP’s implementation (CRMC 1994; and, CRMC 1993). The effort determined whether the SAMP was effectively controlling nitrogen loadings, updated its technical information, incorporated its maps in the state’s GIS system, revised the plan’s nonregulatory recommendations, and does a better job of clearly delineating the plan’s regulatory requirements.

The planning effort began with a cumulative and secondary impact study conducted by the CRC. Nitrogen loadings in 1980 to 1981 were compared with measurements taken from 1994 to 1995 (Nixon 1982; Ernst 1996; and, Ernst, et al. 1996). This information led to revisions in the SAMP’s density controls and regulatory requirements as well as new policies addressing wetlands, breachway modifications, dredging, recreational boating, storm hazards, and public access.

The revisions involved a series of negotiations between environmental groups wanting additional nutrient restrictions, builders desiring less controls and restrictions, and local officials that had their own concerns. The revised density requirements recognize the same tradeoffs but are more sophisticated and better mitigate the cumulative and secondary development impacts. Buffer zones, setbacks, OSDS setbacks,
Table 4.31: CRMC’s Density Controls in the 1999 SAMP

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Developed Beyond Carrying Capacity</th>
<th>Critical Concern</th>
<th>Self-Sustaining</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>Lands developed or undeveloped at &lt;80,000 square feet</td>
<td>Lands developed or undeveloped at 120,000 square feet and have sensitive salt pond or watershed resources</td>
<td>Lands developed, undeveloped at 80,000 square feet</td>
</tr>
<tr>
<td><strong>Buffer Zone Requirements</strong></td>
<td>Coastal buffer based on RICRMP §150</td>
<td>200’</td>
<td>150’</td>
</tr>
<tr>
<td><strong>Construction Setbacks</strong></td>
<td>Coastal buffer plus 25’</td>
<td>Coastal buffer plus 25’</td>
<td>Coastal buffer plus 25’</td>
</tr>
<tr>
<td><strong>OSDS Setbacks</strong></td>
<td>Nitrogen reducing technology is required</td>
<td>225’</td>
<td>200’</td>
</tr>
<tr>
<td><strong>Nitrogen Reducing Technology Requirements</strong></td>
<td>New OSDS installations or replacement</td>
<td>Lands subdivided after adoption of SAMP that do not meet the CRMC density requirement and substandard lots of record</td>
<td>Lands subdivided after adoption of SAMP that do not meet the CRMC density requirement and substandard lots of record</td>
</tr>
</tbody>
</table>

*Source: CRMC. 1999. Rhode Island Salt Pond Region: A Special Area Management Plan (Machaug to Point Judith Ponds). Wakefield, RI: CRMC.*

and nitrogen reducing technology requirements are now linked to the three land use types while other requirements (e.g., erosion and sediment control, stormwater management, etc.) apply to activities regardless of their location [Table 4.31].

The revised SAMP continues to address nonregulatory issues such as extending sewer lines, stormwater retrofits, and upgrading sewage treatment plants. The Salt Ponds Watchers continue to provide water quality data while the Salt Ponds Coalition, a local NGO, helps educate the public about problems affecting the watershed. Habitat restoration continues to be limited by the lack of a dedicated source of funding to support these efforts. There is also an ongoing turf fight between the RIDEM, CRMC, and Save The Bay over competing habitat restoration legislation during the last three sessions of the General Assembly. However, the CRMC and other federal, state, and local agencies have been able to undertake some notable restoration efforts. One example is the Coastal America project near the Port of Galilee that restored a sizable area of wetlands as a
result of a CRMC permit stipulation on the construction of the new Jamestown Bridge. Other collaborative projects have focused on the restoration of seagrass beds in three ponds and an impacted salt marsh east of Quonochontaug Pond. More recently, the NBEP, CRMC, and Save The Bay were jointly awarded a $270,000 grant from NOAA to develop a collaborative coastal habitat restoration program and database.

**Future Prospects**

Unlike many watershed management efforts in the late 1970s and early 1980s (e.g., Section 208 plans), the SAMP has not found a dusty home on the shelves of state and local officials. Respondents were unanimous in their praise of the implementation efforts over the last 16 years. While scientific uncertainty exists, there is reason to believe that the revised SAMP offers the potential to improve environmental conditions and prevent further degradation. It is also clear that regulatory efforts alone may not be sufficient. Habitat restoration efforts targeted at degraded areas are likely to be necessary. It may also be necessary to replace existing OSDSs with denitrifying systems in areas located adjacent to degraded waters. Additional land acquisition and preservation efforts are also necessary. While past efforts have focused on preserving ecologically important lands, it may now be necessary to purchase undeveloped lots in densely developed areas to prevent additional nutrient loadings. Despite these challenges, the support for the SAMP is reason to be optimistic that these issues will continue to remain high on the agendas of state and local decisionmakers.

**Summary**

The cases help confirm previous research findings suggesting that the physical environment, configurational nature of the problems, institutional setting, situational histories, and programmatic context influence watershed planning and implementation (Leach, et al. 2000a). The watersheds vary considerably in size with the Salt Ponds the smallest and Tampa Bay the largest. The ecological systems are quite different, which gives rise to a different set of focal problems [Table 4.32]. Only Narragansett Bay was unable to find a focal problem. In some instances, the participants linked environmental problems to other issues such as flooding (Tillamook Bay) or transportation (Lake Tahoe)
Table 4.32: Characteristics of the Six Case Studies

<table>
<thead>
<tr>
<th>Watershed Characteristics</th>
<th>Inland Bays (DIBEP)</th>
<th>Narragansett Bay (NBEP)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Environment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water body</td>
<td>Inland Bays (DE)</td>
<td>Narragansett Bay (RI, MA)</td>
</tr>
<tr>
<td>Size of watershed</td>
<td>300 square miles</td>
<td>1,600 square miles</td>
</tr>
<tr>
<td>Population</td>
<td>131,000&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2,000,000 in watershed</td>
</tr>
<tr>
<td>Focal problem(s)</td>
<td>Nutrient loading</td>
<td>None: Comprehensive in scope with a diverse range of problems</td>
</tr>
<tr>
<td>Sources/causes of problem(s)</td>
<td>Poultry farms, septic systems, stormwater runoff, and sewage treatment plants</td>
<td>Diverse range of sources and causes of problems</td>
</tr>
</tbody>
</table>

| **Institutional Environment** |                     |                         |
| Jurisdictional complexity   | Low                 | High                    |
| Previous planning activity  | Several collaborative studies beginning with report to the Governor in 1969 | 27 water quality studies dating back to 1900. No collaborative watershed-based programs |

| **Planning Process** |                     |                         |
| Driving force           | State officials     | Congress                |
| Program                 | EPA’s National Estuary Program | EPA’s National Estuary Program |
| Hiring entity for staff | DNREC               | New England Interstate Water Pollution Control Authority |
| Nature of conflict      | High. Agricultural interests had problem with draft plan | High. Lot of actors had problems with the plan |
| Nature of collaboration | Medium. Mostly at the committee level, DNREC’s Inland Bays initiative, and NRCS HUA | Low. At the end of the process actors protected their turf |

| **Implementation Activities** |                     |                         |
| Implementing organization(s) | Center for the Inland Bays (CIB) | RIDEM |
| Organizational arrangement | Nonprofit Organization | Line-item program in RIDEM |
| Hiring entity for staff     | CIB                   | RIDEM                   |
| Nature of conflict          | Low                   | Low                     |
| Nature of collaboration     | Mostly focuses on restoration, public education, and research | Limited collaboration with other actors on selected projects |
| Clear goals/policies        | No/No                 | No/No                   |
| Key regulatory agencies     | DNREC; Conservation District; local governments | RIDEM; CRMC; local governments |
| Key funder of BMPs, restoration, & infrastructure | NRCS, Conservation District, Sussex County | None |

**Note:** All assessments of high, medium and low are based on comparisons among the six programs

<sup>a</sup> Measured at the county level
Table 4.32: Characteristics of the Six Case Studies (Continued)

<table>
<thead>
<tr>
<th>Watershed Characteristics</th>
<th>Salt Ponds (SAMP)</th>
<th>Lake Tahoe (TRPA)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Environment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water body</td>
<td>Salt Ponds (RI)</td>
<td>Lake Tahoe (CA, NV)</td>
</tr>
<tr>
<td>Size of watershed</td>
<td>32 square miles</td>
<td>501 square miles</td>
</tr>
<tr>
<td>Population</td>
<td>32,000</td>
<td>53,000</td>
</tr>
<tr>
<td>Focal problem(s)</td>
<td>Nutrient loading</td>
<td>Nutrients and sedimentation</td>
</tr>
<tr>
<td>Sources/causes of problem(s)</td>
<td>OSDSs, sewage treatment plants, and stormwater runoff</td>
<td>Erosion from development, stormwater runoff, and habitat destruction in the 1960s and 1970s</td>
</tr>
</tbody>
</table>

| **Institutional Environment** |                   |
| Jurisdictional complexity   | Low               | High               |
| Previous planning activity  | First watershed plan | Planning efforts date back to 1960s and resulted in federal-state compact in 1969. Planning has continued |

| Planning Process            |                   |
| Driving force              | Citizens, local officials | Citizens, NGOs, state officials |
| Program                    | NOAA – CZMA         | Federal-State compact |
| Hiring entity for staff     | CRC; CRMC           | TRPA |
| Nature of conflict         | Low                 | High. Environmental, property rights, and development interests |
| Nature of collaboration    | Medium. Mostly CRMC and local governments. Little collaboration with RIDEM | Low. A consensus building process used to identify tradeoffs that formed the basis of new regulations |

| **Implementation Activities** |                   |
| Implementing organization(s) | CRMC and local government | TRPA |
| Organizational arrangement  | Partnership based on shared regulations (i.e., zoning) | Regional Planning Council with politically appointed representatives |
| Hiring entity for staff      | CRMC                | TRPA |
| Nature of conflict           | Low                 | Medium. Same as during planning but conflict has declined |
| Nature of collaboration      | Low. Mostly through informal permit review process | MOUs devolve permitting to locals; $900 million EIP |
| Clear goals/policies        | No/Yes. Zoning standards and regulations | Yes/Yes. Environmental thresholds and regulations |
| Key regulatory agencies      | CRMC, RIDEM, Local government | TRPA, Lahontan Regional Water Quality Board |
| Key funder of BMPs, restoration, & infrastructure | None | federal, state, local governments; USFS, California Tahoe Conservancy |

**Note:** All assessments of high, medium and low are based on comparisons among the six programs
Table 4.32: Characteristics of the Six Case Studies (Continued)

<table>
<thead>
<tr>
<th>Watershed Characteristics</th>
<th>Tampa Bay (TBEP)</th>
<th>Tillamook Bay (TBNEP)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Environment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water body</td>
<td>Tampa Bay (FL)</td>
<td>Tillamook Bay (OR)</td>
</tr>
<tr>
<td>Size of watershed</td>
<td>2,300 square miles</td>
<td>570 square miles</td>
</tr>
<tr>
<td>Population</td>
<td>2,000,000</td>
<td>17,000</td>
</tr>
<tr>
<td>Focal problem(s)</td>
<td>Nutrient loading leads to loss of seagrass</td>
<td>Closed shellfish beds from bacterial contamination, sedimentation, &amp; salmon listed as endangered species</td>
</tr>
<tr>
<td><strong>Sources/causes of problem(s)</strong></td>
<td>Stormwater runoff, sewage treatment plants, phosphate mining, and fertilizer production</td>
<td>Dairy farms, OSDSs, stormwater runoff, and forestry activities</td>
</tr>
<tr>
<td><strong>Institutional Environment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jurisdictional complexity</td>
<td>Medium – High</td>
<td>Low – Medium</td>
</tr>
<tr>
<td>Previous planning activity</td>
<td>Activity dates back to the late 1960s. Two watershed plans developed during the 1980s.</td>
<td>Activity dates back to the late 1970s. Several efforts in 1980s. RCWP runs from 1981 – 1996</td>
</tr>
<tr>
<td><strong>Planning Process</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving force Program</td>
<td>TBRPC, ABM, SWFWMD, FDEP</td>
<td>DEQ, ODF, Tillamook County</td>
</tr>
<tr>
<td>Hiring entity for staff</td>
<td>EPA’s National Estuary Program</td>
<td>EPA’s National Estuary Program</td>
</tr>
<tr>
<td>Organization(s)</td>
<td>TBRPC</td>
<td>Oregon State University</td>
</tr>
<tr>
<td>Nature of conflict</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Nature of collaboration</td>
<td>High. Lot of activity focused on research, environmental monitoring, and public education.</td>
<td>Low. Limited by staff turnover. Mostly limited to research and public education</td>
</tr>
<tr>
<td><strong>Implementation Activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementing organization(s)</td>
<td>Tampa Bay Estuary Program (TBEP)</td>
<td>Tillamook County Performance Partnership (TCPP)</td>
</tr>
<tr>
<td>Organizational arrangement</td>
<td>Independent alliance of government entities</td>
<td>Intergovernmental partnership</td>
</tr>
<tr>
<td>Hiring entity for staff</td>
<td>TBEP</td>
<td>Tillamook County</td>
</tr>
<tr>
<td>Nature of conflict</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Nature of collaboration</td>
<td>Habitat restoration, stormwater, public education, environmental monitoring</td>
<td>Habitat restoration projects and installing BMPs</td>
</tr>
<tr>
<td>Clear goals/policies</td>
<td>Yes/Yes. Goals and binding commitments for nutrient reductions</td>
<td>Yes/Yes. CCMP and TCPP have general goals but specific targets</td>
</tr>
<tr>
<td>Key regulatory agencies</td>
<td>FDEP, EPC, SWFWMD, and local governments</td>
<td>DEQ, ODA, and local government</td>
</tr>
<tr>
<td>Key funder of BMPs, restoration, &amp; infrastructure</td>
<td>SWFWMD and local governments</td>
<td>ODF, NRCS, GWEB, Tillamook County</td>
</tr>
</tbody>
</table>

**Note:** All assessments of high, medium and low are based on comparisons among the six programs.
in ways that built support and cooperation among governmental and nongovernmental organizations.

The different physical environments gave rise to different institutional settings. The level and nature of federal involvement varied across the cases. With the exception of the Inland Bays, there tends to be a great deal of overlap among state and local programs. Lake Tahoe involves two sets of state agencies. Narragansett Bay and the Salt Ponds have two overlapping state environmental agencies. The DEQ, ODA, ODF, and OWEB all have watershed management efforts in Tillamook Bay. Tampa Bay has the FDEP and SWFWMD, both of which have programs addressing water quality problems.

The watersheds also have different situational histories and there was often a long history of previous watershed management efforts. The Inland Bays, Lake Tahoe, and Tampa Bay planning efforts date back to the 1960s while the first efforts in the Salt Ponds and Tillamook Bay began in the late-1970s. The cyclic and evolutionary nature of the planning efforts allowed the organizations to redefine problems, set priorities, develop new institutions, and improve problem-solving capacity. More importantly, the interactions among governmental and nongovernmental organizations provided an opportunity for the participants to build interpersonal and institutional relationships while learning to work together. In some cases, the participants were even able to overcome past conflicts to find areas to work together in a collaborative fashion.

**Using Collaboration as an Implementation Strategy**

Given the different contextual factors, it was not surprising to find different patterns of collaborative implementation activities in each watershed. Contextual factors helped determine the size of the interorganizational system. For example, small watersheds such as the Salt Ponds and the Inland Bays had smaller interorganizational systems than large watersheds such as Narragansett Bay and Tampa Bay. The contextual factors also created incentives or constraints that help determine whether organizations could utilize the opportunities for collaboration present in each watershed’s interorganizational system. For example, there are clear differences in state and local capacity for addressing environmental problems. There is virtually no capacity at the municipal or county level for addressing environmental problems in the Inland Bays.
Table 4.33: Selected Implementation Accomplishments and Future Challenges

<table>
<thead>
<tr>
<th>Case Study</th>
<th>Major Accomplishments</th>
<th>Future Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narragansett Bay</td>
<td>Greenwich bay initiative</td>
<td>Collection of projects not a program</td>
</tr>
<tr>
<td></td>
<td>“No-discharge zone” designation</td>
<td>No state implementation funding</td>
</tr>
<tr>
<td></td>
<td>Improved planning capacity in RIDEM</td>
<td>CCMP is no longer used</td>
</tr>
<tr>
<td>Delaware</td>
<td>HUA and IBRI efforts</td>
<td>CIB is still evolving</td>
</tr>
<tr>
<td>Inland Bays</td>
<td>$158 million in sewer infrastructure</td>
<td>CCMP is decreasing usefulness</td>
</tr>
<tr>
<td></td>
<td>$13 million in land acquisition</td>
<td>Nutrients are still a major problem</td>
</tr>
<tr>
<td></td>
<td>James Farm project</td>
<td>Development is still increasing</td>
</tr>
<tr>
<td></td>
<td>Water Use Plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TMDL and tributary strategies</td>
<td></td>
</tr>
<tr>
<td>Tampa Bay</td>
<td>NMC/Nutrient reductions</td>
<td>Lack of linkage with land use planning</td>
</tr>
<tr>
<td></td>
<td>Habitat restoration</td>
<td>Bring in other industry and local</td>
</tr>
<tr>
<td></td>
<td>Coordinated monitoring programs</td>
<td>government partners</td>
</tr>
<tr>
<td></td>
<td>Public education programs</td>
<td>Address isolated subbasin problems</td>
</tr>
<tr>
<td>Tillamook Bay</td>
<td>Funding for BMPs in state forests</td>
<td>TCPP is still evolving</td>
</tr>
<tr>
<td></td>
<td>TCWRC</td>
<td>Limited local financial resources</td>
</tr>
<tr>
<td>Lake Tahoe</td>
<td>Growth controls</td>
<td>Unclear if EIP funding will be obtained or</td>
</tr>
<tr>
<td></td>
<td>Devolution of permitting</td>
<td>if it will stop declining lake clarity</td>
</tr>
<tr>
<td></td>
<td>Joint lobbying agenda</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$900 million EIP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Presidential summit</td>
<td></td>
</tr>
<tr>
<td>Salt Ponds</td>
<td>Growth controls</td>
<td>Lack of program to do habitat</td>
</tr>
<tr>
<td></td>
<td>Balanced tradeoffs among issues</td>
<td>restoration</td>
</tr>
<tr>
<td></td>
<td>Local environmental ordinances</td>
<td>Lack of collaboration with RIDEM</td>
</tr>
<tr>
<td></td>
<td>No development on barrier beaches</td>
<td></td>
</tr>
</tbody>
</table>

Conversely, municipal and county governments in Tampa Bay have well-developed programs and the EPC implements programs delegated by the EPA and FDEP. While the lack of capacity limited implementation efforts (individual or collaborative) in the Inland Bays, the high capacity facilitated collaborative efforts in Tampa Bay. The impact that these and other factors have on creating opportunities for collaboration or using collaboration as an implementation strategy is discussed in greater detail in Chapter Six.

The preceding discussion also suggests that collaboration was an important implementation strategy. Almost all of the major accomplishments and future challenges noted in this chapter involved some form of collaboration [Table 4.33]. It was also clear that collaboration was not limited to a particular set of policy instruments. Instead, the
### Table 4.34: Use of Different Policy Instruments

<table>
<thead>
<tr>
<th></th>
<th>DIBEP</th>
<th>NBEP</th>
<th>SAMP</th>
<th>TBEP</th>
<th>TBNEP</th>
<th>TRPA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td></td>
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<tr>
<td>General public</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Homeowners</td>
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<tr>
<td>Farmers</td>
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<tr>
<td>Industry</td>
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<tr>
<td>Decisionmakers</td>
<td></td>
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<tr>
<td><strong>Best Management Practices</strong></td>
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<tr>
<td>Agriculture</td>
<td>X</td>
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<tr>
<td>Forestry</td>
<td></td>
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<tr>
<td>Homeowners</td>
<td></td>
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<tr>
<td><strong>Habitat Restoration/Protection</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Land acquisition</td>
<td>X(^b)</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Restoration projects</td>
<td>X(^b)</td>
<td>X(^b)</td>
<td>X(^b)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Planning/capacity building</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Planning</strong></td>
<td></td>
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<tr>
<td>Specific issue(s)/ad hoc</td>
<td></td>
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</tr>
<tr>
<td>Sub-geographic areas</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Land use planning</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Water use plans</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Infrastructure Investment</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Installing sewers</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stormwater retrofits</td>
<td></td>
<td></td>
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<tr>
<td><strong>Regulation</strong></td>
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<tr>
<td>Growth controls</td>
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<tr>
<td>Stormwater and erosion control</td>
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<tr>
<td>Agriculture</td>
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<tr>
<td>Forestry</td>
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<tr>
<td><strong>Financial Incentives</strong></td>
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<tr>
<td>Tax credits</td>
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<tr>
<td>Financial incentives for BMPs</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Scientific Research</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

X = undertaken; X\(^a\) = Planned; X\(^b\) = Limited to individual projects rather than a systematic effort linked to clear goals, targets, or priorities.

Cases revealed a wide range of regulatory and nonregulatory collaborative activities that improved environmental conditions directly (e.g., restoration projects, or infrastructure investment) or indirectly (e.g., public education, changing decision making, conducting new research) [Table 4.34]. Frequent activities included investments in environmental...
infrastructure by constructing sewers to remove OSDSs (e.g., Inland Bays, Lake Tahoe, and Salt Ponds), installing stormwater BMPs (e.g., Tampa Bay), restoring habitat (e.g., Inland Bays, Lake Tahoe, Tampa Bay, and Tillamook Bay), and installing BMPs to address other problems (e.g., Inland Bays, Lake Tahoe, and Tillamook Bay). There were also examples of collaborative scientific and technical studies as well as examples where various organizations worked together to educate homeowners (e.g., Tampa Bay) or farmers (e.g., Inland Bays and Tillamook Bay). Some form of collaborative planning was also used as an implementation strategy in each watershed. Chapter Five examines the various ways that collaboration was used as an implementation strategy in greater detail while the public value generated by these activities is discussed in Chapter Seven.

The scope of collaborative activity also varied within each watershed. It is somewhat problematic to compare the level of collaborative activity within each watershed given each watershed’s unique set of contextual factors, which give rise to different interorganizational systems with different opportunities for collaboration. The capacity and resources needed to become engaged in collaborative activities also varied within the six interorganizational systems. Nevertheless, the scope of collaborative activity within each watershed did vary. At one end of the continuum would be Lake Tahoe (e.g., the EIP) and Tampa Bay (e.g., habitat restoration and nutrient reduction efforts) were numerous collaborative activities were observed designed to systematically addressed specific environmental problems or achieve specific goals. At the other end of the continuum is the Inland Bays, Narragansett Bay, and the Salt Ponds where fewer collaborative implementation efforts were observed and these activities tended to consist of ad hoc projects or attempts to improve ongoing decision-making processes. Tillamook Bay falls somewhere in between the two ends of the continuum. In some portions of the watershed (e.g., the Tillamook State Forest), collaboration is being used to systematically address specific problems. It is less clear if the resources will be available to systematically use collaboration to address other watershed problems. Chapter Six examines the factors that contribute to the different patterns of collaborative activity observed in each watershed. Chapter Seven identifies the common implementation problems that limited the use of collaboration as an implementation strategy.
Endnotes

1 For more information on the history and development of the NEP see: Imperial and Hennessey 1996; Imperial, et al. 1993; and, Imperial, et al. 1992.

2 For examples of these requirements see: EPA 1993a, 1992c, 1992d, 1990c, 1989.

3 This was common for many Tier I programs such as the Albermarle-Pamlico Estuary Study (APES), and the Long Island Sound Study (LISS) because they modeled their efforts on the Chesapeake Bay Program (CBP) and placed heavy emphasis on scientific research (Korfmacher 1998; Colt 1994; Hennessey 1994; Imperial, et al. 1993; and, Imperial, et al. 1992).

4 Delaware Inland Bay’s CCMP also lacks true goals but has specific high priority tasks. However, the CCMP avoids the type of detailed recommendations found in the Narragansett Bay CCMP.

5 There were several reasons this occurred: 1) at this point in time, it was EPA policy that Section 320 funds should not be used to implement the CCMP and this changed with a change in administrations; 2) it allowed the conflict to subside so that implementation could get off on a new start; and, 3) there was some inevitable period of transition as the hiring agents changed.

6 The implementation committee also does not function in the manner prescribed in the CCMP, which refers to this program as the Narragansett Bay Planning Section. Interestingly, the vision recommended in the CCMP is more similar to the relationship that exists between staff and the advisory committees in the three other estuary programs that rely on collaborative organizations to implement their CCMPs.

7 This prohibits the discharge of sewage waste from all vessels within state waters opening up some areas within the bay to shellfishing. While the overall contribution of sewage from vessels is small when compared to other NPSs, it can be a significant problem in smaller, poorly-flushed embayments. Moreover, in addition to these environmental benefits, the designation served as an important symbolic victory for a state that values its marine heritage and relies heavily on tourism revenue.

8 The Bay Committee consists of the RIDEM’s Director, Associate Directors, and other high-level managers within the agency. Its purpose is to better facilitate the communication and status of bay related activities and to find opportunities for joint project development and planning as well as opportunities for the NBEP staff to participate in policy development within the agency. The effort was too new to make any judgements about its effectiveness (RIDEM 1999, 1-1 – 1-2).

9 These tables summarize the progress towards more than 50 strategies contained in the CCMP’s action plans. The “full/ongoing” category means that the activities are currently under way or have been completed. The “substantive” category means that substantive progress has been made. The “moderate” category means that there is good progress towards while the “none/unknown” category indicates that implementation may or may not be occurring (CIB 1999).


11 It was originally called the Tampa Bay National Estuary Program and was subsequently renamed the Tampa Bay Estuary Program with the Interlocal Agreement. Dropping “national” was intentional and symbolized that this was a local partnership. To simplify the discussion is referred to by its new name.

12 Projects included educational programs at the Florida Aquarium, developing pollution prevention plans to reduce stormwater runoff, improved landscaping, mangrove restoration and seagrass protection projects, and a restoration video produced by high school students (Nonpoint Source News-Notes 1998, 13).
13 Rather than sign the agreement, the EPA and the COE signed MOUs as adjoinders to the IA. The COE was willing to sign the IA, however, the EPA’s legal counsel resisted. Many of the respondents were bewildered by this move and did not understand the EPA’s logic. Rather than embarrass the EPA by pushing the issue, the two federal “partners” signed MOUs.


18 For a discussion of interstate compacts see Hardy (1982).

19 These include: Air Quality Monitoring Working Group; Airshed Model Working Group; Biological Advisory Group; Clean Cities Coalition; Communications Working Group; Erosion Control Technical Advisory Committee; Forest Health Consensus Group; Lake Tahoe Environmental Education Coalition; Lake Tahoe Interagency Monitoring Program Subcommittee; Lake Tahoe Sewer Agencies; Lake Tahoe Source Water Group; Lake Tahoe Transportation and Water Quality Coalition; Large Project Water Quality BMP Maintenance Group; Motorized Watercraft Technical Advisory Group; NDOT Master Plan Partnering Process; Nevada Bond Act Technical Advisory Committee; Nevada Ecosystem Advisory Team; Performance Review Committee; Prescribed Burning Technical Advisory Committee; Recreation Advisory Group; Research and Monitoring Subcommittee; Revegetation Technical Advisory Committee; Sensitive Environment Zone Technical Advisory Group; Shorezone Review Committee; South Tahoe Public Utility District Groundwater Management Plan Stakeholder Advisory Group; Tahoe Basin Interagency Road Maintenance and Operations Committee; Tahoe Citizens Environmental Action Network; Tahoe Coalition of Recreation Providers; Tahoe Transportation Commission and Tahoe Transportation District; Transportation Conformity Task Force; Transportation Technical Advisory Committee; Upper Truckee River Focused Watershed Group; Visibility Working Group; Water Quality Working Group.

20 Credit for the formation of the Tahoe Transportation Coalition was given to the directors of The Gaming Alliance and The League to Save Lake Tahoe. The League’s willingness to negotiate and form a partnership with opposing interests was a dramatic change. The Gaming Alliance’s director had been a local newspaper columnist and one of the first directors of the Tahoe-Sierra Preservation Council. His prominent voice in the community brought an enormous amount of social capital to the Coalition.

21 The willingness of the business community to collaborate with environmental groups and the TRPA was not the result of a sudden growth of environmental concern. Instead, the shift occurred when business leaders began to recognize how closely their interests were tied to a healthy environment. By the late 1980s, the tourist industry began a noticeable decline, the aging infrastructure began to show affecting its reputation as a tourist destination (Design Workshop 1995; and, Fletcher, et al. 1993).

22 The group or agency responsible to initiating the Presidential Summit was not clear. Various respondents representing different organizations appeared to be vying for credit.
One informant noted that property owners in the Tahoe Keys Condominium complex are beginning to debate the CTC’s large-scale restoration of the Upper Truckee River. Current debates over the shorezone ordinances also illustrate the increasing levels of controversy as projects near implementation.


The concept of cumulative impacts has been a part of our national environmental policy since 1978 when the Council on Environmental Quality mandated federal agencies to identify the cumulative impacts of federal actions (40 C.F.R. 1508.9 et. seq. 1978). The 1990 CZARA created a Coastal Zone Enhancement Program to encourage states to strengthen their CZM programs in the area of cumulative and secondary of development impacts. Cumulative impacts are defined as the total effect on the environment of development activities and/or natural events taking place within a geographic area over a particular period. But cumulative impacts are difficult to measure and evaluate (Vestal and Rieser 1995).


Federal agency activities are subject to the SAMP because it is part of the state’s federally approved CZM program, it approval by NOAA also required the preparation of an Environmental Impact Statement (EIS) had to be developed pursuant to the National Environmental Policy Act (NEPA) (NOAA 1985).

Some observers argue that the lack of a centralized permit review process and periodic conflicts between the CRMC and RIDEM is a major weaknesses with the SAMP’s implementation (Ernst 1995; Olsen and Lee 1993, 1991).
CHAPTER FIVE
COLLABORATION AS AN IMPLEMENTATION STRATEGY

Given the complex nature of problems such as NPS and habitat loss and degradation, it should not be surprising that collaboration emerged as a dominant implementation strategy. As one FDEP official observed: “To me, the power of the watershed approach is in the collaboration.” Many implementation activities were the direct result of collaboration. Others were undertaken by a single organization but were influenced or constrained by collaborative activities.

One of the obstacles to theory building is that there are many different definitions of collaboration, which often reflect competing theoretical perspectives and normative views of this interactive process (Wood and Gray 1991). Some researchers ignore the definitional question by focusing on a specific type of collaborative activity. Others recognize that there are many types of collaborative activities (e.g., Wondolleck and Yaffee 2000; Selin and Chavez 1995; Gray 1989).

Following Phillips and others (2000), my theoretical strategy was to define collaboration broadly in order to capture the full range of activities. Bardach (1998, 8), building on the work of Moore (1996), defines collaboration as any joint activity by two or more organizations intended to increase public value by working together rather than separately.¹ This interactive process involves an autonomous group of actors who use shared rules, norms, or organizational structures to act or make collective decisions (Gray and Wood 1991, 146). The participants are autonomous in that they retain their independent decision-making powers even when they agree to abide by shared rules within the collaborative (Wood and Gray 1991). Power and politics are therefore critical because the participants remain relatively autonomous and must be convinced to act because they cannot be forced to do so (Phillips, et al. 2000).
Watershed Management as a Governance Challenge

That collaboration emerged as a dominant implementation strategy was not surprising. The study focused on a policy domain, watershed management, where the latent opportunities for creating value through collaboration are thought to be high (Bardach 1998, 53). The move to holistically address environmental problems rather than functioning along traditional programmatic boundaries requires managers to look beyond their particular program and acknowledge the interrelationships among problems and the institutions that address them, thereby recognizing that there is an institutional ecosystem corresponding to the physical one (Bardach 1998, 31).

Thus, watershed management is as much a challenge of governance as it is a question of science and designing effective policies. As one respondent in Tillamook Bay put it: “So much of what this work comes down to is less technical, less scientific than we make it out to be. It’s more practical, political, and social and it’s local.” While scientific research often helps define problems or sets priorities, ultimately these activities are the product of the participants’ values, ideologies, constituencies, turf, power, and ego (Bardach 1998, 199).

Watersheds and their problems also span political, geographic, and ideological boundaries. Since one organization rarely has the power or authority to compel others to act, improving watershed governance typically requires various governmental and nongovernmental entities “managing” a watershed to work together. This can cause organizations to redefine their missions and roles, change decision-making, and to look for opportunities for joint action that improve institutional performance or environmental conditions (Bardach 1998, 202). In fact, collaboration may be the only way for watershed managers to address some complex environmental problems.

There were other reasons to expect that collaboration might be an important implementation strategy. Programs such as the NEP promote collaborative approaches to addressing watershed problems. There were also demands by the governor, legislatures, or other public officials for a higher level of programmatic performance (Bardach 1998, 195). In Tillamook Bay, the designation of certain salmonids pursuant to the endangered species act (ESA) combined with directives by the governor to prepare bi-monthly
reports documenting implementation actions became a strong motivator for seeking out opportunities for collaboration.

Other respondents reported that collaboration was the product of increasing demands to do more with similar or a reduced resources (Bardach 1998, 195; and, Wondolleck and Yaffee 2000). Managers in Tampa Bay reported that they were increasingly being asked to do more with fewer resources and to produce quantifiable results. In this instance, respondents noted that collaboration emerged as an effective strategy to cope with pressures to improve the performance of baseline programs or expand implementation in the face of limited resources (Wondolleck and Yaffee 2000).

The shift towards collaboration as an implementation strategy is also a natural by-product of the changing nature of federalism in the United States. The number of environmental and natural resource management programs has proliferated at the federal, state, and local level. The capacity of state and local governments to address resource management problems has increased dramatically. The corresponding fragmentation of interests, policies, and power located at different levels of government creates opportunities for collaboration but also places organizations in conflict with one another. The shift to managing along watershed boundaries rather than traditional political boundaries also raises questions about whether federal, state, or local interests should drive watershed management. Collaborative processes are one way to address these conflicts because they allow competing interests to craft shared priorities or targets as illustrated by the efforts in Tillamook Bay [See Tables 4.18 and 4.19 as examples].

The corresponding shift towards increasingly complex problems also complicates watershed management efforts by making decision making increasingly reliant on technical, scientific, and time and place information. In response, many interest groups developed their own data and employ their own policy analysts to challenge agency decisions. The resulting democratization of information and technical expertise has made it easier for interest groups to challenge and block agency decisions (Wondolleck and Yaffee 2000, 25). For example, the Delmarva Poultry Industry (DPI) devoted $1 million to conduct its own studies of water quality problems in the region and often challenged the results of technical studies conducted by university researchers or other the CIB. In other cases, interest groups utilized legal processes or their political power to challenge or
block agency decisions. For example, agricultural groups were effective in blocking attempts to regulate poultry operations in Delaware during much of the 1990s.

The resulting conflicts sometimes produced a state of impasse where it was difficult to address watershed problems. Nowhere was this more evident than in Lake Tahoe where competing interest groups and legal challenges made it difficult for the TRPA and other organizations to manage the watershed. In this instance, collaboration emerged as the only viable strategy for resolving the state of impasse. While in the late 1980s and early 1990s delay was viewed as a benefit to one side or the other, there were real costs associated with legal challenges and the time and energy spent on addressing issues with little tangible results. As a result, the actors gradually began searching for ways to proceed while respecting others’ policy differences.

Collaboration Takes Many Forms

Since there are many reasons to establish collaborative relationships, collaboration takes many forms. Some of the observed collaborative activities were temporary, project-based, or ad hoc while others were long-standing or permanent functional or production networks that are institutionalized (Mandell 1990). Different individuals in an organization were involved in different activities, some of which were interrelated (e.g., Agranoff and McGuire 1998; and, Bressers, et al. 1995a). For example, it was common to find that line staff worked with their counterparts on individual projects. Mid-level administrators negotiated policies while high-level administrators represented their organizations in formal processes. Some activities were extensions of traditional agency behavior while others were departures (Wondolleck and Yaffee 2000, 13). These activities were then guided by formal agreements or informal social norms.

Collaborative activities often involved a mix of governmental and nongovernmental organizations. Private firms could also be active participants. For example, several firms are members of Tampa Bay’s Nutrient Management Consortium [Table 4.10] while construction firms donated equipment and labor to the restoration efforts at James Farm in the Inland Bays. Sometimes state or local officials played a leadership role. In other instances, NGOs such as the Tahoe Transportation and Water Quality Coalition filled this role.
The cases also reveal that collaborative activities can be interrelated in complex ways. For example, the efforts to develop the Rhode Island Marina Best Management Practices Guidance Manual involved a partnership between the CRMC, RIDEM’s Section 319 program, and the CRC while the NBEP worked with the CRC and RIMTA to develop a pilot BMP project at a major marina located in Greenwich Bay. The funding was then augmented with a Section 319 grant to increase the level of BMP implementation by providing partial grants to five marinas. The RIDEM also worked with RIMTA to identify marina owners willing to install pumpout facilities around the bay using other grant funds (RIDEM 1997, 13).

It was also clear that collaborative activities occurred at different levels, which may or may not be related with one another. For example, the participants in Tampa Bay created a new organization whereby membership required adopting a shared set of requirements for nutrient reductions and habitat restoration, which in turn influenced individual and collaborative implementation activities (e.g., habitat restoration projects).

A Framework for Classifying Collaborative Activities

The remainder of this chapter examines how collaboration was used as an implementation strategy. This analysis employs a framework that is loosely-based upon the three levels of analysis proposed by Kiser and Ostrom (1982). The framework organizes collaborative activities around three levels of action: operational; policy making; and institutional. The activities at each level are structured by a series of formal or informal rules, which in many cases evolved somewhat unconsciously as a result of repeated interactions. Within each level, I grouped the activities by different functions or conceptual differences. These categorizations are by no means exhaustive of the different ways that collaboration can be used to implement policy and a single collaborative activity may cut across these categories. However, the framework provides a way of examining an interorganizational system’s collaborative capacity by illustrating the different types of activities and the ways that they can be interrelated.

The purpose of this framework is to understand the interrelationships among collaborative activities. It also draws attention to the fact that activities at one level may influence, constrain, or add value to activities occurring at other levels. Activities may
also be embedded or “nested” within one another. In this way, the framework helps researchers and practitioners understand the various opportunities for collaboration that exist. This is important because it is often difficult to observe the unutilized opportunities for collaboration. Yet, it is equally important to understand why practitioners forgo these opportunities as it is to learn why they utilize other aspects of an interorganizational system’s collaborative capacity.

The framework deliberately tries to keep the linkages and feedback loops simple even though, as the examples demonstrate, they are often quite complicated. The number of levels is also somewhat arbitrary in that there are rules that affect activities at the institutional level. It is also possible that activities within each level may have their own set of interrelationships and linkages. It is also quite possible that rules and activities will function at different levels for different actors. Those employing the framework should recognize that this complexity exists even though it is presented without the additional levels and linkages because they did not add much in the way of additional explanatory power and make the framework more cumbersome.

**Operational Level**

The world of action is the operational level. Organizations are free to take action without prior agreement of other actors (Kiser and Ostrom 1982, 206). Implementation activities vary widely and largely involve government service delivery, which in the area of watershed policy typically involves issuing grants, processing permits, installing best management practices (BMPs), acquiring land, restoring habitat, educating the public or decisionmakers, and collecting data on environmental conditions [Table 5.1]. These actions can improve environmental conditions directly (e.g., installing sewers to remove OSDSs) or indirectly (e.g., educating decisionmakers or the public).

While free to act unilaterally, the cases reveal that organizations often choose to work with others in collaborative fashion to accomplish these tasks. Organizations enter into these relationships for various reasons. They may be recommended or required as a result of collaborative activities at the policy-making or institutional level. It may also be the case that it would be difficult or impossible to accomplish the tasks without collaborating or that more value is created by working together rather than independently.
Table 5.1: Collaborative Activities at the Operational Level

<table>
<thead>
<tr>
<th>Type of Collaboration</th>
<th>DIBEP</th>
<th>NBEP</th>
<th>SAMP</th>
<th>TBEP</th>
<th>TBNEP</th>
<th>TRPA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Improving Environmental Conditions</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>• Habitat restoration projects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>• Land acquisition</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>• Installing urban BMPs</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>• Installing agricultural BMPs</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>• Installing forestry BMPs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>• Installing sewers to remove OSDSs</td>
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<td>X</td>
<td>X</td>
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<td>X</td>
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<td>• Relying on another organization’s technical review</td>
<td></td>
<td></td>
<td></td>
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<td>• Standardizing information for permit applications</td>
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<td>• Public education for resource users</td>
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<td>• One organization helping enforce another’s regulations</td>
<td>X</td>
<td>X</td>
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X = undertaken; Xa = Planned;

**Improving Environmental Conditions**

The operational level is the only level where actions lead to direct improvements in environmental conditions (Kiser and Ostrom 1982, 209). Many of these activities involve activities that directly protect or restore environmental conditions such as habitat restoration, land acquisition, the installation of BMPs or other projects designed to improve environmental conditions. In other cases, efforts to improve institutional performance such as collaborative permitting led to indirect improvements in environmental conditions.
**Restoration Projects**

One of the most common types of collaboration involved projects designed to restore habitat. Restoration projects often involved different organizations providing the funding or land, technical expertise, engineering or design work, construction, maintenance, and management of the completed project. If volunteers were used, another organization may recruit, organize, and manage the volunteers.

An excellent example of such a project was the James Farm project in the Inland Bays. James Farm is a 150-acre tract donated to Sussex County that abuts a 475-acre parcel purchased by the state. The land was donated to the county with the provision that it be used for preservation and education purposes. In 1997, the CIB leased the land from Sussex County for five years at $1 per year after it developed a plan to develop and manage the site. In 1999, the CIB began making improvements to the property and secured donations of materials, equipment, and labor from local businesses to clear and mark trails, construct walkways, build viewing platforms, and create a parking area. The CIB also organized a tree-planting day where more than 100 volunteers helped federal, state, and local officials plant 5,000 trees and shrubs to begin reforesting the site. Volunteers are also helping to maintain the site.

Similar efforts focused on restoring aquatic habitat. The Inland Bays, Narragansett Bay, and Tampa Bay implemented projects that restored submerged aquatic vegetation (SAV), with varying degrees of success. Tillamook Bay replaced tidal gates to improve fish passages, reduce flooding, and restore salmonid habitat. In some cases, habitat restoration was linked to other issues. The Park Avenue Development project in Lake Tahoe linked economic development needs with those of habitat restoration. In Rhode Island, the CRMC linked approval for the new Jamestown Bridge to a restoration project in the Salt Ponds.

**Land Acquisition**

Coordinating land acquisition programs was another way to protect sensitive habitat. In Lake Tahoe, the TRPA’s individual parcel evaluation system (IPES) resulted in a scoring of the development potential of each privately owned parcel in the
watershed. This allowed the USFS and the California Tahoe Conservancy (CTC) to work with the TRPA and local governments to identify appropriate sites for land acquisition with implementation funding provided by the Santini-Burton Act (P.L. 96-586). The CTC acquired more than 5,450 undeveloped and environmentally sensitive private parcels covering more than 6,000 acres in California. There are similar examples of collaboration between Florida’s various land acquisition programs.

There were also examples where informal relationships enhanced land acquisition efforts. For example, while the CIB has no formally identified land acquisition priorities, DNREC made acquisitions in the Inland Bays a priority and developed internal policies to guide state acquisition programs. The DNREC also works with groups such as the Nature Conservancy to coordinate and facilitate their acquisition efforts.

**Installing BMPs and Other Environmental Improvements**

Another common collaborative activity involved efforts to install best management practices (BMPs) or other types of environmental infrastructure. It was not uncommon for these efforts to involve an organization supplying funding for BMPs while others provided technical assistance, encouraged landowner participation through educational efforts, and others helped install them. In Lake Tahoe, the TRPA works with homeowners, local governments, and other state agencies to install BMPs by providing education, technical assistance, and low interest loans (e.g., BMP Retrofit Program). The USFS also administers an Erosion Control Grants Program to provide financial assistance to local governments for water quality improvements. The $900 million EIP relies heavily on this approach, containing more than 1,018 regulatory programs, scientific research, and restoration projects that collectively involve 35 different organizations. There were also numerous examples of projects designed to reduce nutrient loadings from stormwater in Tampa Bay.

There were also examples of efforts to address point source problems. For example, DNREC and Sussex County spent several years reaching agreement on plans to remove a point source discharge at Delaware Seashore State Park adjacent to the Indian River Inlet. The DNREC agreed to pay Sussex County a one-time fee of $300,000 and
$72,314 annually to ship the waste to the South Coastal sewage treatment plant. The DNREC will also have to pay as much as $500,000 to build a pump-station.

There were examples of collaborative activities designed to install sewers to remove OSDSs or to work with land owners to upgrade failing OSDSs. In the Inland Bays, various sewer projects will remove more than 14,000 OSDSs by 2001 (DNREC 2000; and, CIB 1999, 1998). The Greenwich Bay Initiative (GBI) in Narragansett Bay is another example of an effort to expand sewers and upgrade failing OSDSs.

Narragansett Bay reveals how collaboration can address NPS problems from recreational boating. The NBEP’s efforts to obtain a no discharge zone designation required working with other RIDEM programs to develop a Marine Pump Out Siting Plan. The RIDEM then worked with RIMTA to identify marina owners willing to install pumpout facilities and used grant money to construct them. In a complementary effort, the CRMC worked with RIDEM, NBEP, and RIMTA to develop regulations requiring the installation of pumpout facilities to create an incentive for marina’s to participate in the RIDEM’s program. It also ensured that future growth in marina facilities would not violate the requirements of a for a no-discharge zone designation.

There were examples of collaborative efforts to address NPS problems from forestry and agriculture. Lake Tahoe and Tillamook Bay undertook collaborative efforts to install BMPs, upgrade forest roads, and replace culverts to address erosion problems and restore habitat on forest lands. In terms of agriculture, the Inland Bays and Tillamook Bay conducted demonstration projects, installed BMPs, and conducted other activities to address NPS problems.

Collaborative efforts often linked environmental improvements to actions taken to address other policy problems. For example, Lake Tahoe and the Salt Ponds both placed varying emphasis on installing BMPs when upgrading transportation infrastructure. For example, in 1995 the TRPA rejected an application by the Nevada Department of Transportation (NDOT) to repair a section of highway by merely repaving it because the TRPA wanted stormwater improvements. The NDOT’s response was that funding was unavailable for such an extensive project. The TRPA offered to help acquire the funds for the stormwater retrofits, assisted the NDOT in passing a $20 million bond, and obtained additional federal funds to support the project. Because it was such a novel
project, the NDOT received a national award for the project. The Park Avenue Development Project in Lake Tahoe is another example that successfully linked economic development to environmental improvements while other redevelopment projects expanded affordable housing while restoring habitat.

**Collaborative Permitting**

Collaboration also improved permitting. The common way this occurred was by having one organization implement another’s permit requirements. One of several examples include Delaware’s erosion and sediment control and stormwater management regulations, which are implemented by the Sussex Conservation District (SCD) with the exception of transportation projects where DelDOT is the delegated authority. The DNREC oversees and audits these activities and provides other technical assistance and support (e.g., training programs). In Tampa Bay, the FDEP’s environmental resource permit program (ERPP) is implemented jointly with the five WMDs. The arrangement provides the WMDs with the flexibility to make adjustments to the FDEP’s design criteria that reflect regional problems and conditions. Other permitting requirements were delegated by the FDEP to the EPC.

Where agencies jointly permit projects, actors found ways to collaborate. In Lake Tahoe, the TRPA entered into over 30 MOUs to devolve permitting to local agencies and utility districts. Meanwhile, the LRWQCB and NDEP defer to the TRPA’s review of all residential and some commercial development projects. In the Salt Ponds, the RIDEM delegated its review of freshwater wetlands permits to the CRMC if the projects include coastal wetlands. Conversely, the CRMC defers to the RIDEM’s technical review for OSDSs. The CRMC and RIDEM also work periodically to reconcile their information requirements for permit applicants. Agencies may also rely on another agency with superior expertise, information, or jurisdiction to review a particular aspect of a development project (Bardach 1998, 151). This allows the partners to capitalize on the specialization of functions and economies of scale similar to how agencies in other policy areas refer cases to partner agencies in a production network.
One obstacle to these activities is the corresponding change in costs or responsibilities. Respondents in Lake Tahoe reported that devolution efforts expanded the resources devoted to permit reviews by local governments while the TRPA shifted staff from reviewing permits to auditing local officials and providing technical assistance. It also shifted the burden for denying projects from the TRPA to local governments. As one TRPA official put it “we are the guys you love to hate” and the agency still serves as a convenient scapegoat for many of the basin’s problems since it has the last permit approval. However, respondents noted that shifting the permitting burden to local governments is gradually shifting criticism for permit delays to local governments. Conversely, local officials are increasingly reluctant to take on additional regulatory responsibilities from the TRPA due to increased costs and the fear that they will be blamed by permit applicants for the strict regulations.

**Educating the Public and Decisionmakers**

Collaborative activities also educated the public and decisionmakers about the environment, watershed problems, or specific management strategies. This reduced information asymmetries and built public and political support for the watershed management program. Public education and outreach also improved environmental conditions in an indirect manner by training and educating industry officials, permit applicants, and homeowners about improved land use practices. Collaboration also improved the performance of public education programs by broadening the audience.

**Public Outreach Activities**

Some public outreach activities involved informal efforts such as developing a speakers bureau where one agency is the coordinator while others contribute speakers on various topics. Others took advantage of existing distribution systems to expand their capacity to deliver public outreach. For example, the CRMC used the state’s system of local libraries to double the distribution of its newsletter. Other efforts were more complex. Tampa Bay’s Florida Yards and Neighborhoods Program involves a partnership between the TBEP, SBNEP, CES, and county governments to teach residents
how to reduce nonpoint runoff from their homes by changing landscaping and adopting other BMPs (Nonpoint Source News-Notes 1998, 13).

Other outreach efforts targeted resource users. For example, Tampa Bay developed materials such as the Boaters Guide to Tampa Bay, which is the product of a collaborative effort between the TBEP, FDEP, and FMRI. It contains information on habitats, sport fish, and boating safety. More than 100,000 copies have been distributed though a partnership with county tax collectors, which distribute the materials to boat owners renewing their tags (TBEP 1998a). A similar guide has now been produced for the Charlotte Harbor NEP.

Other collaborative efforts targeted school children. For example, the TBEP, through partnerships with local school districts and the Florida Aquarium, sponsors field trips and workshops for thousands of students. The TBEP works with the FMRI and other federal and state agencies to hold an annual Bay Day exposing thousands of students to information about Tampa Bay and its resources. Other common activities were conferences and workshops structured around specific issues and often were designed to elevate these issues on the agendas of federal, state, and local officials. Prominent examples would be the Tahoe Presidential Forum in 1997 and the Narragansett Bay Summit in 2000.

**Training and Technical Assistance**

Training and technical assistance programs targeted at teachers, industry, or decisionmakers was another common collaborative activity. Several watersheds developed curriculum materials. For example, in cooperation with the Tampa Tribune’s Newspaper-In-Education Program, the TBEP developed a 6-unit teaching curriculum entitled “Exploring Tampa Bay” (Nonpoint Source News-Notes 1998, 13).

Other training and technical assistance efforts targeted industry. Narragansett Bay’s Hazardous Waste Reduction Project (HWRP) provided technical assistance to conduct industrial process audits. The Inland Bays WE C.A.R.E. (Comprehensive Agricultural Resource Effort) effort helped farmers develop individualized conservation
plans. Delaware and Rhode Island have training programs for engineers and other applicants for erosion control or stormwater management permits.

Other training and technical assistance efforts targeted local officials. The NBEP sponsored several workshops for operators of sewage treatment plants to educate them about denitrification technologies (NBEP 1999). The NBP created the Land Management Project (LMP) to encourage local governments to utilize alternative land use and growth management strategies (Myers 1991). These efforts were timed to coincide with state requirements for developing municipal comprehensive land use plans. The information was well-received by local officials and complemented RIDOP’s technical assistance efforts (Myers 1991). The effort was also the precursor to a training program for local officials implemented jointly by the Rhode Island SGP and CES. In Tampa Bay, the TBRPC provides local governments with technical assistance in terms of economic modeling and geographical information systems (GIS). The development of the Tillamook Coastal Watershed Resource Center (TCWRC) is another example of a training and technical assistance program for local decisionmakers.

In some cases, training and technical assistance efforts were informal. An example would be in Rhode Island where the CRMC works with local building officials to educate them about the CRMC’s permitting jurisdiction and regulatory requirements. Educational efforts may also be the by-product of other activities. For example, the denitrification task force developed by the RIDEM, CRMC, and URI helped train and educate regulatory staff about the latest research and emerging OSDS technologies while university researchers ended up learning about the issues confronting state and local decisionmakers.

**Monitoring and Enforcement**

Collaboration also improved monitoring efforts by improving the scope and substance of data on environmental conditions and the activities taken to implement watershed management programs. Collaboration also improved enforcement.
Monitoring and Data Collection

One of the common ways that collaboration improved environmental monitoring and the collection of time and place information was the development of collaborative volunteer water quality monitoring programs. Such programs exist the Inland Bays, Salt Ponds, and Tillamook Bay. In all three cases, local universities worked with state and local officials to create a program to monitor water quality. University researchers analyzed the data and put it in a form useful to decisionmakers. However, the data is not necessarily limited to water quality data. In the Salt Ponds, one university researcher organized volunteers to develop a long-term database of coastal erosion rates and worked with CRC and CRMC to incorporate this research into subsequent policy changes in the SAMP and RICRMP.

Collaboration also improved the performance of environmental monitoring programs. The effort in Tampa Bay to implement a collaborative interagency monitoring program is an excellent example. The partners agreed to a common sampling design and monitoring protocols. They also share data and routinely swap samples to improve quality assurance-quality control (QA/QC). Similarly, the Tahoe Research Group (TRG) developed the Lake Tahoe Interagency Monitoring Program (LTIMP). This expanded the number of monitoring stations and generates information that monitors progress towards the TRPA’s environmental threshold carrying capacities (ETCCs).

Enforcement

Collaboration also improved an organization’s ability to enforce its own regulations and requirements. The CRMC’s efforts to educate municipal building officials about its regulations and permit jurisdiction had the added benefit of encouraging local officials to help enforce its regulations by referring permit violators. Nongovernmental organizations such as Save the Bay also report violators to state agencies. Collaboration sometimes allows organizations with weaker sanctions take advantage of another agency’s legal authorities. For example, the RIDEM relies on the CRMC to enforce its Section 401 Water Quality Certification because it lacks authority to do so. In Lake Tahoe, the LRWQCB frequently helps the TRPA with its enforcement
efforts. Whereas the LRWQCB has the authority to impose administrative fines, the TRPA can only impose fines through the judicial system.

**Policy-Making Level**

Operational level activities were frequently guided by collaborative activities at the policy-making level, which is analogous to the collective-choice level proposed by Kiser and Ostrom (1982). This is the world of collective decisions made by individuals and organizations to determine, enforce, continue, or alter future actions at the operational level (Kiser and Ostrom 1982, 208). These activities do not have a direct effect on the real world. Instead, they influence, guide, and constrain operational-level activities. Thus, they tend to perform a steering function by focusing on improving communication between the actors, coordinating actions, and integrating policies so that each agency’s decision-making processes advance collective goals (Peters and Pierre 1998; Osborne and Gaebler 1992). The decisions are enforced through a formal or legally binding process or through social peer pressure. Participants at the policy-making level are often different than those at the operational level (Kiser and Ostrom 1982).

The proposed framework identifies three types of collaboration at the policy-making level [Table 5.2]. Activities may share knowledge or pool resources in ways that allow new forms of collaboration at the operational level. It could also enhance an organization’s ability to provide services or indirectly influence operational activities. These activities may facilitate the development of shared policies that are formal or informal (i.e., social norms) in nature. This group of collaborative activities is particularly important because it can influence the scope and substance of operational-level activities. However, to be effective, there must also be some ability to monitor or enforce these policies.

A common element of these activities is that they influence, constrain, or add public value to activities occurring at the operational level. Even when acting individually, an organization’s operational level activities may be influenced or constrained by the collaborative activities at the policy-making level. Policy-making activities may also improve environmental conditions and enhance institutional performance, albeit in a more indirect fashion.
### Table 5.2: Collaborative Activities at the Policy-Making Level

<table>
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<tr>
<th>Type of Collaboration</th>
<th>DIBEP</th>
<th>NBEP</th>
<th>SAMP</th>
<th>TBEP</th>
<th>TBNEP</th>
<th>TRPA</th>
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<td>• Co-locating staff from different</td>
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<td>Resource Sharing</td>
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<tr>
<td>• One actor hiring staff to work in another</td>
<td>X</td>
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<tr>
<td>organization</td>
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<td>• One organization recruiting and training volunteers to support another agency</td>
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<td>X</td>
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<tr>
<td>• One organization detailing staff to work in or support another’s work</td>
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<td>• Agencies pooling financial resources for a common set of activities</td>
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<td>Shared Policies, Regulations, and Social Norms</td>
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<td>• Priorities for land acquisition</td>
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<td>• Informal social norms</td>
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<td>• Report on progress towards environmental goals</td>
<td>X</td>
<td>X</td>
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<tr>
<td>• Report on progress towards</td>
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</table>

X = undertaken; X° = Planned;
Knowledge Sharing

Ecosystems are complex, dynamic, and subject to an immense number of internal and external relationships that change over time. This creates conditions of extreme uncertainty, which presents unique challenges for the design and management of governance systems (Hollick 1993; Ophuls and Boyan 1992; Dryzek 1987). One way resource managers cope with this uncertainty is to incorporate additional scientific and time and place information into decision making. When information did not exist, organizations, either individually or collaboratively, undertook research projects to generate new information. In other cases, information resided in various organizations and was not accessible so organizations collaborated to combine or synthesize the information and make it accessible to decisionmakers and NGOs.

The watershed approach also requires agencies to respond to a wide range of human interests and values. Accordingly, resource managers employed activities to access information about values, attitudes, and concerns such that they can effectively develop and implement policies (Wondolleck and Yaffee 2000, 25). This was accomplished through formal and informal interorganizational meetings. Often the committee membership reflected different societal interests and perspectives on resource management problems. Personal contacts were another way information was exchanged.

These knowledge sharing activities are important to the problem solving process. As information is exchanged, it becomes part of the shared knowledge base necessary to approach problems and this information is “owned” by all participants in a collaborative process (Wondolleck and Yaffee 2000, 27). As a result, managers are better informed and make better decisions about future actions at the policy-making or operational level (Wondolleck and Yaffee 2000, 23). These activities also promote the policy-oriented learning observed by Sabatier and Jenkins-Smith (1999, 1993) in their work on understanding policy change. The interactions also help participants understand the personalities, goals, and preferences of other participants.
Developing and Sharing Information

Collaboration was used to develop and share information among the participants using formal or informal arrangements (Wondolleck and Yaffee 2000, 26). Information is not limited to new data sources. Ideas are equally important (Wondolleck and Yaffee 2000, 24). Ideas and approaches to addressing resource management problems are widely dispersed as is technical expertise. Accordingly, knowledge-sharing arrangements serve as conduits of data and ideas (Wondolleck and Yaffee 2000, 25).

Joint research and fact finding was a common technique used to manage uncertainty and gain access to new information (Busenberg 1999). There were numerous examples of collaborative research projects. There were also examples where participants reached agreement on common facts, theory, or methods (Wondolleck and Yaffee 2000, 29). For example, the development of nutrient reduction and seagrass restoration goals in Tampa Bay required the participants to agree to a common set of facts, assumptions, and a common set of nutrient reduction credits.

The information needed by decisionmakers is widely dispersed and developing common databases and joint technical resources were common activities. Participants often benefited because shared databases are important tools for rational planning, decision making, and resource management. Shared databases also resolve information asymmetries and are an important way organizations exploit their technical complementarity (Bardach 1998, 36).

Perhaps the best example was the development of a GIS. In Tillamook Bay, considerable effort was spent developing a comprehensive GIS database, which is now housed at the TCWRC and is available to all federal, state, and local agencies. Each of the watersheds emphasized, to varying degrees, the development of new data layers. Tampa Bay has taken efforts to change the way environmental data is collected and stored as a result of the collaborative environmental monitoring program. The CRMC and RIDEM are exploring ways to make their permitting databases accessible over the internet. The TRPA and TCPP plan to make environmental and performance monitoring data available over the internet.
There were also efforts to develop shared resource inventories, data syntheses (e.g., characterization reports), and other technical resources. Tampa Bay regularly maps seagrass coverage and developed a comprehensive habitat restoration plan. Narragansett Bay initiated comprehensive habitat mapping efforts to support and stimulate restoration efforts and worked with local governments to encourage them to incorporate this information into local harbor management plans.

All of the watersheds synthesized existing information on environmental problems, which can be valuable resources. In the Salt Ponds, local officials incorporated the SAMP’s technical information into local comprehensive plans while conservation commissions use the information as the basis for project reviews. The DNREC uses its Whole Basin Management program to develop integrated databases and synthesizes information on the state’s major basins. The TBEP collects data produced by environmental monitoring programs, synthesizes the information, puts it in a form understandable to decisionmakers, and reports on progress towards collective goals. The volunteer water quality monitoring programs often perform similar functions.

There were also examples of developing shared technical resources. Computer models developed during the planning process might be useful to other agencies in subsequent efforts. The DNREC used the DIBEP’s water quality model to develop a TMDL for the Inland Bays watershed while the FDEP used the TBEP’s modeling and nutrient reductions to satisfy its TMDL requirements. In Tillamook Bay, the DEQ plans to use the water quality data collected during the TBNEP to develop a TMDL.

Another common form of information sharing was co-locating organizations or staff in order to promote communication and information sharing. There were several examples. The TBEP’s offices are located in the FMRI. The CES and DPI are co-located in the Inland Bays. Local conservation districts were often co-located with NRCS. In Lake Tahoe, the USFS is co-located with NRCS. In Tillamook Bay, regional representatives from the DEQ and ODA are co-located while the offices of the ODF and the ODFW were located adjacent to one another. In Narragansett Bay, the NBP was co-located with the RIDEM during the planning process. These activities were reported to increase the sharing of information between these agencies, often as a result of informal contacts and personal relationships among staff members.
That is not to say that these activities were always effective. Information needs of partners may be incompatible. For example, the CRMC has not utilized many of the GIS coverages developed by the NBP because they are at a scale that is too large for making permit decisions. Organizations may fear that the database will be used to hold them accountable for their actions. Actors might lack the technical expertise necessary to utilize the data effectively. For example, the availability of additional GIS coverages will not change decision making if agencies lack the computer equipment or staff with the requisite technical skills to access these data. That is why training efforts such as the TCWRC are often useful complementary activities.

There can also be hidden costs associated with maintaining and updating these databases. This can be an important problem. If the data is not continually updated, it can cease to be a useful technical resource. Respondents reported that while funding is often available for developing these databases, it is often more difficult to find the funds necessary to maintain and update them.

There may also be technical, practical, or bureaucratic barriers to knowledge sharing. The FDEP reported that an adverse result of the devolution of responsibilities to regional offices was that there was no consistency in how data was collected and stored. As a consequence, it is expensive and difficult to create integrated databases. Respondents also cited the lack of resources for environmental and performance monitoring as a barrier to developing integrated databases or synthesizing technical information.

**Meetings and Informal Contacts**

Another common form of collaboration was work groups, task forces, advisory committees, and other interorganizational meetings as well as informal contacts and interactions among staff. Membership may be heterogeneous, representing a range of stakeholders and competing interests or it could be homogenous and consist of a limited set of organizations with similar interests. The key appears to be that the activities involve routine interactions with opportunities to exchange information, build relationships, and explore opportunities for joint action.
These activities perform many functions. The interactive processes create interorganizational networks that generate new ideas, share knowledge, build relationships, and establish trust. Unlike adversarial processes, collaboration is designed to get more information on the table and find creative solutions that balance multiple objectives. This can eliminate information asymmetries and lead to the development of shared definitions of problems. It can also help develop information channels that inform politicians about management issues. Conversely, elected officials informed agency officials of their concerns (Wondolleck and Yaffee 2000, 32).

Resource managers also function in a political environment where there is a competition for resources and direction. Since there are often asymmetries of power, the meetings often help agency leaders build concurrence or support for a desired course of action (Wondolleck and Yaffee 2000, 31). These interactive processes also help participants explore opportunities for collaboration. For example, at a recent TCPP meeting, one of the participants mentioned that there was a new grant opportunity. Several interested actors then met to prepare a grant application.

The meetings may also be used to resolve specific conflicts or disputes between interest groups (Wondolleck and Yaffee 2000, 33). For example, in the aftermath of the conflict that surrounded the CCMP’s approval in Narragansett Bay, the CRMC and RIDEM formed several work groups to discuss specific conflicts that emerged at the end of the process. Thus, the activities often performed a direct or indirect steering function and influenced activities occurring at the operational level.

Interorganizational meetings were also used to solve common problems and improve information sharing between participants. For example, the TRPA participates in 34 workgroups organized around different issues or geographic areas. In some cases, these activities were ad hoc and had a limited duration. A good example is the denitrification task force between the CRMC and RIDEM, which concluded with an MOU and changes to the SAMP. In other cases, the groups involved permanent, repeated interactions designed to promote information exchange. These meetings often had the added benefit of facilitating the development of interpersonal relationships and trust through repeated interactions. It can also improve a participant’s ability to monitor other organizations and creates a peer pressure mechanism.
Other examples included the standing advisory committees such as CACs, STACs, and Lake Tahoe’s APC. These committees were typically designed to specifically solicit information from the general public, interest groups, or technical experts (Wondolleck and Yaffee 2000, 27). In some cases, these groups developed into organizations in their own right. For example, during the DIBEP’s planning process, its CAC had a clear mission, its own by-laws, and raised its own funds to undertake projects. While there were proposals to transform the CAC into a nonprofit organization near the end of the planning process, it now meets infrequently, has no clear mission or role in supporting the CIB, and is not empowered to make or act upon its decisions. Conversely, the STAC functioned primarily as an advisory committee during the planning process but is emerging into an organization in its own right. While it still advises the CIB, it has a clear role. It provides a forum for discussing research and providing advice to local decisionmakers, and it does not need to wait for the CIB’s approval to fulfill these functions. For example, the STAC is now helping local officials evaluate options for removing or eliminating nutrient loadings from wastewater treatment facilities. The STAC also helps determine the state and local response to a series of algae blooms that adversely affected coastal communities and recently began to examine the potential for a Pfiesteria outbreak.

Meetings of collaborative organizations such as the ABM, CIB, TCPP, and TBEP, which are described in more detail later in this chapter, provide another means of exchanging information, developing a shared understanding of problems, and finding opportunities for joint action. While the distinction between collaborative organizations and working groups is unclear, there are some differences. Collaborative organizations tend to have formal rules governing access and decision making, have the ability to make and act upon their decisions, and a clearly defined mission, role, or function. They are also likely to control their own resources and have staff support.

Planning also emerged as a common implementation activity and formal and informal committees and work groups were often created to support these efforts. For example, the CIB contracted with staff in the University of Delaware’s SGP to develop the Comprehensive Water-Use Plan for Delaware’s Inland Bays in 1997 (Falk, et al. 1999). The SGP created an advisory committee involving citizens, stakeholders, and
agency officials. The plan evolved over a series of meetings to get input, feedback, and develop the plan’s recommendations. When the CIB approved the plan in 1999, it created a new advisory committee to oversee the plan’s implementation. The partnership between the CIB, DNREC, CES, and SGP to develop three tributary teams to develop pollution control strategies to implement the TMDL for the Inland Bays is another example. In other cases, committees were created to support and oversee specific implementation efforts. In Tampa Bay, the ABM is engaged in a number of activities at the request of the TBEP such as the Manatee Protection Strategies Task Force, the Mitigation Criteria Working Group, and the Off-Road Vehicle Access Working Group.

These activities could also be used to enhance permitting efforts. Perhaps the best example is the SAMP’s coordinated review process where the CRMC meets with local officials, the developer, and RIDEM while projects are still in the preliminary design stage. In Lake Tahoe, the TRPA often meets with developers and other government officials to discuss or find ways to modify projects in a way acceptable to the agency.

**Resource Sharing**

A common complaint among most respondents was that there was a shortage of resources (e.g., staffing, funding, and expertise) to implement watershed management plans. One strategy to overcome these limitations was pooling various organizational resources in ways that improved their ability to solve common problems or enhanced organizational performance. Various forms of resource sharing were employed. Some activities were relatively informal. As a result of the integrated environmental monitoring program in Tampa Bay, respondents reported that they often share equipment. In other cases, it involved formal relationships such as co-locating staff, allocating staff to support another agency’s efforts, or pooling financial resources.

**Pooling Staff Resources**

Respondents almost universally noted that a shortage of staff resources was a major constraint limiting implementation efforts. Collaboration was often used to compensate for these shortages. One strategy was for an agency to deploy its staff or pay
for staff to work in another agency. In Tillamook Bay, the ODF hired an ODFW wildlife specialist to work entirely on habitat restoration in the Tillamook State Forest. This allowed the ODF to step up its restoration activities and improved communication between the agencies. A private timber company also paid for an ODFW staff member to work in private forests designing and implementing projects. In Rhode Island, the state DOT hired staff to work in agencies such as the RIDEM and CRMC to review permit applications and expedite these reviews. In Lake Tahoe, El Dorado County placed a planner in the TRPA to review permits.

In other cases, organizations provided staff resources to support agency efforts. The TRPA has an EPA representative on detail to act as a liaison and facilitator between the TRPA and Region Nine. This individual coordinates scientific studies, organizes symposiums, and facilitates working groups. The NBEP director is often tasked to special projects and helps decide where grant funds should be allocated. For example, the NBEP director worked with the Section 319 coordinator to allocate grants. The NBEP’s staff provides RIDEM with slack resources to participate in stakeholder-based and collaborative activities where other organizations have a leadership role.

Another example is allocating agency resources to support interorganizational meetings. In Tampa Bay, the TBRPC provides staff support to the ABM while the DNREC provided staff support to efforts such as the GTFIB, IBMC, and the DIBEP. Alternatively, in the Inland Bays, the CES and SGP devote staff resources to assist the CIB as facilitators for the tributary teams.

In some cases, state civil service systems served as obstacle to hiring the staff necessary to support implementation efforts. Collaboration provided a strategy for surmounting these problems. In Narragansett Bay, the New England Interstate Water Pollution Control Commission (NEIWPCC) continues to hire selected NBEP staff. This removes them from Rhode Island’s cumbersome state personnel system. This is important because the NBEP need staff with specialized technical skills and state personnel descriptions often fail to reflect these requirements. The state classifications and union agreements create other problems such as inappropriate titles, inadequate compensation, or limits on what work employees can do that complicate efforts to attract qualified staff. It was also difficult to fill positions in a timely fashion. Respondents
reported that delays of six months to a year were common as a result of the state’s civil service system. Respondents in the Inland Bays and Tampa Bay indicated that removing personnel from civil service systems was also a factor in developing alternative organizational arrangements.

Collaborative arrangements were also used to solicit volunteers to perform tasks that support agency activities. The TBEP established the Bay Conservation Corps, which recruits volunteers for bay protection and restoration. More than 3,000 citizens participated in projects such as salt marsh plantings and bird island cleanups (Clark, et al. 1997). In some cases, volunteers are engaged in long-term service provision (e.g., volunteer water quality monitoring). In other cases, volunteers were solicited for help in specific activities such as the James Farm restoration project in the Inland Bays.

**Pooling Financial Resources**

Respondents noted that financial resources were another major constraint limiting the breadth and scope of implementation efforts. One strategy used to compensate for resource constraints was to form relationships with other organizations to share financial resources (Wondolleck and Yaffee 2000, 36). These activities often demonstrate commitments to collaborative efforts and provide the resources necessary to support a small staff that facilitates other collaborative efforts. For example, after the initial start-up period, the TBEP’s budget (excluding EPA or other federal funds) will be funded 1/3 by the SWFWMD and 2/3 by the six local governments with shares allocated based on population (TBEP 1998a). In other cases, these arrangements are designed to share the financial burdens for implementation in a manner deemed equitable by the participants. For example, the participants in Lake Tahoe were careful to allocate the respective costs of implementing the EIP [Table 5.3].

Collaboration may also be designed to share revenues. For example, harvests in the Tillamook State Forest currently generate approximately $12 million annually for the ODF. State law requires that this timber revenue is used to administer ODF operations and implement restoration projects. A significant portion of the revenue also benefits Tillamook County and local taxing districts.5
### Table 5.3: Pooling Resources to Implement the EIP – Capital Needs by Sector

<table>
<thead>
<tr>
<th>Threshold Program</th>
<th>Private Sector</th>
<th>Local Govt.</th>
<th>State of California</th>
<th>State of Nevada</th>
<th>Federal Government</th>
<th>Total $ (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality</td>
<td>75</td>
<td>41</td>
<td>88</td>
<td>30.4</td>
<td>116.2</td>
<td>350.6</td>
</tr>
<tr>
<td>Soil Conservation</td>
<td>1.2</td>
<td>11.2</td>
<td>74.2</td>
<td>12.9</td>
<td>93.2</td>
<td>192.7</td>
</tr>
<tr>
<td>Air Quality</td>
<td>28.1</td>
<td>22</td>
<td>41.8</td>
<td>19.5</td>
<td>17.7</td>
<td>129.1</td>
</tr>
<tr>
<td>Vegetation</td>
<td>6</td>
<td>0</td>
<td>7.2</td>
<td>5.6</td>
<td>23.8</td>
<td>42.6</td>
</tr>
<tr>
<td>Wildlife</td>
<td>0</td>
<td>1.3</td>
<td>3.6</td>
<td>1.2</td>
<td>11.1</td>
<td>17.2</td>
</tr>
<tr>
<td>Fisheries</td>
<td>9.9</td>
<td>9.2</td>
<td>20.4</td>
<td>5.9</td>
<td>20.4</td>
<td>65.8</td>
</tr>
<tr>
<td>Recreation</td>
<td>10.8</td>
<td>9.8</td>
<td>35.2</td>
<td>4.2</td>
<td>10.1</td>
<td>70.1</td>
</tr>
<tr>
<td>Scenic</td>
<td>21.7</td>
<td>6.5</td>
<td>4.7</td>
<td>2.3</td>
<td>4.7</td>
<td>39.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>152.7</strong></td>
<td><strong>101</strong></td>
<td><strong>275.1</strong></td>
<td><strong>82</strong></td>
<td><strong>297.2</strong></td>
<td><strong>908</strong></td>
</tr>
</tbody>
</table>

**Source:** TRPA, 1998. Environmental Improvement Program for the Lake Tahoe Region: Draft for Final Adoption, Zephyr Cove, NV: TRPA.

Another example was when organizations adopted a common set of funding priorities. For example, Florida’s land acquisition programs, SWFWMD, and local governments all target habitat restoration and land acquisition at the priorities developed by the TBEP. It may also be due to the fact that the other programs are advancing a set of common interests. For example, the NBEP provided funding to other RIDEM programs to support efforts to improve the implementation and administration of existing programs that result in water quality improvements. One project involves the NBEP funding a technical staff person to rewrite the OSDS regulations (NBEP 1997, 18).

Organizations may choose to collaboratively apply for grants or share project funding. Incorporating a NGO as a partner could also allow the agencies to remove the funding from a state’s contracting and purchasing procedures. For example, the NBEP routes some grant funds through the NEIWPCC or URI to avoid the state’s convoluted contracting and purchasing procedures. Actors may also collaborate because the partners share jurisdiction over a common issue or have differential access to grant funds (Bardach 1998, 151). Thus, an agency may be a co-applicant simply to help another partner receive a grant. It is also possible that the funder may be unwilling to issue a grant unless the project is collaborative in nature. This was the case when the NBEP,
CRMC, and Save The Bay were awarded $270,000 from NOAA to develop a coastal habitat restoration program and database that could be used by various stakeholders.

**Shared Policies, Regulations, and Social Norms**

The polycentric nature of the institutional framework in each watershed results in a conflicting set of management objectives that are the result of different laws, public interests, and demands of constituency groups. Because there are many legitimate objectives, there is no one answer to the question of how to manage a watershed. Various policies and objectives benefit some interests but not others (Wondolleck and Yaffee 2000, 30). For example, there are numerous federal and state statutes and watershed plans with competing priorities and objectives in Tillamook Bay [Table 4.19]. Thus, a common focus of collaborative activities was to develop shared goals or policies whether they are formal written agreements or informal social norms.

These activities have important benefits. Shared policies coordinate activities and allow organizations to cope with geographic and functional fragmentation (Wondolleck and Yaffee 2000, 37). They can improve the participants’ ability to jointly manage projects. They also perform a “steering” function by coordinating action and integrating policies such that individual or collective decisions advance common goals or objectives.

A key determinant of whether these activities are effective was whether they result in a shared sense of purpose. This can be a strong motivator for joint action, creates a sense of urgency, and encourages participants to obtain the commitments and resources necessary to advance shared goals or policies (Wondolleck and Yaffee 2000, 76). However, the mere development of written goals, policies, or recommendations and monitoring was not enough to result in a shared sense of purpose. In the four estuary program cases, respondents reported that there were no norms or expectations to implement the recommendations specified in the CCMP. Conversely, there was a strong norm to achieve the specific goals and targets specified in the Tampa Bay and Tillamook Bay plan while in the Inland Bays there was a strong norm to achieve nine priority actions. Thus, the peer pressure was stronger to demonstrate progress in these areas and there was little concern about whether the other provisions were implemented. In
Narragansett Bay, no similar set of norms or expectations to implement any part of the CCMP emerged.

**Developing Formal Goals, Policies, and Regulations**

Developing clear goals, policies, and rules is important. (Bardach 1998, 147). Goals and policies provide the interorganizational “steering” function that Osborne and Gaebler (1992) and others argue is important (Peters and Pierre 1998). This provides direction and helps organize individual and collaborative activities at the operational level. The development of shared policies also improves accountability. As Bardach (1998, 147) observes, the closer you get to being able to measure the results you care about the more likely you are to elicit desired performance at the operational level.

The development of formal shared policies and rules took many forms. In all six watersheds, the participants developed one or more shared policy documents. In Tampa Bay, it included a series of binding commitments for habitat restoration and nutrient reduction as evidenced by the TBEP’s habitat restoration plan and the Nutrient Management Consortium’s agreements. In Tillamook Bay, it resulted in measurable targets and implementation strategies designed to coordinate the implementation of various resource management plans. In Lake Tahoe, it resulted in nine ETCCs, a shared set of regulations (i.e., Regional Plan), and the Lake Tahoe Joint Federal Legislation Agenda. In the Salt Ponds, it resulted in shared zoning policies and priorities for habitat restoration and infrastructure investment. In the Inland Bays, the participants committed to nine specific actions.

**Developing Informal Social Norms**

Norms still govern much of our political and social lives (Axelrod 1997). Relations among individuals and organizations involved in collaboration are structured by formal policies, but they are also based upon tradition, implicit personal commitments, and shared norms and expectations. This is to be expected because communication processes are embedded in interpersonal relationships (Bardach 1998, 27). Informal social norms are important because they guide collaborative efforts at the operational
level. They also provide a strong motivator for organizations to participate in collaborative activities. As a member of the local business community in Lake Tahoe stated, “I think there is a common vision of what we don't want and that becomes a very powerful motivator of what we do want.”

Informal social norms also provide a foundation for peer pressure mechanisms that encourage collaborative efforts at the policy-making and operational levels. As Bardach (1998, 146) observes, “[d]oing good work was not only a way to get approval from the group, it was a way to further develop the very identity of the group and, therefore, the identity of one’s self as a member of the group.” Peer pressure was also an important accountability mechanism because participants often know how much effort or creativity fellow participants invest in collaborative efforts (Bardach 1998, 145).

The development of social norms appears to have occurred to varying degrees in all six watersheds. In the Salt Ponds, the norms were so strong that many respondents assumed that local officials were “required” to implement the SAMP’s recommendations, even though this is not the case. While strong norms developed between the CRMC, local officials, the URI, and other NGOs, the RIDEM never shared these norms, which helps explain why its implementation of some SAMP provisions (e.g., informal permit review process) has been mixed. In the Inland Bays, Tampa Bay and Tillamook Bay, social norms reinforced or further defined the formal goals and policies and created expectations for a certain level of implementation activity. In Lake Tahoe, efforts to target land acquisition in accordance with the TRPA’s IPES scores was the result of informal norms rather than formal policies or programmatic requirements.

Unfortunately, in Narragansett Bay the social norms were unproductive and led the original NBP partners to reject many of the CCMP’s provisions.

While social norms will not be sufficient in all cases, they can be particularly useful in situations where there is no legal authority to compel other organizations to act. They ensured that local governments did not deviate from the SAMP’s provisions and helped ensure that the partners in the CIB and TCPP implemented some actions. Even in Tampa Bay where the partners signed a “binding” interlocal agreement, there is no legal way to compel a signatory to implement the agreement. Instead, it is social norms and peer pressure that encourages the actors to adhere to the agreement combined with the
threat of formal (e.g., being removed as a partner) or informal (e.g., verbal and nonverbal) sanctions. It is also important to note that many of the collaborative activities at the operational level were the product of informal “agreements” rather than formal written policies. Informal social norms and rules therefore allowed collaborative activities to proceed in a more orderly fashion. Moreover, these implementation activities created new interactions that often added to or modified existing informal norms and rules, which in some cases were eventually formalized as shared policies noted in the previous section. Accordingly, the development of social norms takes place in an evolutionary context.

**Monitoring and Enforcement**

The development of formal policies or informal social norms appeared to require some ability to monitor and enforce collective decisions. This is not to say that enforcement is the only reason that individuals or organizations follow rules. Rules are followed because there is a shared belief that they are fair or there is a reasonable expectation that others will follow them. “Without this shared belief, enforcement would become too expensive to maintain regularity and predictability in ongoing human relationships (Kiser and Ostrom 1982, 192).”

A wide range of collaborative activities allowed for monitoring and enforcing formal and informal agreements at the policy-making level. Shared databases and efforts to synthesize environmental data often improved collective efforts to monitor performance in terms of changes in environmental conditions or implementation. For example, Tampa Bay uses this data to measure progress towards environmental goals. It also requires participants to develop five-year work plans and annual supplements to monitor implementation progress. The interlocal agreement also contains sunset provisions that force the actors to revisit and deliberate shared goals and policies. Lake Tahoe also has a formal process to evaluate the progress towards its ETCCs every five years. In the Inland Bays, the CIB reports on implementation efforts annually while the TCWRC is expected to perform a similar function in the future.
Joint reporting is important because it improves accountability and stimulates the policy-oriented learning observed by Sabatier and Jenkins-Smith (1999, 1993). For example, after two threshold evaluations producing less than satisfactory results, the TRPA developed the $900 million EIP to address the problem of declining lake clarity and improve progress towards other thresholds.

Another important monitoring and enforcement mechanism was peer pressure at the individual, professional, and political level to implement policies or social norms. Peer pressure appeared to be strongest when the participants had a long history of frequent interactions, shared common policies, goals, and expectations for action, and were subject to some form of routine monitoring or joint reporting. The development of effective peer pressure was important for several reasons. Peer pressure can be an important source of accountability, particularly when collaborative activities are the result of social norms instead of formal policies (Bardach 1998, 144). Respondents also reported that “peer pressure” was important because it motivated the partners to undertake actions that fulfilled “commitments” and “obligations” expressed formally or informally. The development of social norms also helped enforce formal and informal agreements between collaborators using verbal (e.g., sarcastic comments) or non-verbal (e.g., look of disapproval) sanctions, which further reinforced peer pressure systems.

Monitoring and enforcement of policies was improved by institutionalizing shared policies in a higher order set of rules containing formal sanctions for failing to adhere to these policies. For example, membership in the TBEP is contingent on adhering to the interlocal agreement. Alternatively, shared regulatory requirements in Lake Tahoe and the Salt Ponds prohibit some activities and require others.

**Institutional Level**

Successful collaborative efforts not only established meaningful processes of interaction, they often found ways to make them endure over time by creating new organizational structures and funding sources designed to last beyond initial efforts (Wondolleck and Yaffee 2000, 115). This was often accomplished by institutionalizing the shared policies, norms, and decisions developed at the policy-making level in a higher order set of rules at the institutional level, which is analogous to the constitutional level.
Table 5.4: Collaborative Activities at the Institutional Level

<table>
<thead>
<tr>
<th>Type of Collaboration</th>
<th>DIBEP</th>
<th>NBEP</th>
<th>SAMP</th>
<th>TBEP</th>
<th>TBNEP</th>
<th>TRPA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Institutionalizing Shared Policies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• MOUs</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>• Creating a new program</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Capital improvement programs</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Comprehensive land use plans</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Harbor management/water use plans</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Incorporating policies into other</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>policies or programs</td>
<td></td>
<td></td>
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<td>• Regional planning agency</td>
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X = undertaken; X* = Planned;

proposed by Kiser and Ostrom (1982). The institutional level involves developing the collective choice mechanisms that govern future interactions or decision-making at the policy-making or operational levels.

There are many ways to institutionalize shared policies and norms [Table 5.4]. The shared policies and norms may be formalized in a memorandum of understanding (MOU) or incorporated into some sort of plan or decision-making process that guides or constrains individual or collective activities at the policy-making or operational level. It might involve creating a new program within an agency dedicated to advancing shared policies or priorities. It may also involve the creation of a new collaborative organization.

Activities at the institutional and policy-making levels are often related in complex ways. The key distinction is that institutional level decisions precede and constrain interactions and decisions at the policy-making level (Kiser and Ostrom 1982, 210). Thus, the inclusion of a shared set of policies in some higher-order set of rules (e.g., Section 208 plan in Lake Tahoe) may constrain collaborative activities at the
policy-making or operational level. For example, the creation of a new collaborative organization might require its members to adhere to specific policies or to make decisions in certain ways. However, activities at the policy-making level may serve as an important precursor to activities at the institutional level. For example, a committee may meet over a period of years to develop a set of shared policies, which are then institutionalized through a formal agreement (e.g., MOU).

Institutional level activities are important because they improve the collective capacity for solving environmental problems and create institutional infrastructure that future organizations can build upon. It also makes collaborative activities at the policy-making level less dependent on personal relationships or leaders that are hard to replace. It can also minimize problems resulting from turnover such as the loss of institutional memory or trust embedded in personal relationships (Bardach 1998, 298).

**Formalizing Shared Policies and Social Norms**

There are several ways that shared policies and norms were institutionalized. A common technique was the development of Memorandums of Understanding (MOUs) formalizing shared policies or social norms. Perhaps the best example was the TRPA’s use of over 30 MOUs because they include clear provisions for monitoring and auditing performance. Conversely, when the CRMC and RIDEM entered into a MOU pertaining to denitrification in the Salt Ponds there were no monitoring provisions. Consequently, it took several years for the CRMC to discover that RIDEM was shirking its responsibilities by failing to implement the MOU.

Another activity was incorporating shared policies into some higher order set of rules that were binding on other organizations. This could be accomplished by incorporating shared policies into local comprehensive plans. For example, elements of the Inland Bays’ CCMP were incorporated into Sussex County’s comprehensive land use plan while Manatee County adopted applicable portions of Tampa Bay’s CCMP into their comprehensive plan. Other local governments in Tampa Bay incorporated action plans into their capital improvement programs (CIPs) to ensure that implementation efforts were funded. In Narragansett Bay, the NBEP worked with the Town of Bristol, the CRMC, and Roger Williams University where the NBEP worked with local officials to
incorporate new Bay resource mapping into a local HMP. The Salt Ponds SAMP was designed to serve as a “collaborative constitution” binding actors to a set of shared policies. One of the ways this was accomplished was by having local governments amend their comprehensive plans and zoning ordinances to implement the SAMP’s density restrictions. In each instance, the incorporation of the shared policies into higher order rules enhanced accountability and constrained activities at the policy-making and operational levels.

In some cases, policies were not incorporated directly but were referenced or used in an informal basis by decisionmakers. For example, the City of South Lake Tahoe, while not formally adopting the TRPA’s codes and ordinances as its local ordinances, is currently using these policies as informal guidelines. This emerged out of the close interaction of TRPA planners with those of the City of South Lake Tahoe on recent projects such as the current redevelopment efforts. While attempts to formalize the use of TRPA regulations failed to find support with local officials, the close interaction between officials in South Lake Tahoe and the TRPA led to their defacto utilization. This proved to be a more efficient solution for both parties because they were not ready to enter into formal arrangements due to the lack of trust. However, the respondents also reported that trust was increasing as a result of these interactions.

Shared policies could also be incorporated into some higher order management plan or policy document. In Narragansett Bay, the CCMP was adopted as an element of the State Guide Plan, the repository of state policies. Theoretically, this could produce changes in decision-making at the state or local level, although my investigation uncovered no evidence that suggests this was the case. In the Salt Ponds, the SAMP was incorporated into the State Guide Plan as well as the state’s federally approved CZM program. This subjected the CRMC to NOAA’s oversight, but it also allowed the CRMC to require all federal agency activities to be consistent with the SAMP’s policies.

A different approach was taken in Lake Tahoe where the Regional Plan was adopted as the watershed’s Section 208 plan, which is implemented by the LRWQCB. As one respondent noted: “The 208 Plan is the gorilla in the closet”. It allows the LRWQCB to use its authority to enforce the TRPA’s Regional Plan. Moreover, any fundamental change to the Regional Plan requires changing the Section 208 Plan, a
lengthy and prolonged process with numerous avenues for legal challenges. While the Section 208 Plan serves as a protective backstop, it also creates a powerful incentive for actors to work to find collaborative solutions within the current regulatory system.

The participants in Tampa Bay took another approach. The FDEP and EPA incorporated Tampa Bay’s nitrogen management strategy into a TMDL. The SWFWMD agreed to incorporate nitrogen goals into its revised SWIM and Comprehensive Water Management (CWM) plans. The EPA agreed to incorporate the CCMP’s goals into all NPDES MS4 permits in the watershed. All of these actions provide further assurance that the TBEP’s shared policies will guide future decision making in these context.

Shared policies can also be institutionalized by creating a new program dedicated to advancing them. To some extent, this occurred in Narragansett Bay. While there was no discernable set of shared policies, the NBEP is a new program within RIDEM dedicated to advancing collaborative projects that improve environmental conditions. The creation of the new program improved RIDEM’s planning capacity and its ability to take a leadership role in encouraging and organizing other collaborative activities. It also improved the RIDEM’s ability to obtain competitive federal grants and enhanced the agency’s decision-making processes.

**Developing New Collaborative Organizations**

The other type of activity at the institutional level was the development of new collaborative organizations, organizations comprised of other organizations [Table 5.5]. Organizations are composites of participants following rules governing activities and transactions designed to achieve some sort of output or outcome (Kiser and Ostrom 1982, 193). When a group of individuals or organizations begins to embrace collaborative processes, makes joint decisions, and acts as a single entity they are in effect acting as a new organization (Jones, et al. 1997; Finn 1996). While organizations are the members of these new organizations, they may have provisions that allow for citizen or interest group representatives, much the same way they participate on advisory boards and policymaking bodies in the human services policy area (Bardach 1998, 214).
Researchers refer to this organizational form in various ways including partnerships, coalitions, strategic alliances, consortiums, and networks. The governing structures vary in their complexity and formality, ranging from prescriptions in statutes and binding legal documents to shared social norms. In Tillamook Bay, the TCPP was established through a resolution of the Tillamook County Board of Commissioners and its by-laws are poorly developed. Conversely, the TBEP has detailed rules governing its operations and decision making contained in a binding legal document. The advantage of formal structures is that clear parameters for action and rules for making decisions and resolving conflicts exist (Bardach 1998, 220). This makes them less reliant on individuals and personal relationships. Organizations also perform various functions that create public value such as a conveynor, catalyst for action, conduit for information, advocacy, organizer, funder, technical assistance provider, capacity builder, partner, dispute resolver, or facilitator (Himmelman 1996, 35–37).

There tend to be no formal hierarchies among the members, even though outside the partnership there may be significant power differences (Huxham 1996b, 6). As a

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<td>Delaware Inland Bays</td>
<td>Center for the Inland Bays&lt;br&gt;Citizens Advisory Committee (CAC) (during planning process)&lt;br&gt;Scientific and Technical Advisory Committee (STAC)&lt;br&gt;Sussex County Association of Towns (SCAT)&lt;br&gt;Inland Bays Monitoring Committee (IBMC)</td>
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<td>Lake Tahoe</td>
<td>Tahoe Regional Planning Agency&lt;br&gt;Tahoe Transportation and Water Quality Coalition&lt;br&gt;Coordinated Transit System&lt;br&gt;Tahoe Research Group</td>
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<td>Tampa Bay</td>
<td>Agency on Bay Management&lt;br&gt;Tampa Bay Estuary Program&lt;br&gt;Nutrient Management Consortium&lt;br&gt;Florida West Coast Regional Ambient Monitoring Program&lt;br&gt;Scientific and Technical Advisory Committee</td>
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<tr>
<td>Tillamook Bay</td>
<td>Tillamook County Performance Partnership&lt;br&gt;Tillamook Coastal Watershed Resource Center&lt;br&gt;Tillamook Watershed Council</td>
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result, they often ensure that they do not alienate important resource contributors and partners. This can limit their ability to address controversial problems and often requires participants to rely on consensus-building to compensate for the imperfections that would result from other decision-making rules (Bardach 1998, 220).

Membership in a collaborative organization may also come with consequences in that it may require the partners to agree explicitly or implicitly to a set of shared policies or social norms. Membership could also require sharing information or resources or may require an organization to participate in various activities, individually or collaboratively, at the policy-making or operational level.

Collaborative organizations are important because they improve the problem-solving capacity in the governance system while providing institutional infrastructure that others can build upon. Many collaborative organizations were staffed directly or one partner provided staff support. This provided slack resources to absorb the transaction costs associated with organizing collaborative activities at the policy-making and operational levels. The staff also represented the collaborative organizations in other participatory planning processes, thereby better representing these political interests. Others may also build upon these new institutions. For example, the SWFWMD linked its funding for habitat restoration projects to the TBEP’s restoration policies.

Implications for Researchers and Practitioners

These findings illustrate the many ways collaboration can be used as an implementation strategy. The activities occur at different levels and can be related in complex ways. Participants are constantly crafting new collaborative activities that become the starting point for new activities (Bardach 1998, 20). Old processes may be destroyed or transformed as new opportunities for joint action are discovered as a result of trial and error processes (Bardach 1998, 29, 203).

At the operational level, collaborative activities improved environmental conditions by restoring habitat, acquiring land, and installing BMPs or other forms of environmental infrastructure. Collaboration also improved the delivery of government services such as permitting, public education, training, environmental monitoring, and data collection. Individual and collaborative activities at the operational level were often
influenced or constrained by activities at the policy-making level. These activities generate new information and allow participants to share knowledge through joint research or the development of shared databases or technical resources. Information is also shared through other interactive processes such as ad hoc working groups and interorganizational meetings, which allows actors to develop relationships and explore opportunities for joint action. Actors also share staff and pool financial resources in ways that enhance implementation efforts. There were also examples where collaboration resulted in shared priorities, policies, and regulations. In some cases, shared policies were formalized in management plans or other joint policy documents. In other cases they were embodied in social norms. The joint efforts to monitor and enforce collaborative agreements also improved accountability and generated peer pressure at the political, professional, and individual level.

There are also many ways that these interactive processes and shared policies could be institutionalized. Shared policies and processes were often formalized in MOUs and other types of binding agreements. New programs were established within an organization to organize, support, and implement efforts at the policy-making and operational level. Some organizations incorporated shared policies in other decision-making process and policy documents. New collaborative institutions were created such as nonprofit organizations, performance partnerships, or alliances of intergovernmental entities. These new organizations institutionalized interactive processes based on joint decision-making while requiring members to commit to shared policies and priorities. Collaborative organizations also provided resources to organize, support, and undertake activities at other levels.

As indicated by Tables 5.1, 5.2, and 5.4, each watershed displayed a different set of collaborative activities, which appears to be the product of different contextual factors such as the physical environment, configuration of the problems, institutional setting, situational histories, and programmatic context. The combination of these factors creates opportunities for joint action as well as incentives and constraints that influence whether the participants can find opportunities for collaboration that fit their collective constraint set. Other factors appeared to influence whether the activities were implemented effectively. Chapter Six discusses these issues in greater detail.
This chapter also gives some indication of the ways that collaboration creates public value. Collaboration can produce additional policy outputs and outcomes that can improve environmental conditions directly or indirectly. Many of these actions were not possible without using collaboration as an implementation strategy. In other instances, collaboration allowed ongoing activities to be expanded or to occur quicker or at less cost than would otherwise have been possible. Collaboration could also make governance processes more effective and efficient by improving decision making, generating new technical information, reducing information asymmetries, improving communication, and coordinating agency decision-making. This can foster policy integration and improve resource allocation. Collaboration also helped actors leverage additional staff, funding, and political support to expand implementation. The interactive processes also allow organizations, and the individuals within them, to develop the relationships and trust that improves governance. Chapter Seven presents a framework for conceptualizing and analyzing the different ways that collaborative activities created public value at the individual, organizational, network, and societal levels.

**Implications for Researchers**

The analysis reveals some implications for researchers. Exploring the wide range of collaborative activities in a systematic manner will help researchers to better understand an interorganizational system’s collaborative capacity. While the proposed framework reveals opportunities for collaboration present in many watersheds, it could easily be modified for use in other policy settings with further research likely to reveal a larger set of collaborative activities.

The wide range of collaborative activities observed also helps explain why there is no generally accepted definition of collaboration (Wood and Gray 1991). Some researchers avoid this problem by analyzing specific activities (e.g., advisory committees, task forces, etc.). However, my analysis and previous studies (e.g., Wondolleck and Yaffee 2000) indicate that there are many ways to use collaboration as an implementation strategy. Any definition of collaboration should therefore be flexible and allow for a wide range of activities, which may or may not be interrelated. The definition should
also recognize that collaboration involves autonomous actors engaged in some form of shared decision making structured by formal and informal rules and norms.

Understanding an interorganizational system’s collaborative capacity and how it is created is an important, but relatively unexplored question. Previous research tends to focus on collaborative activities that were actually implemented. However, it is equally important to understand why organizations often forego opportunities for joint action, thus leaving unutilized collaborative capacity. A comprehensive model of the collaborative process should consider the contextual factors that create an interorganizational system’s collaborative capacity and examine the incentives and constraints that cause actors to utilize some opportunities for joint action but not others. The model should also recognize that a completely different set of factors may influence the implementation of collaborative activities.

**Collaboration is a Dynamic and Evolutionary Process**

Collaboration is also a dynamic and evolutionary process with activities operating and developing in unexpected ways (Bardach 1998). The emergence of the informal permit review process in the Salt Ponds is an excellent example. This should not be surprising. Implementation is a dynamic and constantly changing process (Wittrock and deLeon 1986, 48; Lester, et al 1987; and, Pressman and Wildavsky 1984, 121). Enactment of a program often signifies the starting point of an evolutionary process of experimentation, goal definition, and the search for an appropriate implementation strategy (Mazmanian and Sabatier 1983, 267). Thus, collaborative efforts may start out trying to accomplish one set of objectives but end up accomplishing others (Pressman and Wildavsky 1984, 116). These activities are likely to be continuously transformed as implementors learn from their experiences (Majone and Wildavsky 1979, 170; and, Browne and Wildavsky 1983, 227). Changes will also occur as organizations adapt to changes in their external environment (Gray and Ariss 1985; Hrebiniaik and Joyce 1985; Astley 1985; Astley and Van de Ven 1983; and, Miles and Snow 1978).

My analysis also suggests that collaboration is a path-dependent process. Collaboration constrains or enhances what projects or activities occur in the future.
Participants also learn how to collaborate, find new ways to work together, and build trust by working together. In this regard, Ostrom (1990) and others (e.g., Imperial 1999a, 1999b; Chisholm 1995) note that institutional change is often an incremental and path dependent process. Thus, the predictor of future collaboration within a watershed is likely to be the level of collaboration in the past. This suggests that an important question confronting researchers and practitioners alike is how to stimulate an increased level of collaborative activity.

**Bandwagon Effects and Collaborative Inertia**

These data suggest that collaborative successes help legitimize collaborative processes and demonstrate new ways to create public value. This can increase the incentives to participate in collaborative processes. As success is demonstrated, collaborative efforts begin attracting additional resources and political support. New participants join the efforts, which can bring additional resources and further expands the opportunities for collaboration. Bardach (1998, 276) and Kraatz (1998) refer to this phenomena as the “bandwagon effect.” Conversely, if a collaborative activity generates a high level of conflict and participants have a “bad experience” they may be less likely to become engaged in future collaborative efforts. Thus, the “bandwagon effect” can work in reverse as well. The problems experienced in Narragansett Bay with respect to the lack of CCMP implementation is an example of the bandwagon rolling backwards.

This suggests that the pattern of “success” observed in the period immediately following the initiation of a series of collaborative efforts may be different than that which is observed over a longer-period of time. For example, collaborative efforts following the adoption of the Inland Bays CCMP improved over time as the CIB developed. The changing patterns of success are one reason that researchers advocate using a longitudinal perspective when examining the process of policy implementation (e.g., Goggin, et al. 1990; Browne and Wildavsky 1983; Mazmanian and Sabatier 1983; Kirst and Jung 1982; and, Majone and Wildavsky 1979). These recommendations are equally germane to those studying collaborative processes.
There is also growing empirical support for a theory of the liability of organizational “newness” or “adolescence” (e.g., Levinthal 1991; Cameron, Kim, and Whetten 1987; McKinley 1987; Whetten 1987; and, Child and Keiser 1981). While disagreeing on the specifics, researchers agree that the risks of death and organizational failure are higher for new organizations but these risks decline over time (Amburgey, et al. 1993; Bruderl and Schussler 1990; Singh, House, and Tucker 1986; Singh, et al. 1986; Freeman, et al. 1983; and, Starbuck and Nystrom 1981). These findings raise the question of whether a similar phenomenon may hold true for collaborative processes. Perhaps initial collaborative efforts run a higher risk of failure and implementation problems than those that have survived the test of time (Simonin 1997).

If this were the case, it might explain the phenomenon of “collaborative inertia” (Bardach 1998, 270). When actors decide to become engaged in collaborative efforts, progress is often slower than expected and participants have to spend considerable time and effort building relationships and trust, developing shared definition of problems, and finding opportunities for joint action (Wondolleck and Yaffee 2000; Bardach 1998). While progress is often slower than expected, once a threshold level of success is achieved, the situation often changes and it becomes susceptible to a new dynamic (Bardach 1998, 270). Early problems are overcome, relationships and trust develop, and the actors learn how to work together. The efforts then build momentum, pick up speed, gain new members and resources, and expand dramatically creating the “bandwagon effect” (Bardach 1998; Wondolleck and Yaffee 2000).

Perhaps the best example of the “bandwagon effect” is in Lake Tahoe. The initial impasse resulting from the conflicts between interest groups was perceived as being a satisfactory condition. As the actors became increasingly dissatisfied with the costs of inaction, the incentives to collaborate increased and the actors began to work together in what became known as the Tahoe Transportation and Water Quality Coalition. Initially, progress was slower than expected as time was spent building relationships and trust, finding problems of mutual concern, and developing projects and activities that fit prevailing constraints. As the actors continued working together, they realized the value created by their efforts and discovered additional opportunities for joint action. As successes were realized and momentum developed, additional actors joined the Coalition
and the participants began to attract increased political support and financial resources. Today, what was once dubbed the “unholy” alliance between three NGOs has expanded into a broad coalition supporting a wide range of collaborative activities.

This suggests that any model of a collaborative process should account for its dynamic and evolutionary nature. Thus, the models are likely to have complicated feedback loops and variables such as trust and personal relationships are likely to be exogenous and endogenous in that they affect whether collaborative processes are initiated, are implemented effectively, and are an outcome of a collaborative process that becomes an input for a subsequent process.

**Implications for Practitioners**

The analysis also has several implications for practitioners interested in encouraging the use of collaborative activities to systematically address specific policy problems. Practitioners are advised to consider developing a set of nested relationships similar those developed in Tampa Bay or Tillamook Bay where the participants worked to develop a set of shared priorities and policies. The participants then institutionalized the shared policies by creating a new collaborative organization whereby membership requires agreeing to implement a set of individual and collaborative activities that advance shared policies. Processes were then created to share information and pool resources to support implementation. Processes were also established to monitor individual and collective implementation in order to hold the members accountable. These “nested” arrangements encouraged a broader range of collaborative activity and encouraged the organizations to systematically address specific problems.

Conversely, collaborative activities need not occur in a “nested” fashion and may be unconnected with one another. In the Inland Bays and Narragansett Bay, nested arrangements did not exist. The Inland Bays failed to develop shared policies encouraging a systematic set of operational level activities while Narragansett Bay failed to develop a collaborative organization. As a result, operational level activities were often ad hoc and failed to systematically address specific problems. The lack of clear and measurable goals and objectives also made it difficult to measure success.
Random Acts of Environmental Kindness

This creates the potential for an implementation problem that respondents in Tillamook Bay termed “random acts of environmental kindness.” In other words, participants are engaged in a series of implementation efforts consisting of discrete loosely-connected projects. Individual projects may produce isolated environmental improvements but they are often too limited in scale, scope, number, magnitude, or duration to significantly change the underlying problems when viewed from the perspective of the larger ecological system. This creates a false set of expectations on the part of many participants. As one Inland Bays respondent observed:

“There’s denial on all parts about the complexity and depth of the issues. The problem started 30 years ago with nutrients in the water. Development has been going on. . . . All groups are doing what they can; we need to do more. . . . All the easy issues were tackled 20 – 30 years ago. Now they are slicing little pieces of the pie that’s left. I think everybody with the fast paced technology, everyone wants it now. That’s changed expectations. Everyone thinks if we do something now, its solved. That’s not the case.”

Another respondent in Tillamook Bay noted: “The lifecycle of these fish and the timing of people’s expectations are so out of whack.” Thus, while “random acts of environmental kindness” may generate public value, addressing watershed problems will often require a systematic, long-term effort to address specific problems.

However, making the transition from a series of isolated projects to systematically addressing specific problems was not easy. It appears to require the development of shared policies that focus implementation in a manner that systematically addresses specific problems. This requires a flexible and stable source of implementation funding (Gale, et al. 1993; Coffey, et al. 1992; NRCS 1991; and, Mass, et al. 1988). In Tampa Bay, the presence of numerous revenue sources allowed the actors to focus on systematically reducing nutrient loadings and restoring habitat. Conversely, the lack of similar revenue sources in the Inland Bays and Narragansett Bay forced the actors to adopt a more opportunistic strategy; one based on leveraging federal and state grant funds. As a consequence, the priorities and restrictions of narrow categorical grant programs drove implementation efforts.
Lacking these resources, respondents suggested that their strategy was to “go after low hanging fruit” and look for opportunities to work together (Wondolleck and Yaffee 2000). While this “entrepreneurial” spirit should be applauded, it makes it difficult for the actors to systematically address specific problems. Building on the metaphor, if you want to bake an apple pie and spend your time picking an orange, grapefruit, and a banana, you will be no further along than when you started. This raises important questions about whether these resources might be allocated more effectively because it takes time, money, and staff expertise away from other activities that potentially could create more public value. Moreover, the lack of shared policies raises the possibility that the collaborative efforts will become and “end” rather than a means to an end. Nowhere is this problem more evident than in Narragansett Bay where the NBEP’s goal is to initiate collaborative projects rather than to systematically address a specific problems.

**Institutionalizing Shared Policies and Developing Collaborative Organizations**

The institutionalization of shared policies also helps focus collaborative efforts on specific problems. This occurs in many ways, however, the development of new collaborative organizations appears to be particularly effective. They provide the slack resources necessary to organize, coordinate, and support collaborative efforts (Bardach 1998). This allows other organizations to devote time and energy to other tasks since they will have to spend less time coordinating and acquiring resources for collaboration, tasks performed by the new organization (Provan and Milward 1995).

Collaborative organizations also create stability, which is important for several reasons. Problems such as NPS pollution and habitat loss often result from the “tyranny of small decisions” in that they developed incrementally over decades (Odum 1982). Reversing cumulative impacts is likely to require an equally long series of cumulative benefits. One respondent suggested: “It’s like a visa bill of $10,000 and a 19 percent interest rate. It takes a long time to pay off. If we continue on for twenty years, we’ll see results . . . but twenty years is a lifetime for us.” Another local official noted that “[t]here’s going to be a fair amount of primitivism as far as coming up with projects that are not grandiose but which can make a difference on the ground. I’ve really gotten an
education through this process. We’re going to have to be content with some projects which seem to be relatively small in the cosmos, but which are tangible and make a difference.” This underscores the observation that implementation is likely to require a systematic long-term effort.

Stability also promotes the development of strong social networks, cooperation, and trust since interactions are repeated over a long period of time (Milward and Provan 2000; Axelrod 1997, 1984; Ostrom, et al. 1994; Ostrom 1990). Kiser and Ostrom (1982, 203) argue that when individuals or organizations interact frequently in a specific decision situation, the level of common understanding will be higher when individuals participate sporadically on different issues. Axelrod (1984, 126) argues that “[m]utual cooperation can be stable if the future is sufficiently important relative to the present. This is important because the players can each use an implicit threat of retaliation against the other’s defection – if the interaction will last long enough to make the threat effective.” In order to promote cooperation, Axelrod (1984) suggests “enlarging the shadow of the future” by making the interactions more durable and frequent. This has the added advantage of creating trust and enduring personal and interorganizational relationships (Leana and Van Buren 1999; Tsai and Ghoshal 1998).

The development of collaborative organizations and the institutionalization of shared policies also makes collaborative processes less reliant on individuals and personal relationships that are hard to replace (Bardach 1998). As a result, implementation is less likely to breakdown as a result of staff turnover or changes in organizational leadership. This adds stability to implementation and legitimizes collaborative processes.

Stability also encourages the participants to make investments in relation-specific assets such as shared databases or technical resources (Wondolleck and Yaffee 2000, 101). These investments can occur in human and procedural asset specificity. Human asset specificity concerns the degree to which a staff member’s skills, knowledge, or experience is tailored to the collaborative activity. Procedural asset specificity refers to the degree to which an organization’s decision-making or service delivery process is customized to the requirements of an exchange partner (Zaheer and Venkatraman 1995). The rational is that organizations are more likely to make these investments when there is
reason to believe that they will recover the costs of initial investments. Participants are also likely to make investments that reduce short-term transaction costs such as staff support for a collaborative organization when there is a strong likelihood of repeated interactions (Milward and Provan 2000, 372; Cropper 1996; Huxham 1996b).

Accordingly, the ability to generate relational rents will be influenced by the length of time of the governance arrangement. Actors engaged in frequent, recurring interactions are more likely to develop specialized governance structures (Dyer and Singh 1998; Williamson 1985). However, the incentives for making investments in relation-specific assets is tempered by the fact that the more specialized these resources become, the more difficult it is to use them in alternative ways (Dyer and Singh 1998; Park 1996). Reciprocal investment in a relation-specific asset is also important. It helps reduce transaction costs while simultaneously demonstrating a credible commitment to the collaborative endeavor that signals continuity and the willingness to become engaged in long-term relationships. This helps reinforce the bonds that develop between the participants and encourages subsequent investments in relation-specific assets (Zaheer and Venkatraman 1995).

Collaboration is also a trial and error process. The development of a stable pattern of interaction gives the participants time to learn how to govern collaborative processes and discover which participants can be trusted to cooperate. The participants also learn which organizations make good partners and are easy to work with (Simonin 1997). Thus, stable relationships appear to improve the effectiveness of collaborative efforts (Milward and Provan 2000; Dyer and Singh 1998; Simonin 1997; Park 1996).

However, the development of new collaborative organizations can create problems. New collaborative organizations must confront the problems associated with a “liability of newness” noted above. In the Inland Bays, respondents noted that the time spent on issues associated with developing the CIB as an organization (e.g., liability issues, personnel decisions, finding a physical location, securing a state budget line-item, etc.) were greater than they anticipated. Other researchers also note that new collaborative organizations often experience growing pains or are overwhelmed by the effort required to develop and maintain the organization (Bardach 1998, 301). This helps explain the collaborative inertia noted previously.
Moreover, the development of a new organization, investments in relation-specific assets, and the institutionalization of shared policies can make it difficult for participants to adapt and change (Milward and Provan 2000). Participants may also begin viewing their careers as being dependent on a collaborative organization’s success, which might cause investments in organizational enhancement at the expense of other activities (Bardach 1998, 302). For example, the NBEP is continually engaged in efforts to obtain the funding necessary to survive and justify their existence.

**Maintaining Accountability**

The development of effective accountability mechanisms also enhanced efforts to use collaboration as an implementation strategy. Accountability “involves the means by which public agencies and their workers manage the diverse expectations generated within and outside the organization (Romzek and Dubnick 1994, 160).” A central feature of accountability is the question of who is represented. Collaborative efforts could represent elected officials, agency heads, technical staff, agency clients, interest groups, industry, researchers, resource users, or the general public.

This naturally raises questions about whose interests should drive collaborative efforts. Some national environmental groups, the Sierra Club being the most prominent, have raised concerns that collaborative processes inappropriately transfer power to local collaborative efforts. Many national environmental groups also oppose devolution because they have more influence in lobbying Congress and federal agencies than state legislatures or watershed level practitioners (Wondolleck and Yaffee 2000). Similarly, many EPA respondents appeared reluctant to devolve too much control to local practitioners.

Environmental groups might also oppose collaboration because it required them to “water down” their organization’s mission (Selin and Chavez 1995). This was one of the reasons the local Sierra Club chapter withdrew its participation in the Inland Bays. Others viewed the political nature of the collaborative decision-making process in negative terms, suggesting that decisions should be based on scientific and technical realities rather than political ones (Wondolleck and Yaffee 2000). Environmentalists,
technical staff, and researchers often expressed these concerns or suggested that they disliked the “politics” associated with these processes.

While raising accountability concerns, watershed management may be an effective way to govern in a polycentric federal system. Rather than creating accountability problems, participants can use these efforts to reconcile competing interests and find ways to work cooperatively towards mutual goals. The development of joint-decision-making processes creates another mechanism for improving governance and reaching common agreement on a collective set of policies, priorities, and actions.

A central challenge for practitioners using collaboration as an implementation strategy is developing effective accountability mechanisms. Following the work of Romzek and Dubnick (1994) and others (Romzek 2000; Romzek and Ingraham 2000), various bureaucratic, legal, professional, and political mechanisms were used to improve the accountability of collaborative efforts [Table 5.6]. These mechanisms differ in terms of their level of formality, directness, durability, and coerciveness (Gormley 1994). Bureaucratic mechanisms are based on superior-subordinate relationships (Romzek and Dubnick 1994, 161). An example includes staff being accountable to the decisions made by a collaborative organization.

Legal mechanisms are primarily based on lawmaker-law executor or principal-agent relationships (Romzek and Dubnick 1994, 161). Institutionalizing shared policies in binding agreements or other programs is one example of using legal mechanisms to improve accountability. In Tampa Bay, each partner agreed to certain goals and submits a five-year work plan containing the projects they will implement. Fiduciary arrangements resulting from control over grant funding or budgetary resources were also common legal accountability mechanisms. For example, because the NEPs accept EPA implementation funding, they must undergo a biennial review process.

Professional mechanisms are based upon lay person-expert relationships. In these situations, public officials or decisionmakers “defer” to skilled or expert professional staff to provide advice and appropriate solutions to problems (Romzek and Dubnick 1994, 161). This was often accomplished by creating tiered committee structures. This allows policymakers to defer to the expertise and advice of technical experts. Political mechanisms are based on constituent-representative relationships. If “deference”
### Table 5.6: Mechanisms Used To Improve Accountability

<table>
<thead>
<tr>
<th>Accountability Mechanisms</th>
<th>DIBEP</th>
<th>NBEP</th>
<th>SAMP</th>
<th>TBEP</th>
<th>TBNEP</th>
<th>TRPA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bureaucratic Accountability</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>▪ Staff works for collaborative group</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>▪ Staff accountable to agency director</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Legal Accountability</strong></td>
<td></td>
<td></td>
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<tr>
<td>▪ Approval of annual work plan/budget</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>▪ EPA’s biennial review process</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>▪ NOAA’s Section 312 Evaluations</td>
<td></td>
<td></td>
<td></td>
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<td>X</td>
<td></td>
</tr>
<tr>
<td>▪ Decisions subject to judicial review</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ NEPA EIS process</td>
<td></td>
<td></td>
<td></td>
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<td>X</td>
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<tr>
<td>▪ CZMA’s federal consistency process</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>▪ Controls placed by other statutes</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td><strong>Professional Accountability</strong></td>
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<tr>
<td>▪ Policy comm. defers to mgt. comm.</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X^a</td>
<td>X</td>
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<tr>
<td>▪ Mgt. committee defers to STAC</td>
<td></td>
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<td></td>
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<tr>
<td><strong>Political Accountability</strong></td>
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<tr>
<td>▪ Citizens involvement on committees</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>▪ Public hearings on budget</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>▪ Sunshine requirements</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>▪ Sunset provisions</td>
<td></td>
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<td>X</td>
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<tr>
<td>▪ Public notice/comment</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>▪ Reporting/monitoring requirements</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>▪ Distribution/posting of minutes</td>
<td>X^b</td>
<td>X</td>
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<tr>
<td><strong>Cross-Cutting Mechanisms</strong></td>
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<tr>
<td>▪ Peer pressure/social norms</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>▪ Measurable goals or policies</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Binding regulations/requirements</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>▪ Monitoring environmental conditions</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Monitoring implementation activities</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>▪ Institutionalization of policies into</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>▪ other decision-making processes</td>
<td></td>
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</tbody>
</table>

X = undertaken; X^a = Planned; X^b = sporadic; X^d = only some actors; X^e = only during the planning process

Characterizes professional accountability, “responsiveness” is the core feature of political accountability (Romzek and Dubnick 1994, 162). “Sunshine” requirements such as public meetings and provisions for public comment are excellent examples. Citizens and representatives of interest groups could also be included as decisionmakers or a CAC could be created to allow input.
Accountability also appears to be a two-edged sword. There is a constant tension between organizational autonomy and accountability (Huxham 1996b; Fredericksen and London 2000). On the one hand, accountability mechanisms help participants measure their progress towards shared goals. This was important because formal and informal processes that monitored and enforced collaborative agreements helped reduce strategic behaviors (e.g., rent seeking, turf guarding, shirking, etc.). In fact, respondents were often quick to note that formal mechanisms such as binding agreements (e.g., MOUs) and informal peer pressure encouraged implementation and adherence to shared policies.

Conversely, excessive monitoring and enforcement creates powerful disincentives because collaborators may be unwilling to join the effort if they fear reprisals and criticism. One reason that some state and local officials opposed the Narragansett Bay’s draft CCMP was a concern that its incorporation into the State Guide Plan may require its implementation. Their fear was the EPA or environmental interest groups would criticize the organizations for failing to comply with the CCMP’s recommendations.

Care must also be taken when developing shared policies and goals. If the targets are set too low, almost any agency can meet its goals. If they are set too high, then an agency may be set up for certain failure (Bardach 1998, 148). Thus, developing effective accountability mechanisms is a tricky endeavor and is unlikely to be achieved through a single “standardized” approach. Rather, accountability mechanisms must be designed to fit the watershed’s contextual conditions and should take advantage of the opportunities available to institutionalize shared policies and decision-making processes. Moreover, practitioners are cautioned against devolving too much authority to collaborative groups because it could raise accountability questions. Instead, watershed management programs should be designed to work within existing programs. This also allows them to build upon existing accountability mechanisms.

Endnotes

1 This definition is somewhat broader than Bardach’s (1998) and includes nongovernmental organizations (NGOs), which were often involved in these activities.

2 This act authorized the sale of BLM lands near Las Vegas, Nevada. The proceeds from these sales were used to acquire environmentally sensitive lands in the Lake Tahoe Basin.
The 1993 merger of the DNR and DER combined the wetland resource, stormwater quality, and stormwater quantity permitting into a new ERP in 1995. The FDEP and WMDs share implementation depending on the type of activity.

It also allows the WMDs to coordinate the water quantity aspects of the WMDs surface water management permits with the FDEP’s water quality concerns in the stormwater permits.

Revenues from timber sales (after operation expenses of ODF) are allocated as follows: 51.3 percent goes to school districts where timber is harvested; 22.3 percent goes to all county schools; 21.6 percent goes to the county general fund; 4.8 percent is divided among all other taxing districts.
CHAPTER SIX

INSTITUTIONAL FACTORS INFLUENCING COLLABORATION

Given the wide range of collaborative implementation efforts noted in the previous chapter, it is important to understand how the institutional setting creates an interorganizational system’s collaborative capacity as well as the factors that influence its members ability to utilize these opportunities for working together. Understanding these factors and their relationships will improve practitioners’ ability to utilize collaboration as an implementation strategy.

It is also an important question for researchers because there is no agreement on how this “process” should be modeled. Principal agent, resource dependency/exchange, transaction cost economics, and institutionalism, all offer partial and unsatisfactory explanations for why collaboration occurs by drawing attention to a subset of the variables influencing this complex process. Research in areas such as watershed management, policy implementation, collaboration, interorganizational networks, social networks, organizational change, diffusion of innovations, and institutional analysis also offer nothing more than partial insights into selected aspects of the collaborative process.

What is needed is a comprehensive and integrated theoretical framework with testable propositions that takes an ecumenical rather than a parochial view of theory and synthesizes previous research. This avoids the “ideological hegemony” that makes it difficult to view collaboration in a way that is different from that prevalent in a particular stream of literature (Maxwell 1996). Given the complex and dynamic nature of collaboration, it is unlikely that a single theory will fully explain all aspects of the process (Menzel 1987). Moreover, several lines of research identify similar variables and put forward compatible explanations of collaborative processes, albeit using different terminology and concepts. Thus, there is the opportunity and need to integrate existing research on collaborative processes; that is the objective of this chapter.

My approach was one using grounded theory to identify variables and important relationships and then examined the extent to which these findings were consistent or inconsistent with existing theory. Going back and forth between empirical data and
previous research allowed me to use theory as a “coat closet.” “The concepts of the existing theory are the ‘coat hooks’ in the closet; they provide places to ‘hang’ data, showing the relationship to other data (Maxwell 1996, 33).” As Maxwell (1996, 33) suggests, this iterative process allows theory to be used as a “spot light;” theory helped illuminate particular events or phenomena and shed light on relationships that otherwise might go unnoticed or be misunderstood. The result is an integrated theoretical framework with a preliminary set of propositions that can be operationalized, tested, and refined through subsequent comparative studies.

**Limitations of the Proposed Framework**

The proposed framework recognizes that collaboration is a dynamic process. Activities today influence the way activities occur in the future. As a result, some factors are exogenous and endogenous, which necessarily complicates the framework. The best example is the role that trust and personal relationships play in a collaborative process. Respondents frequently cited improved trust and improved personal or organizational relationships as being important: reasons why individuals or organizations choose to collaborate; factors that influence the effectiveness of a collaborative activity; and, value added as a result of a collaborative process. Thus, any comprehensive model of the collaborative process is likely to have complex feedback loops, many of which remain poorly understood. The framework discussed in the following sections deliberately tries to keep the linkages and potential feedback loops simple even though, as this example demonstrates, they are likely to be quite complicated. Those utilizing or building upon the framework should recognize that this complexity exists.

An unfortunate tendency for some collaboration and watershed studies is also to let a normative bias enter the analyses. For example, researchers may view collaboration as an inherently egalitarian process and suggest that for collaboration to be successful, all affected actors must be included (e.g., Wondolleck and Yaffee 2000). In these cases, it is often difficult to discern whether research findings are based on empirical observations or normative preferences. My proposed propositions are confined to those supported by empirical observations while the advice provided to researchers and practitioners is based on my efforts to draw lessons based on these data (Rose 1993). Complicating matters is
the fact that other researchers (e.g., Gray and Wood 1991) often reach opposite conclusions. While my findings may be unable to resolve conflicts such as these, they can shed light on the debate by comparing my empirical findings with those of other researchers.

The framework is also structured in a manner that avoids the pro-innovation bias noted in the diffusion of innovation literature (Downs and Mohr 1976, 700; and, Rogers 1995). It is important for researchers to recognize that changes associated with a collaborative activity can be adaptive or disruptive (Amburgey, et al. 1993). Researchers should also give adequate attention to the contextual or situational characteristics that impose constraints on an actor’s participation in collaborative activities (Rogers 1995, 114). They should also remain neutral and avoid siding with change agents that promote collaborative efforts rather than with those who decide not to participate. This helps researchers avoid being unfairly critical of those that choose not to collaborate. This is important because actors may correctly choose not to participate because the proposed activity is simply a “bad” idea and when viewed at a later point in time may prove to be the correct decision.

The proposed framework avoids these biases by looking objectively at the characteristics that create an interorganizational system’s collaborative capacity and identifies the factors that create incentives or impose constraints on whether an individual or organization (i.e., actor) can participate in a collaborative activity. No normative determination is made with respect to whether an actor “should” collaborate, although the framework does assume that decisions occur in a manner consistent with a broad conception of rational action (Ostrom 1999, 1990).

The framework described in the following sections is also best thought of as a starting point for subsequent theory integration and conceptual development. The empirical findings produced testable propositions that either stand on their own merits or build upon previous research. However, in some cases these data are insufficient to support testable propositions but shed light on contradictory research findings. There are also cases where the literature raises important questions that these data cannot answer. In the interest of formulating an integrated theoretical framework, all three types of findings are reported in the following sections.
A Framework for Analyzing the Collaborative Process

The proposed framework argues that two sets of factors influence the collaborative process. Contextual factors create an interorganizational system’s collaborative capacity or the opportunities for joint action. Once these opportunities exist, a different set of situational factors creates incentives or imposes constraints on the actors’ ability to exploit the opportunities for working together.

As noted earlier, the literature suggests five sets of contextual factors influence a watershed’s collaborative capacity: (1) the physical environment; (2) configuration of problems; (3) institutional setting; (4) situational histories; and, (5) and programmatic context [Figure 6.1] (e.g., Born and Genskow 2001; Leach, et al. 2000; Imperial 1999a, 1999b; and, Ostrom 1999, 1990). Contextual factors create the mix of actors and problems and regular interactions among subsets of actors in the interorganizational system. These factors also create incentives and constraints on collaborative activities.

Once these opportunities exist, the actors must become engaged in an interactive process that produces collective agreement on a course of joint action. A different set of situational factors influences this process. My framework assumes that actors involved in this process make decisions in a bounded-rational manner (Ostrom 1998, 1990), however, the individuals must reach a joint decision. The garbage-can model proposed by Cohen and others (1972) is a simplified model of how decision making occurs in multi-actor or group settings. Decision making looks like “organized anarchy” where a collection of individuals, problems, and opinions look for situations to be noticed, solutions look for problems, and decisionmakers look for work (Cohen, et al. 1972).

In this “garbage can” process, the actors collectively search for win-win or at least win-no-lose situations that fit their constraint set using some sort of group decision-making process. Thus, the mix of actors, problems, and rules used to make group decisions influences the search process in important ways by generating incentives and constraints. Once opportunities fitting the collective constraint set are identified, the decision to utilize these opportunities depends upon each actor’s perception of the outcomes and transaction costs associated with the action’s implementation.
Figure 6.1: A Framework for Analyzing the Collaborative Process

Modeling the decision process this way has important implications for it suggests that the actions chosen may be suboptimal. That is, the policy or action that would be selected if the collective constraint set did not exist would perform better. It is also possible that the constraint set will prevent the actors from addressing all aspects of a given problem or prevents actors from addressing the most important watershed problems.
using a collaborative implementation strategy. Further complicating the search for actions fitting the constraint set are faulty or conflicting perceptions of incentives, constraints, the value added, or the potential implementation problems associated with a proposed course of action.

Once the actors decide to undertake a collaborative activity, another set of interrelated factors influences whether the actors have the capacity to implement the activity in a manner that creates public value and avoids imposing significant unforeseen costs. The proposed framework’s final element looks at how collaboration creates public value and the commonly observed implementation problems. The collaboration, implementation, and watershed management literatures are replete with characteristics found to influence “success.” Rather than proposing a comprehensive set of relationships, the proposed framework simply identifies the most prominent variables. This final element of the proposed framework is discussed in Chapter Seven while the framework’s first two elements are discussed in the following sections.

**Contextual Factors**

Collaboration research often identifies antecedents thought to affect collaboration positively or negatively (e.g., Selin and Chavez 1995). There are contextual conditions that practitioners have little control over. Contextual conditions are important because they create an interorganizational system’s collaborative capacity. They also create incentives and constraints on whether organizations can find opportunities for joint action that fit the collective constraint set.

My data suggest that conditions favoring cooperation or conflict can lead to collaboration, a rather encouraging prospect for practitioners interested in using collaboration as an implementation strategy. Perhaps the best example is in Lake Tahoe where the major stakeholders were involved in repeated conflicts but are now involved in numerous collaborative efforts. In Tampa Bay, the same actors collaborating on water quality and habitat issues are involved in periodic conflicts over water supply issues. In Rhode Island, the CRMC and the RIDEM are still involved in periodic conflicts and turf fights yet still find ways to work together in Narragansett Bay and the Salt Ponds.
These findings were not surprising because previous research on watershed management suggests that collaboration can result from situational histories filled with cooperation or conflict (e.g., Leach, et al. 2000; Born and Genskow 2001; Imperial and Hennessey 2000; and Imperial 1999a, 1999b). Sabatier and Jenkins-Smith (1999, 1993) further demonstrate that competing advocacy coalitions produce policy change and policy-oriented learning when viewed over relatively long periods of time. Conversely, Ostrom (1990) identifies contextual factors favoring cooperation that lead to the development of new institutions for managing common pool resources. Research on interorganizational networks also notes that collaboration results from situational histories involving conflict or cooperation (Alexander 1995; Hall 1995).

What appears to be of theoretical importance are the factors that create conditions encouraging organizations and the individuals within them to interact in ways that provide opportunities to begin learning how to work together and to build the trust and personal relationships that foster expanded collaboration. My analysis focuses on five sets of contextual factors that encourage the aforementioned interactions. These factors are consistent with those identified in the watershed management literature (Born and Genskow 2001; Imperial 1999a, 1999b; Leach, et al. 2000; Lubell, et al. 1998) and other interorganizational relationships and processes (e.g., Ostrom 1999, 1990; Ostrom, et al. 1994; Ostrom, et al. 1993; Goggin, et al. 1990).

**Physical Environment**

Previous watershed management research often concludes that the physical boundaries and size influence program development and implementation (Leach, et al. 2000; Lubell, et al. 1998). The physical boundaries are important because they delimit the potential set of actors and the state and local programs with jurisdiction over the watershed. Land ownership and historic land use patterns will also affect the mix of actors. At the same time, the ecological setting shape and influence the problems that the mix of actors addresses. These factors are discussed in subsequent sections.

My data suggests that certain aspects of a watershed’s physical environment influence the interorganizational system’s collaborative capacity in important ways. Large watersheds such as Narragansett Bay and Tampa Bay increased the number of
local government entities involved in implementation efforts. In the larger watersheds, the mix of problems also seemed to increase as the land use pattern became increasingly heterogeneous. For example, in a small watershed like the Salt Ponds, NPS problems were primarily the result of residential and commercial development activities. In a medium size watershed like Tillamook Bay, the NPS problems were mainly on agricultural land and forested lands. In large watershed like Narragansett Bay and Tampa Bay, NPS problems were due to numerous sources. Since the government programs each addressed a narrow range of NPS problems, as the land use and ownership pattern becomes increasingly heterogeneous there were more potential actors to collaborate with, which increases the collaborative capacity for the watershed. This finding can be stated formally as the following proposition:

\[ P_1: \text{As the size of the watershed increases, the size of the interorganizational system will increase, which in turn increases its collaborative capacity.} \]

**Physical Proximity of Actors**

The physical proximity of the actors also appeared to influence their propensity to collaborate. This was not surprising because a frequent and consistent finding of social network research is that the distance between actors is a strong predictor of their interactions. Gray (1985) also argues that collaboration is enhanced by the physical proximity of stakeholders and that local initiatives capture geographic advantages. Being in the same area increases the probability that the participants share values, norms, and language. They are also more likely to interact with one another and recognize their interdependence than widely dispersed participants (Wondolleck and Yaffee 2000, 75, 143; Gray 1985). Wondolleck and Yaffee (2000) go further and argue that the physical isolation of actors encourages collaboration.

There were countless examples of actors located close together collaborating more than actors located farther apart. Geographic distance helps explain, in part, the RIDEM’s reluctance to participate in the Salt Ponds informal permit review process with the CRMC and local governments. Distance was also an important factor in Tillamook Bay. Respondents suggested distance was an important reason why it was difficult to get
some state agencies and OSU faculty involved in the Tillamook Bay effort. As noted in Chapter Five, there were also many examples of the co-location of actors. Not surprisingly, these actors often interacted and collaborated more with one another than they did with other organizations both inside and outside of the watershed. In general, distance appeared to explain why their tended to be greater collaboration and interaction between agencies and staff located within a watershed than with organizations located outside of the watershed.

Less clear is the role that physical isolation played. The watersheds for Lake Tahoe and Tillamook Bay are both isolated, located in rural areas, and are situated a fair distance from their respective capitals and state agencies. The highway access and mountains that form the watershed boundaries further adds to the sense of physical isolation. The isolation was also one of the reasons why staff were frequently “detailed” to work in local offices in the watershed. Respondents in both watersheds noted this sense of isolation, and that they could not rely on “Portland” or “Sacramento” to solve their problems. Respondents also suggested that the sense of isolation encouraged them to set joint priorities and work together because there was a sense that “we’re in this together.” It also appeared that isolation fostered interactions among staff inside and outside the work environment. Respondents in both watersheds noted that since they also live in the watersheds it was not uncommon for them to develop relationships with people outside of the work environment through involvement in other community activities. This was also evident in other rural settings like the Inland Bays and the Salt Ponds. Several respondents noted that these relationships outside of the workplace often helped improve their ability to collaborate in a work environment. On the negative side, respondents pointed out that the isolation made it difficult to recruit and retain staff.

Since “isolated” actors also tended to be located in close geographic proximity to one another, it was unclear whether isolation in and of itself increased collaboration. Isolation may increase incentives for organizations in the watershed to try and solve their own problems. It could also help create the “sense of place” noted below that could create additional incentives for collaboration or starting a watershed effort in the first place. While the precise manner isolation influences collaboration is unclear, the
findings do point to the strong role that geographic location played. This can be stated in the following formal proposition:

\[ P_2: \text{Organizations located in close geographic proximity are more likely to interact with one another.} \]

**Physical Configuration of the Watershed**

Other aspects of the watershed’s configuration also shape collaborative efforts, although it is unclear precisely how this occurs. Discernable boundaries appear to help create a sense of place, a factor which Wondolleck and Yaffee (2000, 75) find increases collaboration. My data offer some support for their finding. A striking visual example is Lake Tahoe. It was not uncommon during an interview for respondents to point to the mountains surrounding the basin when asked why they were collaborating. A similar condition exists in Tillamook Bay, which has mountains forming the eastern watershed boundary. A highway runs roughly parallel to the northern boundary of the Salt Ponds and creates a distinct sense of place and several respondents actually referred to this general region as “God’s Country” or “the ponds”.

In all three cases, the resulting sense of place appeared to be an integral part of the local culture and respondents suggested that this “uniqueness” was an important rationale for starting the watershed management effort. The impetus for the Salt Ponds SAMP was to develop “special” policies that would respond to the region’s unique problems. The “unique” status of Lake Tahoe as one of the largest alpine lakes in the world is another example. This uniqueness may be important because it may help galvanize support and help attract resources to support planning and implementation efforts.

Conversely, respondents in the Inland Bays, Narragansett Bay, and Tampa Bay reported that the lack of a discernible boundary created an obstacle by making it more difficult to convince actors that inland activities affected surface waters. For example, the NGOs affiliated with the poultry industry in the Inland Bays watershed questioned whether their activities affected water quality. In all three cases, respondents suggested that it was difficult to obtain participation by inland actors because they did not attach much importance to the estuary’s water quality problems, did not see their organization
as having a strong role in addressing these problems, viewed other local environmental
problems as being more important, or did not believe their actions had a large impact.

The watershed’s configuration could also influence transaction costs. For
example, the Salt Ponds is comprised of nine subwatersheds, many of which are located
within particular towns. This minimized “free-rider” problems because a town could not
benefit from changes in zoning or infrastructure investment in other communities. At the
same time, it incurred costs if it engaged in “shirking” and failed to implement the
policies (Imperial 1999a). In other instances, the configuration exacerbated transaction
costs. In the Inland Bays, the political differences between the agricultural and
development interests were exacerbated by the watershed’s configuration because the
residential and commercial development is located directly across the bay from the
agricultural operations, further emphasizing their different perspectives on the
watershed’s problems.

A final question raised by the analysis is whether collaboration will become more
difficult as the number of actors increases in a watershed. For example, increasing the
number of actors may increase the constraint set, which in turn increases the transaction
costs associated with finding opportunities for joint action. This line of reasoning would
suggest that collaboration is less likely in large watersheds with a large number of actors
(Imperial 1999b). Conversely, in small watersheds it may be more difficult to attract the
attention of federal- and state-level actors, making it more difficult to get the resources
necessary for collaborative activities. This study finds that collaboration occurs in both
small and large watersheds, although it is unclear whether watershed size makes
collaboration more or less likely to occur. It is also unclear whether watershed
management is likely to be more effective in small or large watersheds.

My data does suggest that regardless of the watershed’s size, it is useful to be
strategic and rely on several targeted collaborative efforts rather than trying to address the
whole watershed and all of its problems through one centralized collaborative effort. The
use of harbor management plans and the informal permit review process in the Salt Ponds
and the tributary teams and water use plan in the Inland Bays illustrate that even in a
small watershed it is often useful to look at problems in a particular subregion or to
structure several sets of collaborative efforts around a narrow set of issues rather than
trying to have one centrally directed effort. As these findings suggest, much work remains to fully understand all of the ways that a watershed’s physical setting influences collaborative processes.

**Configuration of Problems**

Different ecological systems and the patterns of historical development give rise to different problems. The mix of problems is important because different organizations are concerned with different problems. It also influences a watershed’s collaborative capacity by shaping the mix of actors involved in watershed management efforts.

My data suggests certain problem characteristics influence the collaborative process. Rochefort and Cobb (1993) propose a useful framework for analyzing different dimensions of policy problems. They suggest that policy problems can be described in terms of characteristics such as their causes (e.g., simple or complex), severity, observability, tractability, familiarity, or linkages. My data offers strong support for the proposition that complex problems or problems with multiple causes like NPS pollution increase an interorganizational system’s collaborative capacity by increasing the number of actors with responsibility for addressing a given problem. It also appears that problems that are perceived to be increasing, severe, or approaching crisis increase incentives for interaction and finding opportunities that fit the collective constraint set. Less clear is whether problem characteristics such as the observability, tractability, familiarity, or linkages between problems influence the collaborative process.

**Causes of Problems**

The cause of a watershed’s problems appears to have a strong impact on a watershed’s collaborative capacity. Many of the collaborative activities described in Chapter Five involved complex problems in the area of NPS pollution and habitat loss and degradation. This was not surprising. Complex environmental problems such as NPS pollution often has numerous causes within a watershed. Yet, many government programs are narrow in focus and address only a specific cause(s) of NPS pollution. For example, In Tillamook Bay three sets of federal, state, and local agencies address NPS
problems from agricultural, forestry, and land development activities. It is also common for government programs to review a small piece of a proposed development project. For example, OSDSs, stormwater runoff, wetlands alterations, and erosion and sediment controls from construction activities may all be subject to review by different agencies (or independent programs within the same agency). This reliance on government programs targeted at specific aspects of a problem combined with increasing technical specialization greatly expands the number of organizations involved in addressing complex watershed problems. This expands the opportunities for collaboration by introducing complementary and potentially synergistic relationships. It also creates incentives for the agencies to work together because individually they are unable to address all aspects of a complex problem. This finding can be stated formally as:

\[ P_3: \text{Problems with multiple or complex causes increases an interorganizational system’s collaborative capacity because it increases the number of actors with responsibility for addressing a problem.} \]

**Problem Severity**

As Rochefort and Cobb (1993) suggest, another important characteristic is the actors’ perception of a problem’s importance, its severity, and whether it is increasing. Other researchers have noted that these problem characteristics influence the collaborative process (Born and Genskow 2001; Phillips, et al. 2000; Wondolleck and Yaffee 2000; McCaffrey, et al. 1995; Selin and Chavez 1995). My data supports these findings because these problem characteristics create strong incentives for collaboration.

Respondents in the Inland Bays reported that the rapid increase in residential development, *Pfiesteria*, and algae blooms all created strong incentives to collaborate. Respondents in Lake Tahoe continually repeated the mantra that they only had a 10-year window to do something about declining lake clarity. Respondents in Tillamook Bay noted that the listing of the salmon pursuant to the ESA created strong incentives for federal, state, and local agencies to begin searching for ways to work together to restore salmon habitat. They were also quick to note that increased shellfish closures were the impetus for early collaborative efforts. Similarly, the threat of a nuclear power plant and
declining water quality from point sources were frequently cited as the reason for starting the efforts in the Salt Ponds and Tampa Bay, respectively.

Respondents suggested that the severe nature of the aforementioned problems created incentives to collaborate because no one agency could “solve” the problem by working independently. They also suggested that the general public and political officials were more likely to pressure the agencies to take action to address them. As a result, participants were more likely to view the status quo condition as being unacceptable. As McCaffrey and others (1995) suggest, this creates strong incentives for the actors to reconcile conflicting goals and to find opportunities for joint action that address the problem, if for no reason other than to respond to political pressures. The best example of where this occurred was in Tillamook Bay where the Governor makes all of the state agencies report to him twice a month on the actions taken to address the salmon’s ESA listing. Respondents suggested that this reporting process created strong incentives for the agencies to find new ways to work together. This suggests the following proposition:

P₄: Incentives for collaboration increase when the members of an interorganizational system perceive a problem to be increasing, severe, or approaching a crisis.

**Other Problem Characteristics**

Less clear is how the other problem characteristics noted by Rochefort and Cobb (1993) influenced the collaborative process. One of the features of many NPS problems is their ubiquitous nature and the difficulty in directly observing them. Conversely, point source problems often are easily identified. The physical environment can also dictate how “observable” a problem is. For example, Lake Tahoe’s declining water clarity is readily observable while excessive nutrient loadings in the Inland Bays and the Salt Ponds are not. Other NPS problems are difficult to observe because natural variations in pollutant levels such as those associated with rainfall patterns make it difficult to discern whether the observed problem is due to man’s influence or is the result of natural fluctuations. Since the cases are replete with examples of collaboration dealing with
problems that are easy and difficult to observe, this does not appear to be an important problem characteristic.

It is also questionable whether a problem’s familiarity influences the collaborative process. Some researchers suggest that the actors may be more willing to use collaboration to address “novel” problems because established policy solutions do not exist (Phillips, et al. 2000; Chisholm 1995). When problems are new, unfamiliar, and unprecedented it is also possible that there are no clearly demarcated lines of authority or institutional constraints restricting collaborative activities. Collaboration may also be a mechanism for the actors to collectively examine problems and address these problems. Many of the early watershed planning efforts would be examples of where this occurred. Conversely, the institutional system addressing familiar problems may be better developed with clear lines of authority. For example, Tampa Bay has long addressed problems such as nutrient loadings from point sources and stormwater runoff. As a result, there are well-developed programs at the state, regional, and local level to address these problems. However, because it is well developed, the institutional system also places constraints on how the actors address these problems.

A problem’s level of tractability could also influence the collaborative process. Intractable problems result when there is the lack of agreement on how to frame problems or in what constitutes acceptable policy solutions (Gray 1997; O’Toole 1997a). Ill-defined problems may be less suitable for being addressed by a consensus-based process (Chisholm 1995). That is not to say, however, that a problem’s intractability prevents collaboration. Rather, it suggests that some transformation in how a problem is defined may be necessary before the participants can reach agreement on ways to work together (Gray 1997). Conversely, intractable problems may require participants to devote more effort to framing problems in an attempt to develop a common understanding of appropriate policy solutions.

The problems clearly varied in terms of their tractability. Complex problems such as nutrient loadings from atmospheric deposition in the Inland Bays and Tampa Bay remain intractable with collaborative efforts limited primarily to joint research projects. Other problems such as point source discharges from sewage treatment plants are very tractable. There were examples of collaboration in trying to address these problems as
well. Thus, it was unclear what the specific relationship between a problem’s level of tractability and the collaborative process was.

The configuration, or linkages and tradeoffs, among watershed problems also appeared to be important, although it was unclear what the specific relationship to the collaborative process was. While all of the watersheds experienced multiple problems, only Narragansett Bay was unable to find a focal problem to raise on the policy agenda. The ability to find a focal problem(s) appeared to be particularly important because it helped forge the group’s collective identity and mission, which in turn became its rationale for collaborative action. It also created the measuring stick against which the public and politicians hold the collaborative effort accountable for its progress. For example, while the efforts in the Inland Bays address a number of problems, respondents generally viewed the effectiveness of these collaborative efforts in terms of their ability to address excessive nutrient loadings from exploding growth and the poultry industry.

The complementarity of problems was also important. Linking environmental problems to other environmental or social problems expanded the mix of actors, created new opportunities for collaboration, and attracted additional resources and support for these collaborative activities. For example, the efforts to install tidal gates in Tillamook Bay helped address water quality and flooding problems while restoring salmon habitat. The ability to link environmental problems with other social problems had a similar effect. The best example was in Lake Tahoe where environmental restoration projects were incorporated into projects addressing the region’s transportation, affordable housing, and economic development problems.

However, the failure to recognize these linkages and tradeoffs also caused problems. Linking environmental issues with other social problems caused agencies to be criticized. For example, one EPA official in the NEP noted that the agency is often accused of “mission creep” when it does this. In Tillamook Bay, the EPA limited the TBNEP’s efforts to address flooding issues to those actions that reduced environmental problems. This limited its ability to link activities to address flooding issues with those that might address other economic development and transportation problems.

The failure to recognize potential tradeoffs among problems caused the actors to utilize opportunities for collaboration that created new problems as well, although the
new problems created new opportunities for collaboration. The best example is the failure to recognize the tradeoffs between sewers and OSDSs in the Inland Bays and Lake Tahoe (Paterson, et al. 1991). In both cases, the actors emphasized installing sewers to remove nutrient loadings from OSDSs. But this allowed development in areas unsuitable for OSDSs and allowed greater densities. As a result, there is greater impervious surface, habitat loss, and user conflicts that are now “new” problems. Conversely, in the Salt Ponds the actors recognized these tradeoffs and pursued a different set of collaborative actions. Accordingly, a better understanding of the configurational nature of problems influences an interorganizational system’s collaborative capacity is needed.

The Institutional Setting

Researchers often conclude that the institutional setting has a strong influence on the development and implementation of watershed management programs (e.g., Leach, et al. 2000; Born and Genskow 2001; Imperial and Hennessey 2000; and Imperial 1999a, 1999b). Similarly, Ostrom (1999, 1990) and others (e.g., Ostrom, et al. 1994; and Ostrom, et al. 1993) argue that the institutional setting influences the design and performance of institutional arrangements.

My data suggest three interrelated features of the institutional setting merit particular attention: the number of actors in the interorganizational system; the distribution of functions, responsibilities, and resources among the members; and, the pattern of interactions and overlap in functions and responsibilities. It was already noted that the physical setting influences the size and composition of the interorganizational system (proposition 1). As the size of the watershed increases and land use becomes increasingly heterogeneous, the number of actors in a watershed’s interorganizational system is likely to increase. As the number of actors increases, the number of potential linkages between organizations (i.e., possible opportunities for joint action) also increases. Patterns of land ownership and resource use will also affect this mix of actors.

More important though is the distribution of functions, responsibilities, authorities, and resources among the interorganizational system’s members. The previous section noted that problems with multiple or complex causes often have more actors with responsibility for addressing them (proposition 2). In part, this is a product of
the structure of the U.S. federal system where federal and state statutes vest different functions, responsibilities, authorities, and resources in a wide range of government agencies and programs.

Research suggests that this distribution of functions, responsibilities, and authorities creates opportunities for organizations to collaborate (e.g., Alexander 1995; and, Hall 1995). For example, a development project in the Salt Ponds may be subject review by the OSDS, freshwater wetlands, and water quality programs in RIDEM, the CRMC, and local governments. As previously noted, these actors collaborate in several ways to improve their review of development projects. Similar examples exist in nonregulatory programs where various functions, responsibilities, and resources pertaining to public education, environmental monitoring, habitat restoration, and NPS control are distributed among a diverse range of actors.

Using the terminology employed by the respondents, this suggests that there is likely to be greater collaborative capacity in “fragmented” institutional systems where functions, responsibilities, authorities, and resources are widely dispersed among of federal, state, regional, and local actors. This may explain why a common rationale for undertaking watershed management in the literature is overcoming the problems resulting from the “fragmentation” of government authorities (Imperial 1999b).

However, exercising these authorities also imposes constraints on the utilization of an interorganizational system’s collaborative capacity. For example, restoration projects are still subject to approvals by various federal, state, and local agencies. Thus, exercising these authorities imposes constraints while simultaneously creating incentives for regulatory and nonregulatory agencies to collaborate during the project design phase in order to expedite permit approvals. Indeed, this combination of incentives and constraints drove the creation of the interlocal agreement in Tampa Bay. Similarly, it was not uncommon to find that federal grant programs limited what types of collaborative activities would be funded while at the same time created eligibility requirements that favored collaborative projects.

It was also the case that federal or state statutes might impose conflicting mandates or made agencies responsive to different constituencies. Perhaps the best example is in Rhode Island where the CRMC and RIDEM address many of the same
problems but have conflicting mandates. The CRMC is required to balance the interest of conservation and development and promotes certain activities such as recreational boating and it is a legislative agency. The RIDEM is charged with resource protection and public health and it is an executive branch agency. While the overlap in functions creates opportunities for collaboration, differences in the respective state statutes and their respective constituencies prevent them from utilizing all of these opportunities.

Federal or state statutes can also encourage or restrict certain types of implementation actions. Some organizations are limited to nonregulatory actions such as funding BMPs, restoring habitat, or public education. For example, Tampa Bay’s interlocal agreement prohibits the TBEP from using regulation as a policy tool and the CIB’s enabling statute requires it to undertake public education and promote habitat restoration. In other instances, organizations are required to use certain policy instruments. For example, the CRMC and TRPA are required to regulate activities and their lack of access to funding for nonregulatory activities limits their efforts in areas such as habitat restoration.

Thus, it was not surprising to find that organizations often advocated different policy solutions to the same problems. For example, it was common for respondents to note that EPA and state-EPAs prefer command and control approaches to solving both point and nonpoint source problems while many local officials and agricultural programs favored nonregulatory approaches. Conversely, EPA respondents were often critical of the NRCS and agricultural programs for promoting nonregulatory actions.

While the distribution of responsibilities, authorities, and resources among an interorganizational system’s members was important, equally important was the pattern of interaction among these organizations. It was possible to have a fragmented system where the functions and responsibilities were divided and compartmentalized in such a manner that there was little reason for organizations to interact as they fulfilled these responsibilities on a daily basis. Conversely, it was possible to have an interorganizational system that requires its members to interact as a result of overlapping functions and responsibilities.

Some examples are instructive. The functions and responsibilities in the Inland Bays are allocated among state and local governments in such a manner that there is little
reason for the organizations to interact. Local officials reported that they rely on approvals from state programs and the local conservation district to review the environmental aspects of projects. Delaware’s stormwater requirements are delegated from the DNREC to the conservation district except for transportation projects, which are delegated to DelDOT. There is even little need for local municipalities to discuss border issues because they are surrounded by unincorporated land. In fact, several respondents suggested that they have a long history of planning efforts in the Inland Bays watershed because this creates a reason for the organizations to interact on an ongoing basis.

Conversely, in the Salt Ponds the CRMC, RIDEM, and local governments responsibilities overlap considerably. The same is true in Lake Tahoe and Tampa Bay where development projects are subject to review by a wide range of agencies. Thus, the organizations interact on a regular basis even if they do not want to. It was also common to find multiple organizations with responsibilities for public education, environmental monitoring, land acquisition, habitat restoration, or the installation of BMPs in all of the watersheds. Even though these organizations may not be required to interact as a result of their overlapping functions and responsibilities, this pattern of potential interactions adds to the interorganizational system’s collaborative capacity.

These overlapping functions and responsibilities also explain the subsystems of interaction observed in many of the cases. In other words, more collaboration was observed between organizations with overlapping functions than with organizations whose functions and responsibilities did not overlap. Born and Genskow (2000) observed a similar phenomena in the watersheds they examined in a recent study. My data suggested that there was greater interaction among regulatory or nonregulatory programs than occurred between regulatory and nonregulatory programs. This was most apparent within state-EPAs where nonregulatory programs were often involved in collaborative efforts with nonregulatory programs in other agencies. However, there was less collaboration between regulatory and nonregulatory programs within state-EPAs even though staff may be located literally just a few feet away from one another. Examples of other subsystems included the interaction between NOAA and the CRMC, EPA and state-EPAs (and in Tampa Bay the EPC), and NRCS and conservation districts. Collectively, these findings suggest the following proposition:
P5: The more widely distributed and greater the overlap in functions, responsibilities, authorities, and resources among an interorganizational system’s members the greater its collaborative capacity.

**Other Properties of the Interorganizational System**

Less clear is how the interorganizational system’s other structural properties influence the collaborative process. While my data prohibited the analysis of the structural properties in any great detail, this is an area where future research can and should build upon using techniques such as block modeling (e.g., Wasserman and Faust 1994; Wasserman and Galaskiewicz 1994; Knoke 1993; Scott 1991). The structural properties are important because they reflect the patterns of actual or potential interaction that create the interorganizational system’s collaborative capacity (Raelin 1980). While the network literature is often criticized as being atheoretical and oriented towards using quantitative techniques to measure network structure, there is the potential to link collaboration theory to these measures. Two examples illustrate how this could occur.

One of the commonly analyzed properties of network structure is the density of relationships within the system. Accordingly, density is a characteristic of the entire network measuring the relative number of ties that link actors together (Rowley 1997, 896; Walker, et al. 1993; Lincoln 1982). These linkages might reflect different patterns of task specialization or responsibilities that exist in an interorganizational system. Thus, the density of network ties may provide a means of measuring the interorganizational system’s collaborative capacity. Previous research in this area may also provide insights into the collaborative process. For example, research suggests that as density increases and the number of network ties increases, communication across the network becomes more efficient and this facilitates information exchange (Rowley 1997). It can also facilitate the diffusion of norms and shared values (Rowley 1997; Oliver 1991; DiMaggio and Powell 1983; Meyer and Rowan 1977; Pfeffer and Salancik 1978).

Structural measures might also be modified to examine whether an organization’s network position influences its propensity to collaborate. A measure that might be used to examine this question is an organization’s centrality. Centrality refers to an organization’s position in the network relative to other organizations. Essentially, it is
the number of ties an actor has with others in a network.\textsuperscript{1} In some cases, organizations may have relatively few linkages. For example, in the Inland Bays the local municipalities have few linkages with other local governments, Sussex County, or state agencies. Conversely, Tampa, St. Petersburg, and Clearwater have numerous linkages with other local governments, their respective counties, and various state agencies.

Researchers using this measure might examine an actor’s prominence or power obtained through its position within the network structure (Rowley 1997; Wasserman and Galaskiewicz 1994; Mizruchi and Galaskiewicz 1993; DiMaggio 1983; Lincoln 1982). Previous research also suggests that actors that are central in a network have greater potential to combine and exchange resources with other actors due to their positional advantages (Tsai and Ghoshal 1998, 467). Naturally, this raises the question of whether a high level of centrality increases the likelihood that an organization will participate in collaborative activities. As the two examples suggest, linking measures of the structural properties of interorganizational systems to the study of collaborative processes may lead to new insights while providing quantitative tools to better assess and examine some of the propositions put forward in this chapter.

**Situational Histories**

Previous research frequently notes that situational histories have a strong influence the development and implementation of watershed management programs (Born and Genskow 2001; Leach, et al. 2000; Imperial 1999b; and, Lubell, et al. 1998). Examining these factors is complicated by the fact that these situational histories are both exogenous and endogenous. That is, collaborative efforts produce situational histories that provide the starting point for a subsequent set of collaborative activities. The situational histories also facilitate ongoing collaborative efforts. Thus, it was difficult to separate out how all of the ways that the situational history influences the collaborative process. Nevertheless, my data suggests two interrelated aspects of a watershed’s situational history influence the collaborative process: the degree to which past interactions allow the actors to engage in policy-oriented learning and develop collaborative know how; and, the trust, personal relationships, and interorganizational relationships that developed during collaborative processes.
Policy-Oriented Learning and Collaborative Know How

It was clear that the history of interactions in the watersheds produced the policy-oriented learning observed by Sabatier and Jenkins-Smith (1999, 1993), which in turn influenced the collaborative processes described in Chapter Five. This was readily apparent during the review of the archival record of previous planning efforts. For example, a review of the technical reports in the Inland Bays reveals that early efforts were mostly concerned with properly planned development and the installation of central sewer systems. While these issues remain relatively constant, there is a gradual expansion in issues to nonpoint sources from residential and commercial development, to conflicting recreational uses, and more recently to NPS pollution from poultry facilities. More recently, attention has shifted from nitrates to phosphorous as research demonstrated that it is more mobile in the soils than previous suspected, which has important policy implications in that it means new BMPs are needed. Similar examples of the shift in issues and how problems were defined can be found in the other watersheds as well. As these issues shift and expand, new collaborative opportunities emerge.

Policy-oriented learning influenced the collaborative process in several distinct ways. Past interactions created shared definitions of problems and a common understanding of acceptable policy solutions. When the most recent set of planning and implementation efforts in the Inland Bays, Tampa Bay, and Tillamook Bay started, little effort was devoted to identifying problems because previous planning left the participants with a shared definition of priority problems. Moreover, little time was spent educating participants about the issues because they already understood the problems. In the Inland Bays and Tampa Bay, previous watershed efforts also created a clear set of research priorities, which allowed the participants to use EPA’s research funds effectively. Conversely, the lack of a similar history in Narragansett Bay complicated efforts to develop a shared understanding of the watershed’s priority problems. This prolonged decision-making and fostered the conflicts surrounding the CCMP’s approval.

The history of interactions also led actors to develop a shared understanding of what policy solutions were appropriate for addressing problems. This reduced the time spent searching for possible implementation actions. In the Inland Bays, Tampa Bay, and
Tillamook Bay, instead of spending their time collectively deciding what to implement, their efforts were spent trying to figure out how to implement desired policy solutions. Conversely, disagreements in Narragansett Bay revolved around competing problem definitions and policy solutions. The shared experiences and learning were often quite strong and could differ between watersheds experiencing similar problems. The best example would be the differences in preferred policy solutions in the Inland Bays and Salt Ponds. Whereas the actors in the Inland Bays the participants shared a common belief that sewers should be installed to remove OSDSs, the actors in the Salt Ponds strongly believed that zoning overlays were more appropriate.

It was also clear that the subsystems of interaction noted earlier often share common problem definitions and advocate similar policy instruments. For example, the EPA and some state-EPA and environmental groups preferred regulatory approaches to addressing NPS problems while nearly everyone else, the vast majority of respondents, viewed nonregulatory efforts as being more effective. These beliefs are often the product of their respective statutory missions but also reflect the organizations’ experience in addressing these problems as it was common for respondents to couch their opinions in terms of their own implementation experiences.

There were also examples where previous experience led to policy-oriented learning that produced policy changes, which in some cases fostered new collaborative efforts. The best example was in Lake Tahoe. Many of the actors had a strong belief during the TRPA’s early history that strong regulatory controls would address the watershed’s problems. However, after two disappointing threshold reviews, over 10 years of implementation experience, and research suggesting that additional action was needed to address declining lake clarity, it became clear to many of the actors that regulatory actions alone would be unable to solve basin problems. This led to the search for new nonregulatory approaches, and eventually the development of the basin’s Environmental Improvement Program (EIP). Interestingly, several respondents noted that the EIP was not a new idea. A similar nonregulatory approach had been proposed years earlier but found few supporters among any of the key stakeholder groups.

There were also examples of where organizations became engaged in a form of learning where organizations learn how to collaborate by collaborating, a process
Simonin (1997) refers to as “collaborative know how.” Organizations must learn what types of collaboration produce public value. They also need to learn how to design effective collaborative processes that reduce transaction costs (Dyer and Singh 1998; Kraatz 1998; Simonin 1997). This learning process helps explain the collaborative inertia and bandwagon effects noted in Chapter Five (Bardach 1998).

There were many examples of this type of learning across the cases. In the Inland Bays, respondents reported that a great deal of time was spent during the early years of the CIB addressing organizational issues such as liability protections for board members, finding a permanent home, hiring staff, and securing grant funds. Since the staff had never administered a collaborative effort, they reported that early implementation efforts were often experimental as they tried to find what worked. Even in Tampa Bay where the participants had a long history of collaboration, respondents reported that they were still learning how the interlocal agreement worked in practice as well as practical matters such as how to deal with different budget and grant procedures.

It is clear that policy-oriented learning and the development of collaborative know how influenced the collaborative process. Importantly, it improves the actors’ ability to link issues and problems in ways that take advantage of the collaborative capacity present in a watershed’s interorganizational system. Putting these findings in the form of a formal proposition it can be stated that:

\[ P_6: \text{Histories of interaction that encourage policy-oriented learning and the development of collaborative know how improve the actors’ ability to exploit the interorganizational system’s collaborative capacity.} \]

**Trust, Personal Relationships, and Interorganizational Relationships**

Another important aspect of the situational history is the trust and the personal and interorganizational relationships that develop as a result of previous interactions. Numerous respondents pointed to trust and personal relationships as being an important precursor to and product of a collaborative process (See Chapter Seven). This finding was not surprising since watershed research frequently points to the importance of trust and personal relationships (Born and Genskow 2001; Leach, et al. 2000; Wondolleck and
Yaffee 2000; Lubell, et al. 1998). It is also consistent with research noting the many ways that relationships and trust develop as a result of network interactions (Fountain 1998, 1994; Putnam 1995; Coleman 1990; Ostrom 1990; Axelrod 1984). Research suggest that this “social capital” facilitates future cooperative efforts (Leana and Van Buren 1999; Tsai and Ghoshal 1998). Others note that it is important to look at a transaction in the history of trust and ongoing relationships between the organizations involved (Saxton 1997; Gulati 1995; Granovetter 1985). Trust is generally viewed as important because there is a widespread preference for transacting with individuals or organizations with known reputation and few are content to rely solely on generalized morality and institutional arrangements alone cannot entirely prevent strategic behavior (Granovetter 1985). Information from a trusted informant or from an individual or organization where there is a history of previous positive transactions is also likely to be viewed as more reliable and accurate (Granovetter 1985).

My data suggests that trust and personal or interorganizational relationships (i.e., social capital) develop through conflict or cooperation. For example, respondents in Inland Bays, Tampa Bay, and Tillamook Bay were quick to point to previous collaborative efforts and the trust and personal relationships that developed as being the reasons that they were able to collaborate in current efforts. As a respondent in Tillamook Bay noted: “it [the TBNEP] has created awareness and brought groups together that otherwise wouldn’t have worked together.” Conversely, respondents in Lake Tahoe noted that interpersonal relationships developed during the ongoing interactions surrounding interorganizational conflicts. Eventually, these relationships facilitated the development of the Tahoe Transportation and Water Quality Coalition and the collaborative efforts currently underway in the watershed.

It was also clear that it took time to build trust and personal and interorganizational relationships, a common finding of those examining cooperative processes (e.g., Axelrod 1997, 1984; Ostrom 1990; Ostrom, et al. 1994). When asked, most respondents reported being frustrated with the time it took to develop trust and personal relationships but also noted that there did not appear to be any effective way to shorten the process. This helps explain the collaborative inertia and bandwagon effects noted in Chapter Five. During early collaborative efforts there is likely to be less trust
and weaker personal and organizational relationships. As the trust and relationships build, collaboration becomes easier and efforts expand to new areas. This suggests that collaboration may be more likely to occur in watersheds where the situational histories and interactions allow actors to develop trust and relationships.

Interestingly, while trust and personal relationships developed slowly as a result of repeated interactions, one negative experience appears to have a more profound affect in terms of destroying this social capital. For example, respondents still viewed the NBP in negative terms. As one RIDEM staff member in the process noted: “It was a very difficult process, and I think we all learned a lesson from it. If nothing else, how not to do it in the future.” Many respondents characterized the final months of deliberation as “arduous”, “hellish”, and “destructive” while the EPA staff referred to it as a “dysfunctional program”. Some respondents suggested that the se negative experiences were still used as justification for avoiding collaborative efforts even though few of the original participants remain.

In Tampa Bay, several FDEP officials were upset with the EPA as a result of the recent delegation of portions of the NPDES permit system. According to one high-level state official, when they entered the program “there were all of these hidden surprises. Here EPA has been running the program for years. We get it and all of a sudden there is a 90% non-compliance rate because EPA let all of these things slide for all of these years. We are the bad guy . . . so we are not going to get in that trap again [reference to taking over the stormwater portion of the NPDES program].” As a result of this bad experience, the FDEP officials suggested that they would be more careful in the future when entering into future agreements with this set of EPA officials.

Trust and relationships play an important role in all aspects of the collaborative process. They help actors find ways to exploit the interorganizational system’s collaborative capacity. They facilitate the collaborative process by reducing transaction costs. As discussed further in Chapter Seven, they are also one of the important ways that value is created as a result of collaborative processes. Stated formally, the findings support the following proposition:
Histories of interaction that produce trust, personal relationships, and interorganizational relationships improve the actors’ ability to exploit the interorganizational system’s collaborative capacity.

**Programmatic Context**

A frequent finding of many watershed studies is that planning and implementation efforts are influenced by their programmatic context (e.g., Born and Genskow 2001; Leach, et al. 2000; Imperial 1999b). This includes factors such as: (1) the norms of acceptable behavior in the community; (2) the level of common understanding that potential participants have about problems, policy solutions, and collaborative processes; (3) the degree of homogeneity of preferences of those living in the community; and, (4) socio-economic conditions (Born and Genskow 2001; Ostrom 1999, 1990; Imperial 1999a, 1999b). The term culture is often applied to this set of factors (Ostrom 1999).

While my data generally supports these findings, it is insufficient to support any specific propositions, and in many cases the analysis of these factors produced more questions than answers. It was also clear that these factors are interrelated with the contextual factors described in previous sections as well as the situational factors described in the following sections. This further confounded the analysis. Nevertheless, the data does suggest some important areas for future research.

The particular mix of economic conditions and potential sources of implementation funding appears to be important. For example, the devastating floods and small tax base made Tillamook County heavily reliant on federal and state funding. This imposed constraints on the types of collaborative activities that could be undertaken. Conversely, Tampa Bay has a large tax base with a diverse set of state and local revenue streams to support implementation efforts. This facilitated the actors’ ability to make the transition from funding discrete loosely connected projects to systematically implementing a series of collaborative projects designed to meet a set of shared policies. The role that these resource differences played is explored further in Chapter Seven.

The programmatic context combined with the physical location of actors, institutional setting, and situational history may also influence the level of trust and the nature of the relationships that develop in different subsystems of interaction. For example, there was little trust between the agricultural industry in the Inland Bays and
DNREC’s water quality programs (e.g., Section 319). There was much more trust between farmers and the CES, NRCS, and SCD with the greatest level of trust occurring between the farmers, integrators, DPI, and the Farm Bureau (Llvento and Watson 1997; and Michel, et al. 1996). However, more needs to be learned about the factors that produce these different levels of trust and relationships.

The most interesting question concerned how “rural” or “urban” settings influenced collaborative processes. In urbanized settings and watersheds with a large number of actors (e.g., Tampa Bay, Narragansett Bay) there appeared to be less importance attached to interpersonal trust and personal relationships. Instead, trust between organizations and institutionalizing relationships among organizations appeared to be important priorities. Conversely, respondents in rural or isolated watersheds (e.g., Inland Bays, Salt Ponds, and Tillamook Bay) appeared to place greater importance on interpersonal trust and personal relationships. They were also inclined to rely on informal agreements and personal relationships to administer collaborative processes.

Rural settings influenced the collaborative process in other ways. Respondents in Tillamook Bay noted that the small population made it difficult to replace volunteers once they burn themselves out. As respondent observed: “Some folks [volunteers] have done an outstanding job, but you can’t ask them to go on year after year.” Another respondent noted that: “At several projects, agency folks have shown up but no citizens and that’s tough. They’re [agency officials] willing to help. As long as there are people here.” Since there is only a fixed pool of volunteers to draw off, the program is increasingly reliant on working with the schools to provide a stable source of volunteers.

Rural settings also influenced how collaborative processes occurred. Respondents noted that it was difficult to schedule meetings in the Inland Bays. Many federal, state, and local officials want to meet during the day because of their work schedules and constraints on the use of flex time. However, this is inconvenient for other participants that have full-time jobs, particularly during the summer months when it is tourist season. Other residents are farmers who have trouble attending meetings during the planting or harvest seasons. Similar problems exist in Tillamook Bay where respondents were noted that a dairy farmer’s life style does not lend itself to going to advisory committee meetings during the day when federal, state, and local officials are working. As one
respondent noted: “In an agricultural community such as this one, you can’t expect people to drop everything and come to meetings. You don’t start meetings around here until about 7:00 PM.” These findings suggest that more attention needs to be placed to the role that the programmatic context plays in influencing collaborative processes.

**Situational Factors**

The interaction between the physical setting, the configurational nature of problems and policy solutions, institutional setting, situational histories, and programmatic context created opportunities for organizations to become engaged in collaborative activities. However, collaboration is fundamentally a process of communication, problem solving, and decision making (Wondolleck and Yaffee 2000, 63). Thus, a different set of situational factors influences whether organizations can reach agreement on activities to pursue jointly. Thus, a separate set of situational factors create incentives or impose constraints on the actors’ ability to exploit the interorganizational system’s collaborative capacity.

While researchers generally agree that collaboration involves a group decision-making process (e.g., Selin and Chavez 1995; Gray 1989), there is little agreement on how this process should be modeled. I view this group decision-making process as a modified version of the “garbage can” model first proposed by Cohen and others (1972).² The “garbage can” model argues that problems arise and disappear, change shape or significance, and be combined or separated over time. Participants move in and out of situations where choices are made and will look for opportunities to promote their ideas. Some actors advocate parochial solutions drawn from a standard “toolkit” while entrepreneurs may try to win approval for innovative solutions.

The key to the model is the interactive process that allows for the mix of actors to define problems and search for policy solutions that fit their collective constraint set. The process involves varying degrees of cooperation and conflict as the participants undertake this search process and break down jurisdictional barriers to develop a shared definition of problems. As one local official in Tampa Bay noted: “I know there are jurisdictional, invisible barriers between communities, states, and local governments. They don’t
communicate. They don’t share resources. They seem to be in competition with each other most of the time.” Another respondent in Tampa Bay noted:

“The collaboration between counties was not that great; there had always been some conflict there. But once they all got together sitting on the policy and management boards, they finally realized that they were all going after the same thing basically and any improvements in the watershed really benefit them all. We’re all dealing with our own set of peculiar little problems but we’re dealing with it in an organized fashion. That was one big thing that came out of the CCMP and the action plan process.”

These interactions often change participants’ perceptions. For example, there was some tension between the six local governments and the regulatory agencies in Tampa Bay as a result of previous conflicts pertaining to water supply issues and the implementation of some EPA and FDEP programs. Many local officials were initially concerned that the NEP might evolve into new regulatory requirements. However, these perceptions changed as a result of their interactions. As one local official explained:

“The city first knew that the estuary program was another potential regulatory branch with a possibility of an extra layer of bureaucracy that may not be cost effective to environmental benefits. After getting into it, it became clear that they were taking a very different approach, which was very attractive to the city, that being a more holistic view and systematic view as to how to improve the bay waters. That it was not end of pipe technology but more holistic and the adoption of habitat as a barometer measuring bay success was attractive.”

Respondents also reported that the interactions were instrumental in helping the participants discover new ways of working together. One respondent in Tillamook Bay noted: “People can achieve things that were just unimaginable when they first got together. Once they understand what their opportunities are, they create opportunities that were previously unbeknownst to them.” Another respondent in Tampa Bay observed: “Some of the strongest opponents became the strongest proponents when they began to see that it could actually increase their ability to get things done rather than just taking time away from them.”

Following Ostrom (1999, 1998, 1990), the individuals and organizations participating in this group-decision-making process are assumed to be fallible learners
who act in response to a bounded-rational calculation of the expected costs and benefits of a proposed course of action, an assumption consistent with the original formulation of the garbage can model (Olsen 2001). Each actor weighs the perceived costs and benefits of participating in the collaborative effort. The “perceptions” rather than the actual distribution of costs and benefits appears to be most important because many of the costs and benefits are intangible and difficult to measure in an objective fashion (Alexander 1995, 16). Participants also lack the collaborative experience necessary to accurately measure the potential distribution of costs and benefits. Participants also used different discount rates and appeared to value current and future benefits or costs in different ways.

This is important because it is not uncommon for the costs of collaboration to be incurred before the value has been generated. It also means that the participants can have incorrect perceptions of the distribution of costs and benefits of proposed activities. This can produce poor choices about whether to participate in a collaborative effort, which helps explain why “collaborative know how” is important.

It is also assumed that each actor searches for a collaborative opportunity that allows the organization to extract public value that offsets the costs generated. Collaboration is therefore an individually rational strategy as well as a means to a more cohesive and well-functioning social system (McCaffrey, et al. 1995). While the assumption of bounded rationality will always be problematic, it should not easily be abandoned. What often looks to an analyst like nonrational behavior, may actually be quite sensible when the situational constraints embedded in individual and organizational relationships are fully examined (Granovetter 1985). Such behavior will also be seen as rational or instrumental if one recognizes that goals are not only economic but can involve the pursuit of other types of goals and objectives (Granovetter 1985).

Each actor has a set of constraints that have to be considered in this cost-benefit calculation. Some constraints result from an organization’s institutional setting (e.g., rules about what can and cannot be done), while others are a function of its values, ideologies, mission, and strategy. Thus, the mix of actors, problems, and policy solutions creates a particular set of constraints that limits the solution set. Other constraints result from an organization’s strategic decisions when confronted with decision rules and perceptions about what is required by the decision. Accordingly, unlike the contextual
factors, which are not easily manipulated, practitioners have greater opportunities to modify the situational factors.

The garbage-can model proposed here is therefore similar to a linear programming model. Alternatively, constraints might be modeled using game-theoretic models (e.g., Ostrom, et al. 1994) or agent-based models (e.g., Axelrod 1997, 1984). Collectively, the actors are searching for a value maximizing decision that fits their collective constraint set. It is possible, perhaps even likely, that the resulting policies and actions will be sub-optimal in performance because they reflect tradeoffs among interests, constraints, and constituencies. As a result, the selected action(s) may fail to address environmental problems in an optimal fashion or ignore the most important aspect of a problem. It is also possible that the search process will not generate many alternative solutions or even a single plausible one because there may be no configuration that completely satisfies everyone’s constraints (Axelrod 1997; Chisholm 1995).

The model’s central proposition is that each participant in a collaborative process will choose to collaborate when an opportunity that fits the collective constraint set is present, there are no alternatives that allow the actors to act alone to achieve similar objectives at less cost, and the status quo condition presents unacceptable costs. The constraint set is the product of the mix of participants, mix of problems and policy solutions, the decision rules governing the process, and the expected outcomes. These factors combine to create incentives and constraints and explains why actors utilize some collaborative opportunities but not others.

**Mix of Actors**

One of the central features of the “garbage can” model is that group decisions depend heavily on the mix of actors involved in this interactive process. Cohen and others (1972) suggest that participants move in and out of decision situations where choices are made, in this case a decision to undertake a collaborative activity. Therefore, the characteristics of problem solvers, including their values, professional backgrounds, knowledge, expertise, and other abilities will influence the decision-making process (Chisholm 1995). Others may be there to “broker” decisions or are entrepreneurs that
advocate new definitions of problems or encourage the adoption of innovative policy solutions (Cohen, et al. 1972).

Ostrom (1999, 43) refers to these decision situations as action situations. Each actors brings with it certain values, processes, and rules it uses to make decisions about future course of action, many of these will place constraints on collective action (Ostrom 1999, 42). For example, statutes may define problems in specific ways and give organizations conflicting missions designed to protect competing interests. There may also be practical constraints on becoming engaged in activities such as procurement rules or grant restrictions. Each actor also has access to certain resources and constraints on how they are utilized. Even when an organization’s formal rules do not conflict, informal norms of behavior, values, and traditions may cause it to resist cooperating (Wondolleck and Yaffee 2000, 60; Ostrom 1999, 42).

It has already been noted that certain contextual factors influence the mix of actors, which in turn influences the collaborative process. All else being equal, an interorganizational system’s collaborative capacity increases as its membership increases. The collaborative capacity also increases when there is a greater the distribution and overlap of functions, responsibilities, authorities, and resources among the interorganizational system’s members. The history of the previous interactions among the mix of actors is also important because it allows the mix of actors to become engaged in policy-oriented learning, develop collaborative know how, and fosters the trust and relationships that improve their ability to find opportunities for joint action that fit their collective constraint set.

While it is clear that the mix of actors has an important influence on collaborative processes, it is unclear whether a particular mix of actors produces more effective processes. Some researchers suggest that it is important to have a broad, inclusive membership. For example, in their study of the role of collaboration in natural resource management, Wondolleck and Yaffee (2000, 238) conclude that: “Collaborative processes must be carried out in accordance with norms of good collaborative decision making . . . . The processes should be inclusive of all who care about the issues on the table, not just those with formal authority or political power.” Unfortunately, this
conclusion falls dangerously close to viewing collaboration as an end rather than a means to an end.

Evidence pertaining to the question of whether one mix of actors will be more effective than another is mixed. In their analysis of 36 watershed management studies, Leach and others (2000) report that a frequent finding is that a broad and inclusive membership facilitated success, however, a sizable number of researchers do reach a contradictory conclusion. Collaboration research offers equally mixed conclusions with some researchers advocating inclusive arrangements (e.g., Huxham 1996b) while others note that there is no reason to believe that a broad, inclusive set of actors produces better results than a more limited set of actors (Wood and Gray 1991).

This is clearly a question deserving additional research. Increasing the number of partners increases the opportunities for collaboration, which in turn can expand the value generated by collaborative activities (e.g., more exposure to information). However, as group size and diversity increases, the benefits of increased participation could soon reach the point of diminishing returns where the benefits are exceeded by the transaction costs associated with reaching and maintaining the agreements. As McCaffrey and others (1995) suggest, all else being equal, it may also be more difficult to develop the personal relationships that enhance collaboration in larger groups.

As Wood and Gray (1991) suggest, the presence or absence of stakeholders clearly has an impact on the subsequent interactions in a collaborative process (Wood and Gray 1991). The question is whether one particular mix of actors (i.e., broad, inclusive set of stakeholders) is more effective than another. My data suggests that there is no reason to believe that the number of actors, whether inclusive or limited, necessarily results in a more effective collaborative process. A broad inclusive approach worked in the TCPP while limited membership worked in the CIB and TBEP. For example, the TBEP limited initial local involvement to the three main counties and three big cities and there was limited involvement by industry. Respondents noted that they wanted to first reach agreement amongst themselves and commit to action before they sought commitments from smaller local governments and industry. Their fear was that the involvement of these actors at the onset of the process would make it difficult to reach agreement on binding commitments for nutrient reductions.
The exclusion of particular stakeholders also had mixed results. In Narragansett Bay, the exclusion of the CRMC and RIDOP from the high-level decision-making committee appeared to cause problems. In Tillamook Bay, it increased information costs when certain DEQ officials became disengaged from the process. As one DEQ official commenting on the TBNEP’s decisions with respect to funding research projects noted: “State agencies really need to be involved with things like this so the NEP doesn’t get taken to the bank [by consultants] with things they don’t need.” It was also clear that increasing the size and heterogeneity of the mix of actors increased transaction costs by making it more difficult and time-consuming to make decisions.

Conversely, in Tampa Bay the decision to exclude some local governments, environmental groups, and industry groups from the high-level committee was largely viewed as being the key to the TBEP’s success. In other instances, the lack of participation had no discernable affect other than limiting the opportunities for collaboration. For example, most watershed efforts had limited involvement by the state DOTs. While this did not cause any obvious problems, it did reduce collaborative opportunities because the federal Intermodal Surface Transportation Enhancement Act (ISTEA) and other transportation programs have funding that can be used for restoration projects. Alternatively, the inclusion of additional actors adds to the group’s constraint set, which can limit the group’s ability to find opportunities for collaboration that fit their collective constraint set.

My data also suggests that some organizations were better “partners” than others. Several respondents noted that some organizations used their resources and power to try and control collaborative processes. The EPA was the most frequently cited example. As one Inland Bays participant noted:

“In my opinion, EPA wants this command and control. They want to be in charge. They want to feel like they have control of things but at the same time they want no accountability and they want the NEPs to feel like they have buy-in to this whole thing. Boy, they are shooting themselves in the foot there. But, they are gaining what they want, but not all of what they want because . . . they [estuary programs] feel like they have just been doing it for somebody else, not themselves.”
Another noted: “at the end of the program I was so really turned off and disgusted with EPA that I never wanted to have anything else to do with them at all” while a different respondent suggested that “[w]e probably just should’ve never asked for federal money.” Respondents suggested that the EPA’s attitude limited collaboration in the years immediately following the CCMP’s approval, but the relationships have improved.

In other cases, the situational history made it difficult for particular actors to work together. The history of distrust between the CRMC and RIDEM limited their use of collaboration as an implementation strategy. Becoming partners with an agency could also have unintended adverse consequences. For example, the RIDEM has been under periodic attack by the Rhode Island General Assembly (RIGA) while the CRMC enjoys strong political support. Some CRMC respondents noted that they were reluctant to collaborate too closely with the RIDEM because they wanted to avoid criticism by the legislature and avoid “guilt by association.” Others lacked the capacity to participate in collaborative efforts or were unable to do more than attend meetings. For example, in the Inland Bays, municipal governments lack staff to participate in meetings.

These findings suggest that there is no reason to believe that a particular mix of actors such as one that contains a broad inclusive set of stakeholders will be more effective. Instead, each combination of actors will have its own particular set of resources and constraints that will influence what can and cannot be done. This suggests that future research should focus on the particular characteristics of the combination of actors that may influence whether they can utilize the interorganizational system’s collaborative capacity.

**Leadership**

My data suggests that one characteristic of this mix of actors was particularly important – leadership. Leadership was important in several ways. Respondents often noted that it mattered which individuals represented the organizations in collaborative processes. The presence of these “opinion leaders” appeared to influence collaborative processes in important ways. Collaboration is also an inherently “political” process involving extensive discussions, bargaining, and negotiation. While this was a source of
frustration for many respondents because they believed “politics” had no role in environmental policy making, the reality is that our political institutions make no such allowance for treating environmental issues different from other social issues. Given the political nature of collaborative processes, it was not surprising that many respondents pointed to the importance of having fixers, brokers, or champions with the political skills necessary to navigate the collective constraint set and find ways to work together. Moreover, not all of the constraints are fixed and persuasive individuals often encouraged organizations to “bend the rules” or to “think differently” about a problem, proposed course of action, or the potential benefits that accrued from an activity.

My data suggests that it was important that the individuals representing organizations in the collaborative process were opinion leaders (Wondolleck and Yaffee 2000, 106). These individuals seemed to improve the likelihood that win-win or win-no-lose situations that fit the actors’ collective constraint set were found. Opinion leaders appeared came in different forms. In some cases they were the “grisly old veterans” of previous watershed efforts. These individuals were often highly regarded as the repositories of knowledge and experience. Their opinions were well respected and their support was often critical to reaching agreement. It also included individuals who worked for several of the key stakeholders or were widely respected for their expertise or their neutrality. Their opinions were also highly valued. These individuals also tended to have extensive networks of social ties and were well trusted. This often allowed them to broker agreements, facilitate discussions, or resolve group conflicts.

Opinion leaders also included individuals with extensive knowledge of how the whole portfolio of institutions was supposed to function and interact in the watershed, knowledge that often resided in a small group of participants. These individuals were often valued because their knowledge helped them come up with creative solutions that fit within the constraints imposed by this portfolio of institutions. It also appeared to be particularly important that the representatives of important stakeholder groups were the opinion leaders within their respective memberships. For example, in Tillamook Bay, strong support by opinion leaders in the TCCA facilitated the spread of innovative waste management practices among dairy farmers. Conversely, the lack of support by opinion leaders in Delaware’s poultry industry created obstacles to the CCMP’s approval.
Opinion leaders also included high-ranking state or local officials. Respondents suggested that it sent a message to other organizations and their staff that these efforts were important and valued by upper management.

While the presence of opinion leaders was important, respondents also suggested that “leadership” was critical to finding ways to work together. As one EPA respondent noted, “leadership for any single project is usually provided by one or two agencies with a historical local presence.” This was not surprising because watershed research frequently points to the importance of effective leaders such as entrepreneurs, coordinators, or facilitators (Born and Genskow 2001; Leach, et al. 2000; Wondolleck and Yaffee 2000; Selin and Chavez 1995). Other collaboration studies highlight the important role that leadership plays in these processes (e.g., Bardach 1998; 1977; McCaffrey, et al. 1995; Mandell 1989).

Leadership came in different forms. Some leaders were “entrepreneurs” who viewed collaborative processes as a way to attract new resources to address local problems. They also used the process to elevate local problems on the policy agendas of federal decisionmakers. The efforts of the small groups of individuals that initiated the Inland Bays, Tampa Bay, and Tillamook Bay efforts are excellent examples of where this occurred. Others took advantage of a focusing event to initiate a new collaborative process. For example, the Presidential Summit in Lake Tahoe provided an opportunity to initiate the development of the EIP, which had long been discussed but never acted upon. In other cases, individuals performed the role of being an “unsnarler,” helping navigate the bureaucratic maze of constraints to find ways to conduct the desired activity.

Respondents also suggested that it was important that someone played the role of “coordinator.” This appeared to be particularly important at the onset of relatively informal processes. Someone had to call meetings and provide a point of contact. It was also important for someone to keep the effort going as interest naturally ebbed and flowed over time. Less clear was the importance of having an outside facilitator. Some researchers note that facilitators are important because they resolve disputes that emerge during group decision-making (Wondolleck and Yaffee 2000; Khator 1999). In some cases, individuals were brought in specifically to be facilitators. The best example was during the negotiations surrounding the interlocal agreement in Tampa Bay. In the Salt
Ponds and Inland Bays, university researchers played this role. This role was also filled by committee members or staff in a collaborative organization. While it was unclear whether outside facilitators are needed, someone needs to fill this role.

It was also important that there were individuals to play the role of “fixer,” “broker,” or “devil’s advocate” (Bardach 1977; Levin 1986). The watershed coordinator often played the role of “fixer” or “broker” by helping participants find opportunities for joint action. Respondents frequently noted the importance of having someone keep participants “eye on the ball” and making sure that they were not sidetracked by peripheral issues. In Tampa Bay, respondents noted the importance of several individuals that continually pushed the group to prepare “more than just a plan.” Respondents noted that others took on the role of “devils advocate” by challenging the group’s assumptions and keeping everyone grounded in political and practical realities.3

Others were “champions,” providing leadership to reach agreement on a course of action that fits the collective constraint set. The importance of “champions” has been noted in other watershed research as well (Wondolleck and Yaffee 2000; Khator 1999). These individuals often found a course of action that fit the collective constraint set and used their powers of argument and persuasion to encourage others to commit to the proposed course of action. The “champions” also tended to be strong supporters of the watershed management efforts and encouraged others to participate in the effort. Excellent examples of the constructive roles played by “champions” are in Tampa Bay and Tillamook Bay where a few individuals got the participants to agree to the interlocal agreement and the TCPP, respectively (Imperial and Summers 2000; and, Khator 1999). These conclusions about leadership can be stated formally as the following proposition:

P8: The mix of actors is more likely to find opportunities for joint action that satisfy their collective constraint set when the mix of actors includes opinion leaders and one or more participants fill the role of fixer, broker, facilitators and champion.
Homophilous Actors

Less clear is how other characteristics of the mix of actors influence the collaborative process. Previous research draws attention to several factors that provide promising lines of research. Previous research suggests that organizations with similar values, rules, resources, and beliefs about how activities should occur (i.e., homophilous organizations) are more likely to interact. Diffusion research highlights the finding that new ideas tend to spread more quickly among homophilous individuals and organizations as a result of improved communication processes (Rogers 1995, 287). Applied to collaboration, homophilous actors may be more likely to find opportunities for joint action that fit their constraint set than heterophilous actors (Wondolleck and Yaffee 2000).

Researchers also observe that the institutionalism of practices, strategies, or processes is more likely among organizations that share rules, resources, and assumptions about how these activities should be undertaken (Phillips, et al. 2000; Lincoln, et al. 1985; and, DiMaggio and Powell 1983). This study offers support for this line of reasoning because many of the collaborative efforts occurred between subsystems of organizations that shared similar values, rules, and beliefs. For example, in Lake Tahoe, the increased professionalism of local planning departments improved their relationship with the TRPA, which resulted in increased cooperation because as one county official noted, “planners tend to think alike”. This suggests that collaboration may be more likely to occur among professional staff and organizations sharing a common culture, procedures, and perceptions of power (Huxham 1996b).

Complementary Resources or Power

The institutional setting provides each member of the interorganizational system with different statutory responsibilities, authorities, and resources (Raelin 1980). This creates both opportunities and constraints on collaborative action. It also creates symmetries or asymmetries of resources, power, and interdependence (Kickert, et al. 1997). While there is disagreement on whether symmetric or asymmetric power relations create opportunities for collaboration (e.g., Kickert, et al. 1997), there is greater agreement that opportunities for collaboration increase when these symmetries produce
some form of complementary relationship between organizations (e.g., Kickert, et al. 1997; Alexander 1995; Hall 1995).

My data offers support for this argument. Many of the collaborative activities described in Chapter Five involved some sort of complementary relationship. For example, different organizations may contribute different resources to a habitat restoration project or one organization helps another enforce its rules. As discussed in Chapter Seven, these complementary relationships are one reason why public value is created by working together that cannot be obtained by organizations working alone.

This observation was not surprising because previous research suggests that the greater the compatibility in organizational systems, processes, and cultures (complementarity), the greater their ability to generate relational rents (Dyer and Singh 1998). Resource dependency/exchange theory suggests that organizations with complementary resource profiles are most likely to enter into collaborative relationships (Lincoln and McBride 1985). Thus, interdependencies create incentives for organizations to collaborate, particularly when they are unable to act unilaterally to achieve their goals because these interdependencies exist (Wondolleck and Yaffee 2000, 143).

Various interdependencies are created when organizations possess or control important resources (e.g., material, human, political, structural, or symbolic) that others need (Park 1996). Several patterns of interdependence exist. Serial or sequential interdependence results when one organization’s output is the input for another organization (Thompson 1967; Alexander 1995; O’Toole and Montjoy 1984). An example would be in RI where the CRMC relies on the RIDEM’s review of OSDSs and water quality impacts when making its permit decisions. Reciprocal interdependence exists when each organization imposes contingencies on each other (Thompson 1967; Alexander 1995; O’Toole and Montjoy 1984). In this situation, organizations must adjust mutually to coordinate with one another. Many collaborative activities take this form. An example would be developing and implementing the nutrient reduction or habitat restoration policies in Tampa Bay. Pooled interdependence results from some sort of mutual commonality that results from symbiotic relationships because both organizations act on the same object during the implementation process (Thompson 1967; O’Toole and Montjoy 1984). An example would be the review of development projects in Lake Tahoe.
or the Salt Ponds. Even though the organizations can perform their jobs independently, their efforts are enhanced when they work together. As these examples suggest, these interdependencies create incentives for organizations to collaborate in order to secure access to needed resources by pooling their resources, sharing perspectives on problems, making compromises, or avoiding the costs of conflict (McCaffrey, et al. 1995; Menzel 1987). This suggests that the greater the interdependence between actors, the stronger the incentives are for organizations to find opportunities for collaboration that fit their collective constraint set (Agranoff and McGuire 1998).

Whether collaboration is more likely when these interdependencies are symmetric or asymmetric is an important question. Research suggests that networks of asymmetric relations are considerably more complex than networks of symmetric ties because they contain twice as many linkages (Lincoln 1982). This increases the potential transaction costs associated with organizing and implementing collaborative efforts. McCaffrey and others (1995) argue that collaboration is more likely to occur when power relationships are approximately balanced (McCaffrey, et al. 1995). However, an approximate power balance is viewed as a necessary but not a sufficient condition because it can lead to collaboration or a state of impasse where no action is possible (McCaffrey, et al. 1995). The balance of power among various NGOs in Lake Tahoe is an excellent example.

Kiser and Ostrom (1982, 204) argue that decision situations are affected when one or more organizations control a disproportionate share of the resources. Accordingly, asymmetric distributions of resources give organizations a source of power that can be used to control collaborative processes in productive or unproductive ways. The EPA’s use of its legal authority and control over grant funds to control the NEPs is an excellent example. Resource dependence and exchange theory also argue that those controlling resources have more power and control. Mandell (1989) suggests that the extent that one organization’s participation is essential to a network’s maintenance, that organization’s power will increase.

This study offers some empirical support for the arguments noted in this section. Many of the collaborative activities described in Chapter Five did involve complementary relationships. Less clear is whether symmetric or asymmetric relationships or different patterns of interdependency influence the collaborative process.
because no clear relationships emerged from these data. More research on interdependencies and the influence of symmetric and asymmetric relations is warranted.

**Opportunities to “Exit” the Process**

A related question is how the opportunities for exiting the process that each actor possesses influence the collaborative process. Negotiation theory offers some insights. A balance of power is thought to contribute to successful negotiation (Burkardt, et al. 1997; Amy 1983). Negotiations are also more likely to be successful when each party has sufficient power or influence or exercise some sanction over others (Burkardt, et al. 1997). Collectively, this research suggests that collaboration is more likely when there are symmetric power relationships among the mix of actors.

Asymmetries of resources or power create a “best alternative to a negotiated agreement” (BATNA) because it imposes constraints on the actors’ ability to find opportunities for joint action that fit their constraint set. A BATNA is an organization’s estimate of the probable outcome that can be achieved without becoming engaged in a negotiation process. In the collaboration context, the BATNA would be that which could be achieved by working independently or with some other collection of actors with a different constraint set. If it appears that a favorable outcome will result without continued participation, the incentive is to withdraw because there is a better alternative (Burkardt, et al. 1997; Fisher 1983; Fisher and Ury 1981).

The best example of the use of a BATNA was in the Inland Bays. Faced with the choice of a CCMP modified to appease agricultural interests and the focus on nonregulatory efforts to address nutrient loadings, the Sierra Club decided to use its BATNA and withdrew its support and stopped participating in the Inland Bays effort. Instead, it sued the EPA and DNREC and was successful in forcing the development of a TMDL, which it hoped would lead to stronger nutrient controls.

The decisions about a BATNA are often based on how similar situations were resolved in the past (Burkardt, et al. 1997; Fisher 1983; Fisher and Ury 1981). Thus, situational histories play an important role in how organizations perceive their BATNA. The best example of where the perception of a BATNA changed was in Lake Tahoe,
where property rights and environmental groups long viewed legal challenges as their BATNA. Over time, the groups became increasingly dissatisfied with costs of pursuing legal challenges, the transaction costs associated with the conflicts, and opportunity costs resulting from the impasse. Moreover, as the participants discovered new ways to create value, the cost-benefit calculus that creates an organization’s BATNA changed in ways that encouraged collaboration. This suggests additional research on the influence of a BATNA on the collaborative process may be warranted.

**Innovativeness and Organizational Change**

Collaboration often involves changing policies, adopting new practices and procedures, or employing new technologies. Accordingly, research on the diffusion of innovations and organizational change offers useful insights on the characteristics of the mix of actors that influence collaboration. My data suggested that the organizations that were frequently most involved in collaborative efforts were those with a history of frequent organizational or policy changes or were perceived by the respondents to be “innovative”. Some of the organizations that resisted participating in collaborative efforts were also organizations that respondents reported as resisting changes, in diffusion terms the nonadopters or laggards. For example, respondents frequently noted that the CRMC was more innovative than many of the regulatory programs in RIDEM. Conversely, the RIDEM demonstrated a surprising inability to learn from its successes and failures for more than a decade. As one respondent observed: “RIDEM is not a can do gang, they’re a can’t do gang.” This may explain, in part, why many RIDEM’s programs were reluctant to collaborate.

There is a strong body of research supporting this conclusion. There are a variety of competing perspectives on how internal and external characteristics influence organizational change and adaptation. Some changes are reactive and occur in response to changes in the external environment. Others are anticipatory and initiated because an organization senses the need to change prior to changes in its external environment. Most changes are likely to be incremental and only affect selected aspects of the organization’s strategy, structure, and process. Fundamental changes in core agency
functions or programs may also occur, although much less often (Nadler and Tushman 1990; Majone 1989; Miles and Snow 1978; and, Meyer and Rowan 1976). Research also suggests that an organization’s strategic choices (Hrebiniak and Joyce 1985), search activity (Hrebiniak and Joyce 1985; Daft and Weick 1984; Meyer 1982), and political behavior (potential for interorganizational conflict) (Hrebiniak and Joyce 1985) influences its propensity to adapt and change.

Alternatively, Denison and Mishra (1995, 204) argue that ideology or culture is an integral part of the adaptation process. An organization’s ideology or culture is the coherent set of beliefs that bind people together (Meyer 1982). Indeed, many respondents suggested that some organizations have a “culture of collaboration” reflected in the fact that the organization supports and rewards staff for participating in collaborative activities. In this regard, research identifies two cultural characteristics influencing the propensity to adapt and change: (1) the perceived importance of the environment (Daft and Weick 1984; Meyer 1982); and, (2) organizational change and flexibility (Denison and Mishra’s 1995). Essentially, the argument is that organizations learn to change by changing. The more an organization changes, the more likely it is to have change routines facilitating future changes (Amburgey, et al. 1993, 54).

Simonin (1997) refers to this form of organizational learning as “collaborative know how.” This is the knowledge learned through collaborative experience that allows organizations to obtain additional benefits from future efforts (Dyer and Singh 1998; Kraatz 1998; Simonin 1997; Gulati 1995). Organizations with greater collaborative know-how are more likely to develop trust and reputation through repeated ties with other organizations (Simonin 1997; Gulati 1995). Firms with collaboration experience also make desirable partners and are more likely to generate public value through partnerships (Dyer and Singh 1998; Gulati 1995). As noted earlier (proposition 6), this study suggests that collaborative know how helps the organizations find opportunities for joint action that fit the collective constraint set.

Previous research on the diffusion of innovations offers other insights on the collaborative process. Innovativeness is perhaps the most studied concept in diffusion research (Rogers 1995). It is the degree to which an individual or organization has a propensity to adopt a new idea before other members of a social system (Rogers 1995,
Research consistently finds that some organizations are more “innovative” than others (Rogers 1995; Damanpour 1991; and, Damanpour and Evan 1984).

Diffusion research suggests that the characteristics of innovative organizations can be grouped in terms of the characteristics of leaders (e.g., attitude towards change), internal characteristics (e.g., degree of centralization, complexity, formalization, interconnectedness, organizational slack, and size), and external characteristics (e.g., system openness) (Rogers 1995, 380; and, Damanpour 1991). Unfortunately, the results of the several hundred studies of organizational innovativeness demonstrate mixed results with respect to these variables (Rogers 1995). Research also demonstrates that some state and local governments are more “innovative” when it comes to adopting administrative, technological, or policy innovations. Characteristic that influence their innovativeness include affluence, slack resources, population size, industrialization, urbanization, education level, party competition, public opinion, religion, political culture, interest group activity, and socioeconomic change (Savage 1985a, 12; and, Perry, et al. 1993). Interestingly, many of these same variables influence intergovernmental policy implementation (Goggin, et al. 1990; O’Toole 1986).

The research findings suggest that an organization’s propensity to change, ideology or culture, previous experience in collaborating, and its innovativeness may increase its likelihood to become involved in collaborative activities. However, more research is needed to better understand how these factors influence the collaborative process. It is also unclear what attributes of an innovation, in this case a collaborative activity, influence an organization’s willingness to collaborate.

Mix of Problems and Policy Solutions

The mix of actors is intimately related to the mix of problems and proposed policy solutions. In fact, the mix of actors is ultimately a function of the problems addressed (Bressers, et al. 1995a). For example, the organizations involved in agricultural issues are different than those involved in habitat protection. It has also been noted that certain problem characteristics influence the collaborative process. The mix of actors involved in addressing problems with multiple or complex causes will generally increase, which increases the interorganizational system’s collaborative capacity (proposition 3). My
data also suggests that there are greater incentives for collaboration when the mix of actors perceives a problem to be increasing, severe, or approaching crisis (proposition 4). Each actor also tend to define problems in certain ways and tends to advocate specific policy solutions as a result of the distribution of responsibilities, authorities, and resources imposed by the institutional setting. Moreover, each organization’s constituency will favor some policy solutions over others.

Thus, the mix of actors can view problems and associated policy solutions in different ways. The “garbage can” model recognizes that participants frame problems and appropriate policy solutions in different ways (Gray 1997; Bardwell 1991). “The very notion of problem definition suggests a constructionist (rather than an objectivist) view; that is, problems do not exist ‘out there’; they are not objective entities in their own right (Dery 1984, xi).” Decisionmakers make choices about how to formulate or “frame” problems (Gray 1997; Chisholm 1995; Rochefort and Cobb 1993; Bardwell 1991; Lindblom and Cohen 1979). Problem definitions change overtime as some problems are reduced or eliminated while “new” problems emerge as a result of scientific research, changes in local conditions, and shifts in value preferences.

The process of problem definition is particularly important in watershed management. Most of the problems discussed in Chapter Four involve questions of “trans-science” in that they could be formulated in scientific terms but can not be answered entirely by science (Miller 1993; and, Weinberg 1972). They are also “wicked” because they have no definitive formulation, can be represented in different ways, and have no immediate stopping rules (Rittel and Webber 1973). Wicked problems are not simple or well bounded and there is no ultimate test for “solving” them. Instead, participants reach a collective judgement about how a problem should be defined and what a satisfactory solution is. For example, setting the goals in Tampa Bay was not entirely based on scientific research. As one respondent noted, 1950 was chosen because “we want the bay to look like it did when a lot of people who’re in the office now were kids. . . . People remember the way it was before. They also realize we are not going to get back to a pristine condition. This is a very urbanized estuary. There are a lot of people and they aren’t going to go away. We wanted to make an aggressive but realistic goal.” It also turned out that 1950 marked the introduction of air conditioning, the
beginning of rapid population growth, and there were good aerial photos to estimate seagrass coverage.

It is also clear that the individuals and organizations involved in watershed efforts will value natural resources differently (Grumbine 1994). These philosophical differences are exacerbated by cultural and economic conditions as well as an individual’s education and training. Some ardent environmentalists view humans as intruders and destroyers of ecological systems. They may tend to define problems in objective terms, attach a high value to scientific knowledge, preserving the environment in its present state, or restoring it to some previous point in time. At the other end of the continuum, are those individuals who view environmental problems in purely subjective terms. This view argues that both human and ecological systems are constantly changing and that environmental problems are no different than other policy problems like crime, poverty, health, transportation, and education.

Accordingly, the actors define problems in different ways (Wondolleck and Yaffee 2000, 60). Problems will appear to be novel for some and routine for others. Some problems will be viewed as being worthy of attention while others will not. Participants are also likely to emphasize different causes of these problems and view their severity differently (Rochefort and Cobb 1993). Further complicating these efforts are the tradeoffs and linkages among problems.

This suggests that finding opportunities for collaboration that fit the collective constraint set requires the mix of actors to develop a shared definition of the problems or to at least reach agreement on appropriate policy solutions for some generally defined problem. The collaborative decision-making process provides a mechanism for this mix of actors to define problems and debate policy solutions based on available scientific research and the public’s policy preferences (Selin and Chavez 1995; Lee 1993). Because this is an interactive search process, collaboration allows the mix of actors to develop innovative policy solutions by framing, reframing, and linking problems in creative ways that help expand the potential solution set for all participants (Phillips, et al. 2000). The Park Avenue Development Project in Lake Tahoe is an excellent example where collaboration led to an innovative project that linked economic development, transportation, and environmental problems in ways that produced an innovative solution.
It was clear that the central challenge confronting participants was to develop a shared definition of problems and policy solutions through some sort of interactive process. As one respondent in the Inland Bays described the process: “It brings everybody to the table in a neutral setting where we can discuss these issues and bring good, science-based information, to all of these managers. The funny thing is none of these folks even knew the problems existed and even today there is some challenge on whether or not some problems exist, especially with agriculture.” My data suggests that the situational histories or previous efforts to address watershed problems often helped the mix of actors develop the shared definitions of problems or a common understanding of appropriate policy solutions. This helped reduce the transaction costs associated with reaching these agreements. Conversely, the problems experienced in Narragansett Bay demonstrate that the failure to reach common agreement on the definition of problems, the priorities for action, or appropriate policy solutions will prevent the mix of actors from finding opportunities for joint action. Stated formally, this suggests:

\[ P_9: \text{The mix of actors is more likely to find opportunities for joint action that satisfy their collective constraint set when the actors share common definitions of problems and appropriate policy solutions.} \]

**Decision Making Process**

One of the central implications of the garbage-can model is that determining and enforcing the rules governing a decision-making process is often more important than the careful analysis of problems and policy options. Collaborative decision making inherently involves strategic interactions governed by a set of rules; it isn’t a form of rational, synoptic scientific analysis that tries to maximize a single goal or policy objective (Palumbo and Maynard-Moody 1991). Ostrom (1999, 43) also notes that the level of control participants have over choices and their relative positions within the decision-making process is likely to affect a decision situation.

Two sets of decision-making rules appear to be important. The first are the access structures that describe the actors allowed to participate and their positions in the process. These rules define the mix of actors and indirectly the mix of problems and the opportunities for collaboration open for consideration. The second set of rules governs
how the participants make decisions (Palumbo and Maynard-Moody 1991). The structure of the rules is important because it leads to different strategic behaviors. For example, the TRPA’s first set of decision-making rules often led to project approvals. When the Compact was revised, the changes in the rule structure led to fewer approvals. It is also likely that majority rule will produce different outcomes over time than consensus-based rules.

Watershed management research often concludes that it is more effective to make decisions based on consensus (Born and Genskow 2001; Leach, et al. 2000; and, Wondolleck and Yaffee 2000). Some form of consensus or shared decision making appeared to be employed in most of these cases. When asked to characterize the process in Tampa Bay, one management committee member described the process as follows:

“It was based on consensus building. Contentious issues came and went. There was productive controversy at best . . . virtually every major decision, at least on the board I sat on, was made with nothing short of unanimous approval. The chemistry of the board members lent a lot to the process. There seemed to be a good mixture of visionaries with pragmatists . . . there were good roundtable discussions with an adequate amount of political sensitivity and it has a pseudo-environmental membership dealing with hands-on brick and mortar membership with those that have to deal with permits. So you had almost diametric entities sitting across a table working out solutions in a professional manner. Looking back on it, I am quite amazed at how it did work.”

Another respondent in Tampa Bay characterized the process this way: “The best part of this process is that you sat down with these guys. And it was sort of like a bunch of jagged rocks being thrown into one of those rock tumblers. And we just rubbed each other raw for five years because you thought the other guy is not as big of a jerk as you might have thought . . . He’s got his problem and I have got my problems.”

It was clear that “consensus” was defined in different ways and rarely was synonymous with unanimity. Instead, consensus appeared to be a goal but voting was used to resolve disputes or see where actors stood on particular issues. It also did not appear that “consensus” decision making was a prerequisite for success. In fact, some respondents were quite dissatisfied with the use of consensus-based processes. One respondent went so far as to say “I think the word consensus has done more damage than
any word in the last two years.” Some respondents suggested that the consensus-based process caused them to compromise their values while others suggested that it results in negotiating to the lowest common denominator.

My data suggested that arrangements such as the CIB, TBEP, and TCPP, which relied on voting procedures, could be equally effective. Others also note that collaboration does not necessarily require consensus decision making (Leach, et al. 2000). In fact, there was every reason to believe that decision-making rules requiring “consensus” or unanimity would exacerbate transaction costs by lengthening the time it takes to make decisions because it becomes more difficult to find actions that fit the collective constraint set. My data suggested that what appears to be important is that the rules encourage the actors to be involved in some form of shared decision making that promotes regular interaction, bargaining, and negotiation.

My analysis also suggests that it was important that the rules were clear, predictable, and perceived to be fair. For example, the participants in the TBEP spent considerable time negotiating their access and decision-making rules. It was also clear that practitioners should be careful when changing the rules of the “game” during the process as this caused problems. As one respondent in the Inland Bays recalled:

“[W]hen we started out I remember without any question that we were told more than once as we were starting the program that the document that we came up with was our own document and we felt it was important having our own document and we discussed what was going to be in our document and how long we would try to keep it. But as we were going on with our process, EPA was going on with several of theirs. One of which was developing checklists and requirements for this and requirements for that . . . So we get to the point where we have a preliminary draft but by this time they are developing a whole set of standards by which they want to approve these things. So, the ground rules had changed while we were in the process and it really stuck in our crawl very badly. We thought we were in control, that it was a grassroots program and we were evolving our own grassroots solutions and all of a sudden EPA is coming in with their command and control of this whole thing.”

Other problems resulted when decision rules existed informally as social norms but staff turned over or new participants joined the process who did not share the group’s norms or had different views of what constituted “consensus.” The implication for practitioners is
that it is important to formalize access and decision-making rules when the process will last for a long period of time.

While it was clear that decision rules influence the collaborative process by shaping the mix of actors (i.e., access rules) and how decisions are made (i.e., decision rules), no clear pattern emerged that suggested that one particular pattern of rules was more effective. Instead, my data suggests that the particular combination of rules is important because it influences the mix of actors, problems, and transaction costs associated with the decision making process in a manner that influences the ability to find opportunities for joint action that fit the collective constraint set.

**Transaction Costs**

My data suggests that transaction costs influence the collaborative process in important ways. This finding is consistent with a great deal of research on interorganizational relationships (e.g., Ostrom, et al. 1993; Williamson 1985). McCaffrey and others (1995) suggests that collaboration is more likely when the transaction costs of developing and maintaining collaborative agreements are small because participants are more willing to take the time necessary to reach agreement (McCaffrey, et al. 1995). Conversely, when transaction costs are high the participants may be more likely to exit the process.

Research also suggests that transaction costs increase as the number of bargaining partners and routine interactions increase (Levi 1990, 403). They also increase when asymmetries of information or power exist. Thus, as jurisdictional complexity increases and the actors’ interests become increasingly heterogeneous, transaction costs are likely to increase (Imperial 1999a, 1999b). Transaction costs also increase when there is conflict among scientists, agency officials, interest groups, and the public with respect to the definition of problems, priorities for action, or the selection of appropriate policy solutions. Thus, it is often important to have mechanisms to resolve disputes in order to reduce transaction costs and encourage the participants to continue their search for opportunities for joint action that fit their collective constraint set. The inclusion of
individuals or organizations in the mix of actors that serve as facilitators, fixers, or brokers often fills this purpose (proposition 8).

My data illustrates several of the ways that transaction costs influence the collaborative process. The best example of a decision-making process with high transaction costs was Narragansett Bay. As one participant recalled:

“We had meetings literally for years before we put pen to paper to write a plan. Over those years you had different characters. Characters. You had different individuals representing different agencies. So, at times you didn’t have a good institutional memory of the agencies. What they originally said four years ago. Would they still support that. RIDEM had different directors. Different people were representing RIDEM. Some people didn’t take the plan seriously until it got toward the end and then realized that they’d better read it and comment on it.”

Another noted:

“We had a huge group of stakeholders, 40-45 groups. They came with variable education. Very different organizational interests and backgrounds. So, one of the difficulties was trying to educate them so that there was ever a common language. Our experience was twofold. Committee members participated only when their ox was being gored. Our experience was that this project never really rose to consensus based decision-making about what was best for Narragansett Bay. Constituents entered the process determined that their interests be protected. Which is one of my criticisms of this problem. It also meant that decision making was bizarre, because you only had the most interested groups making decisions rather than having well informed people saying, this on objective grounds appears to be best for this bay or this watershed.”

The high transaction costs relative to the lack of corresponding benefits may explain why the actors have been reluctant to participate in the Inland Bays citizens advisory committee (CAC). As one long time CAC member observed: “And thank God they [CAC] are meeting only four times per year because they were four meetings per year that were absolutely worthless. We didn’t have staff for the committee. We didn’t have anybody implementing anything. . . . this thing was walking backwards. That was frustrating in and of itself.” While the CAC now has staff support, it is still “floundering” because it lacks a clearly defined purpose and respondents were hard-pressed to identify
any tangible value generated by the meetings since the members already had well
developed personal relationships and typically interacted in other forums.

The IAD framework developed by Ostrom (1999, 1990) and others provides a
useful framework for examining the transaction costs in watersheds and other natural
resource settings (Imperial 1999a, 1999b). The IAD framework draws attention to three
interrelated transaction costs associated with interorganizational policy implementation:
(1) coordination costs; (2) information costs; and, (3) strategic costs (Ostrom, et al.
1993). All three types of transaction costs were observed to varying degrees in the cases.

Information costs include those associated with searching for and organizing
information and the errors resulting from an ineffective blend of scientific and time and
place information (Hayek 1945). Scientific information is “acquired by individuals
through education and/or experience about the regularities of relationships among key
variables rather than the particular state of those variables in a specific context (Ostrom,
et al. 1993, 50).” Time and place information refers to the knowledge “acquired by
individuals who know the nature of a particular physical and social setting (Ostrom, et al.
1993, 50).” Given the information needs necessary to address watershed problems, all
six watersheds spent considerable time, staff, and financial resources to conduct both
general scientific studies as well as regularly collect the time and place information
needed to make decisions. As noted in Chapter Five, many of the research projects were
collaborative in nature. Moreover, there were several collaborative efforts devoted to
collecting time and place information. The collaborative monitoring and reporting efforts
in Tampa Bay are perhaps the best example.

Information costs are also the product of asymmetries of knowledge and expertise
among the participants. As one Narragansett Bay respondent noted:

“[A]ll stakeholders are not equally educated or even, this is gross, but educable on
certain issues. Some don’t care about a certain level of detail, and may prefer to
make decisions based on something other than the best available technical
information. For those reasons, I don’t think those people ought to be making
public policy decisions for large populations.”

As suggested by Narragansett Bay, information asymmetries among scientists, agency
officials, interest groups, and the public often made it difficult for the participants to
reach agreement, which increased their transaction costs. These asymmetries also explain why participants were involved in a wide range of public education and information-sharing activities, many of which were collaborative in nature. Conversely, as the Inland Bays, Tampa Bay, and Tillamook Bay demonstrate, situational histories with a history of watershed planning and implementation often encouraged the policy-oriented learning that helped reduce information asymmetries (proposition 6).

Other information costs could result from common psychological problems such as stereotyping, cognitive bolstering, defensive avoidance, escalation of commitment, or groupthink could also increase the transaction costs associated with a group decision-making processes (Palumbo and Maynard-Moody 1991; Janis and Mann 1977; Janis 1972). My analysis suggested that two of these were readily apparent. Stereotyping was the most readily observed problem. As Wondolleck and Yaffee (2000) note, stereotyping has the potential to create conflicts and imposes obstacles to reaching agreement (Wondolleck and Yaffee 2000). These problems were most pronounced in the Inland Bays and Narragansett Bay where respondents noted that different interested groups were often viewed in stereotypical ways, which introduced unnecessary communication problems and conflicts. Conversely, respondents in Lake Tahoe and Tampa Bay noted that a key to their success was breaking down prevailing stereotypes and recognizing the legitimacy of contrasting viewpoints. There was also some evidence that the conflicts surrounding the draft CCMPs in the Inland Bays and Narragansett Bay may have been the product of groupthink (Imperial 2000a; Imperial, et al. 2000). Some respondents reported being “surprised” by conflicts and others suggested that dissenting viewpoints were silenced. This may have led the participants to believe that there was greater consensus that actually existed.

Coordination costs are those associated with negotiating, monitoring, and enforcing agreements (Ostrom, et al. 1993, 120). Coordination costs also include those associated with organizing and administering the decision-making process, developing a shared definition of problems, building trust and relationships, developing a shared set of expectations, and the costs of selling the cause. Respondents were quick to note many of these coordination costs. Perhaps the best example was Narragansett Bay. Respondents suggested that the large number of issues combined with a time-consuming briefing paper
process overwhelmed staff and committee members and it became challenging to simply keep track of the different versions of the documents and agreed upon changes.

It was also clear that collaboration was a time intensive process. This should not be surprising. While there are certainly exceptions, collaboration often increases coordination costs. Respondents in all six watersheds noted that it took a long time to build the relationships and trust that allowed them to find opportunities for joint action. However, they also noted that these costs were necessary and often could think of no practical way to lower them. Interestingly, some respondents even viewed these coordination costs as investments in the future, suggesting that their hope was that time spent now would reduce the costs of future collaboration. Others simply viewed these costs as part of doing business or suggested that the costs were less than those associated with conflict or inaction. Conversely, some respondents reported that these costs were one reason that they resisted participating in a specific collaborative activity.

A number of factors appeared to increase coordination costs. Participants may lack the flexibility in agency procedures or had institutional constraints that increased the costs of reaching agreement on a collective course of action. There could also be relational factors and power asymmetries that complicate the use of collaborative decision-making. These findings are consistent with research suggesting that interorganizational collaboration will be difficult when: (1) conflict is the result of basic ideological differences; (2) one or more stakeholders has the authority to take unilateral action; (3) constitutional issues or precedents are sought; (4) past decision-making efforts were unsuccessful; and, (5) issues are threatening because of past conflict (Gray 1989; and, Selin and Chavez 1995). Conversely, the development of trust and personal or interorganizational relationships helped reduce these costs (proposition 7).

While organizations benefit from mutual cooperation, they may do better by exploiting cooperative efforts for their own gain (Axelrod 1997). Strategic costs result from asymmetries in information, power, or other resources when actors try to obtain benefits at the expense of others (Ostrom, et al. 1993). The structure of the rules governing decision-making can create opportunities for the participants to engage in various forms of strategic behavior. It could also cause actors to withdraw from the process. An excellent example would be the Sierra Club’s withdrawal from efforts in the
Inland Bays when representatives of the agricultural industry used their political power to make changes to the CMMP.

There are many ways to conceptualize strategic costs. Researchers have noted various forms of strategic behavior such as shirking, free riding, rent seeking, social loafing, corruption, adverse selection, moral hazard, and turf guarding (Leana and Van Buren 1999; Bardach 1996; Ostrom, et al. 1993). These behaviors were observed to varying degrees in the six watersheds.

The incentive to shirk is closely related to free riding, but the distinction is blurred in a collaborative process because the participants are the producers and consumers of the collaborative process. Shirking is a strategy used by producers of a good or service. It is a common problem in an interdependent production process, particularly when it is difficult for the participants to determine the marginal contributions of other participants (Ostrom, et al. 1993). Free-riding is a strategy used by consumers of what is produced by a collaborative process. These distinctions are not important, however, this general type of strategic behavior is because it allows an actor to benefit from the group’s effort without contributing to it. The most common example was when some agencies participated in and devoted resources to an effort while others were free riders that benefited from the group’s collaborative efforts. This problem appears to be exacerbated when the lack of slack resources makes it difficult for a participant to do more than attend meetings or lacks the capacity to implement the actions agreed to. Almost all of these large committee driven collaborative efforts had members who respondents reported as doing nothing more than attending meetings or providing a nominal level of involvement while they benefited from the groups outputs.

Rent seeking behavior occurred when the results of a collaborative process produced unearned benefits for some participants (Ostrom et al. 1993). There are a number of ways that rent-seeking behavior occurred. Agencies or interest groups might advance policies or recommendations that advance their individual interests. For example, in Narragansett Bay representatives from some industry interest groups were dominant members of their respective industries. They ended up supporting some recommendations because they believed their implementation might cause weaker competitors to go out of business. There were also examples where government agencies
advanced initiatives that they would like to undertake, but only if some other agency provided funding. In Tillamook Bay, early participation in the STAC included a wide range of agency officials, university researchers, and consultants. After early enthusiasm died down, so did participation in the STAC. Respondents suggested that this was due in part to the long drive for many of the participants, which made it difficult and costly to attend meetings (proposition 2). However, respondents also suggested that many university researchers and consultants participated initially because they were only looking for project funding. Once it became clear that their research would not be funded, they withdrew from the STAC even though their expertise may have improved decisions or outputs. This form of strategic behavior presents significant problems because it becomes difficult to discern the true motives and preferences of the individuals engaged in bargaining. It can also exacerbate information and coordination costs.

In social loafing, the problem is that the group is unable to establish the relationships, norms, or accountability systems that ensure that the partners perform the requisite level of effort (Leana and Van Buren 1999). This problem was most acute in Narragansett Bay where the lack of strong relationships, norms, and accountability systems allowed the partners to stop implementing their implementation commitments. This was also a problem with the implementation of the denitrification MOUs in the Salt Ponds. Conversely, the TRPA took steps to develop strong norms and accountability systems to ensure that its MOUs devolving permit authority are implemented.

The tendency for an organization to protect its “turf” is another type of strategic behavior that increases transaction costs (Bardach 1996). Turf refers to the exclusive domain of activities and resources over which an agency has the right to exercise operational or policy responsibility. All else being equal, individual or organizational preference is likely to be to maintain or increase turf since it secures the agency’s strategic position and enhances long-term survival (Bardach 1996, 177). Since the collaborative efforts described in Chapter Five often result in new policies, programs, and interorganizational relationships, it was not surprising to find that conflicts about turf prevented them from utilizing some aspects of the interorganizational system’s collaborative capacity. The best examples may be the ongoing turf battles between the RIDEM and CRMC in Rhode Island that hindered the implementation of some aspects of
the CCMP and SAMP. Conversely, the acquisition of turf may be a strong incentive for collaboration. At the individual level it may be a way to improve job security or advance careers. It can also provide a mechanism to secure needed resources. Stated formally, these findings suggest the following proposition:

\[ P_{10}: \text{The mix of actors is more likely to find opportunities for joint action that satisfy their collective constraint set when the transaction costs associated with this interactive decision-making process are low.} \]

Expected Outcome of the Decision-Making Process

Collaboration often results in some loss of organizational autonomy because committing to joint actions requires organizations to commit time, staff, capital, or other resources, which diverts them from other organizational functions or priorities. This might suggest that the greater the loss of autonomy required by a collaborative agreement, the less likely participants are to reach agreement. However, organizations may sacrifice autonomy if they receive something of value in return (Oliver 1991b). Accordingly, an organization’s willingness to participate in a collaborative process depends on how they value or perceive the probable outcomes.

Two outcomes merit consideration. The first involves the perception of the public value or implementation problems that participants expected from a proposed joint action. As one respondent in Tampa Bay observed: “In order for partnerships to have any meaning, there has to be some incentive for everyone involved.” For example, the TBEP considered implementing portions of their CCMP covered by the interlocal agreement pursuant to the EPA’s project XLC program. As one respondent recalled:

“When we were considering how to do this cooperative approach, we thought we could use Project XLC as a way of getting industry and governments involved. Then it became obvious that the paperwork and legal aspects were way beyond what we wanted. . . . We asked EPA what they could do through XLC that they couldn’t do otherwise and they said nothing.”

As a result, they withdrew their application because they could not achieve any additional flexibility that could not be achieved pursuant to existing programs. Moreover, the monitoring, reporting, and other administrative requirements of Project XLC would have
created unnecessary transaction costs. Thus, there was no “real” incentive to participate. The different sources of public value and common implementation problems are discussed further in Chapter Seven.

The second outcome is the expected consequences or commitments required by the decision because this introduces disincentives to joint action (Selin and Chavez 1995; Gray 1989). The strategic behavior and interactions in the six watersheds appeared to be different when developing voluntary agreements as contrasted to legally binding agreements. As the decisions became increasingly binding on participants, they seemed to pay closer attention to the details of the proposal and were more cautious in terms of making commitments. Respondents also suggested that they were less likely to subject themselves to accountability mechanisms that subject them to criticism.

It also appeared to be much easier to reach agreement on goals, policies, and priorities than it was the wording of specific recommendations specifying implementation actions in detail. In Narragansett Bay, a great deal of time and effort was spent negotiating the wording of exceptionally detailed regulations because some participants believed they might ultimately be held accountable for achieving the CCMP’s recommendations. This was even more pronounced in Lake Tahoe and the Salt Ponds, which amounted to a form of regulatory negotiation. Conversely, in Tampa Bay and Tillamook Bay, the clear understanding among the participants was that while the goals and policies were important, there was no expectation that the implementation efforts had to occur in the specified manner.

Whether the participants expect the decision situation to occur once, a fixed number of times, or an infinite number of times also appeared to affect the strategies of individuals. Previous research suggests that the likelihood of future interactions reduced the incentives for strategic behaviors (Axelrod 1997, 1984; Ostrom 1999; Ostrom, et al. 1994). Repeated interactions also increase the probability that trust and personal relationships will develop (proposition 7). It also encourages policy oriented learning (proposition 6). Moreover, if the interactions are ongoing, the participants have stronger incentives to incur transaction costs now to avoid costs as a result of implementation problems later on. They may also be more likely to discount current costs and future benefits in a manner that encourages involvement in the collaborative process.
The nature of the monitoring and enforcement procedures was also important. As noted in Chapter Five, collaborative monitoring and enforcement procedures such as joint reporting were often used to help ensure adherence to shared policies. As one respondent in Tillamook Bay explained: “We need to keep measuring our progress as we go and make sure we’re meeting our targets over the timeframe we’ve set. We need to make sure we have measurable outcomes.” Another respondent in Tampa Bay noted: “Because we have these numeric goals, it’s easy to see if we’re meeting them or not. That’s probably our most important achievement.”

Monitoring is also important because it creates disincentives to various forms of strategic behavior and improves accountability. However, respondents also noted that they were careful to avoid strong accountability mechanisms. For example, the TBEP has various monitoring procedures such as the development of five-year work plans. Respondents noted that they resist putting information in a form that encourages “finger pointing” or makes one partner stands out in an overly positive or negative fashion. Instead, they rely on peer-pressure, which respondents often identified as being the key incentive for continued participation in collaborative efforts. Stated formally, my findings suggest the following proposition:

\[ P_{11}: \text{The mix of actors is more likely to find opportunities for joint action that satisfy their collective constraint when the perception of the public value resulting from the actions increases relative to those associated with potential costs or implementation problems.} \]

**Implications for Researchers and Practitioners**

The first two elements of the proposed framework demonstrate that collaboration is a complicated process, which is difficult to model and additional research is needed to further develop, test, and refine the framework’s propositions. Contextual factors influenced the collaborative process in two ways [Table 6.1]. First, they create the interorganizational system’s collaborative capacity. Second, contextual factors can create incentives or constraints that complicate the participants’ ability to find opportunities for joint action that fit their collective constraint set.
Table 6.1: Summary of the Propositions Suggested by the Proposed Framework

<table>
<thead>
<tr>
<th>Model Component</th>
<th>Propositions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contextual Factors</strong></td>
<td><strong>Physical Environment</strong></td>
</tr>
<tr>
<td>P1:</td>
<td>As the size of the watershed increases, the size of the interorganizational system will increase, which in turn increases its collaborative capacity.</td>
</tr>
<tr>
<td>P2:</td>
<td>Organizations located in close geographic proximity are more likely to interact with one another.</td>
</tr>
<tr>
<td><strong>Configuration of Problems</strong></td>
<td></td>
</tr>
<tr>
<td>P3:</td>
<td>Problems with multiple or complex causes increases an interorganizational system’s collaborative capacity because it increases the number of actors with responsibility for addressing a problem.</td>
</tr>
<tr>
<td>P4:</td>
<td>Incentives for collaboration increase when the members of an interorganizational system perceive a problem to be increasing, severe, or approaching a crisis.</td>
</tr>
<tr>
<td><strong>Institutional Setting</strong></td>
<td></td>
</tr>
<tr>
<td>P5:</td>
<td>The more widely distributed and greater the overlap in functions, responsibilities, authorities, and resources among an interorganizational system’s members the greater its collaborative capacity.</td>
</tr>
<tr>
<td><strong>Situational Histories</strong></td>
<td></td>
</tr>
<tr>
<td>P6:</td>
<td>Histories of interaction that encourage policy-oriented learning and the development of collaborative know how improve the actors’ ability to exploit the interorganizational system’s collaborative capacity.</td>
</tr>
<tr>
<td>P7:</td>
<td>Histories of interaction that produce trust, personal relationships, and interorganizational relationships improve the actors’ ability to exploit the interorganizational system’s collaborative capacity.</td>
</tr>
<tr>
<td><strong>Programmatic Context</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Situational Factors</strong></td>
<td><strong>Mix of Actors</strong></td>
</tr>
<tr>
<td>P8:</td>
<td>The mix of actors is more likely to find opportunities for joint action that satisfy their collective constraint set when the mix of actors includes opinion leaders and one or more participants fill the role of fixer, broker, facilitators and champion.</td>
</tr>
<tr>
<td><strong>Mix of Problems</strong></td>
<td></td>
</tr>
<tr>
<td>P9:</td>
<td>The mix of actors is more likely to find opportunities for joint action that satisfy their collective constraint set when the actors share common definitions of problems and appropriate policy solutions.</td>
</tr>
<tr>
<td><strong>Decision Making Process</strong></td>
<td></td>
</tr>
<tr>
<td>P10:</td>
<td>The mix of actors is more likely to find opportunities for joint action that satisfy their collective constraint set when the transaction costs associated with this interactive decision-making process are low.</td>
</tr>
<tr>
<td><strong>Expected Outcomes</strong></td>
<td></td>
</tr>
<tr>
<td>P11:</td>
<td>The mix of actors is more likely to find opportunities for joint action that satisfy their collective constraint when the perception of the public value resulting from the actions increases relative to those associated with potential costs or implementation problems.</td>
</tr>
</tbody>
</table>
Understanding these contextual factors is important. As Chess (2000) notes, not all watersheds are good candidates for using collaboration as an implementation strategy. Thus, additional research on how contextual factors create collaborative capacity will help practitioners determine where watershed management might be a useful approach to intergovernmental management. Network analysis may be useful in this regard as there are techniques for examining the structure of relationships and some of these measures (e.g., density, centrality, etc.) may be useful in characterizing an interorganizational system’s collaborative capacity.

Situational factors impose a different set of constraints and influence whether the mix of actors is able to find opportunities for joint action that satisfy the actors collective constraint set. More research on the situational factors is needed. Unlike many of the contextual factors, the situational factors are subject to greater modification by the actors seeking to use collaboration as an implementation strategy. Thus, the propositions identify potential ways that practitioners can improve the likelihood of exploiting an interorganizational system’s collaborative capacity. Practitioners can make an effort to ensure that the mix of actors includes opinion leaders or individuals that perform other leadership functions. Extra attention can be placed on framing problems such that there is strong agreement on the definition of problems and associated policy solutions. An effort can be made to reduce the transaction costs associated with decision making processes and pointing out the different ways that proposed actions generate value. Thus, an improved understanding of the situational factors can help practitioners to better design and manage collaborative processes.

**Implications for Practitioners**

These findings have other important implications for practitioners. It was clear that all issues or watershed problems are not amenable to collaboration. If an organization wants to establish a precedent or influence another agency’s policies in ways that advance its interests at the expense of others, going to court or lobbying the legislature may be more effective. Organizations may also want to act unilaterally in ways that advance its agenda, perhaps at the expense of others. When strong power asymmetries exist, stronger organizations may see no need to collaborate while weaker
organizations may want to prolong a conflict in hopes that growing public awareness may shift the balance of power in their favor (Wondolleck and Yaffee 2000, 48).

However, these conditions exist less frequently than it might appear. When collaboration highlights common values and interests, participants often find creative ways to bridge seemingly incompatible differences (Wondolleck and Yaffee 2000, 73). Even where there was a history of strong disagreement over fundamental values and interagency conflicts in Lake Tahoe, Rhode Island, and Tampa Bay, the actors were able to find ways to productively work together. Moreover, strong information and resource asymmetries create opportunities for joint action by creating the potential for complementary resource exchanges.

The findings also illustrate the importance of effectively managing collaborative processes (Wondolleck and Yaffee 2000, 63). The process must be crafted in a manner that fosters interaction and makes decisions in a manner sensitive to the time demands placed on participants. Staff managing these processes must also have the requisite technical, administrative, policy making, dispute resolution, and political skills.

**It Can Be Difficult to Remain Neutral on Controversial Issues**

It was also important for the staff supporting a collaborative effort to remain neutral such that they could serve as facilitators and brokers rather than be advocates for a particular organization or policy proposal. When the NBP staff began advocating specific policy positions, it ended up creating conflicts. As one respondent recalled: “The NBEP director felt that the CCMP might bypass the differences when it was incorporated in the State Guide Plan, thinking that would supercede arguments happening at the department level.” Instead, this had the opposite effect. It reinforced the determination of agencies such as the CRMC to protect their “turf”. It also made the process confrontational. This made it difficult to resolve issues since it was unlikely that the RIDEM or the CRMC was going to make concessions in a confrontational atmosphere. Conversely, staff for the CIB, TBEP, and TCPP remained neutral and helped the participants find areas of common agreement.
However, remaining neutral was clearly a challenge. As the following respondent in the Inland Bays observed:

“I’ve got a lot of respect for Bruce [CIB’s Executive Director]. He’s got the toughest job around next to the Board of Directors. You’ve got the Agriculture Secretary sitting next to the Natural Resources Secretary. They work very closely together, but they have to look at issues from two different directions. Sometimes they agree, sometimes they disagree. You’ve got the County Administrator sitting there with the economic viability of the county through the tax base at issue. You’ve got someone from water resources [DNREC] saying our fish our dying. You’ve got farming members there who are waiting for the first time you point a finger or cause a black eye . . . It’s a very fragile partnership right now.”

Respondents also noted that it can be difficult to appear neutral and nonpartisan in rural communities where other actors may misconstrue the mere presence at a political, public, or interest group event.

Many collaborative organizations were also designed to be neutral and avoided taking positions on controversial issues that divided their membership. This neutrality was often a source of frustration for some constituencies with a different vision of the organization’s mission. One respondent critical of the CIB commented: “[T]hey ought to change their name or go out of business because the Center has not taken one stand or done one thing that is useful for the Inland Bays.” Nevertheless, maintaining this neutrality was crucial to preserving a viable decision-making process and finding new ways to work together.

The frustrations reported above also reflect the inherent limits on using collaboration as an implementation strategy. One respondent noted:

“the criticism the Center is getting is that we don’t have much more with the Center than we had without it because the Center is made up of all of the heads of various departments in the state that were there before and the center will not take sides on an issue. . . . The role of the center has not become embroiled in policy-making or decision-making and I am not sure that is so easy to accept for people who have been with the department [DNREC] for an extended period of time because they saw the center as maybe the final test to get some hard issues resolved that involve politics and other people like to get mixed up in the controversy but it hasn’t come to that. It is good for getting dollars to do research or to study matters or to do public relations and try to get groups together.”
Thus, while the CIB provides a forum for discussing issues and elevating them on the policy agenda, it does not play a strong leadership role in addressing controversial issues.

**Understanding the Ecology of the Governance System**

One reason that a wide range of collaborative activities were observed may reflect the fact that watershed management encourages participants to think holistically about problems (Wondolleck and Yaffee 2000, 124). While it is important to understand how ecological systems function, my data suggests that it is equally important to understand “the ecology of governance”. That is, the watershed’s unique contextual setting, the tradeoffs among problems, and how the institutions that address problems function and interact (Imperial and Hennessey 2000; Hennessey 1994). It is important for practitioners to recognize that there is an institutional ecosystem corresponding to the ecological system. Unfortunately, few participants had a clear understanding about how the whole portfolio of federal, state, and local institutions interacted with one another. Several respondents pointed to this problem because it complicated efforts to find ways to work together, caused policy interventions to be poorly designed, or prevented the actors from fully exploiting potential implementation resources.

This finding underscores the importance of performing the type of forward and backward mapping Elmore (1985) recommends. This requires knowing how government and the industries and activities that cause problems are organized so that successful policy interventions and implementation structures can be developed. It is also important that the analysis accounts for the linkages and tradeoffs among problems. This helps identify opportunities for collaboration. It also helps the actors identify supportive coalitions or sources of potential political opposition (Wondolleck and Yaffee 2000, 82).

**Think Holistically But Act Strategically**

Given the complexity of the mix of actors and problems and the institutional constraints present in most watershed settings, even though it is appropriate to think holistically, it may be better to act strategically. Collaboration is confined primarily to win-win and win-no-lose situations (Wondolleck and Yaffee 2000, 48; Fisher 1983;
Fisher and Ury 1981). It appears to be less effective where fundamental value differences exist and opportunities for joint action cannot be crafted that fit the participant’s collective constraint set.

The key appears to be to developing an effective interactive process that allows the participants to find areas of common agreement. This could involve linking different problems. It could involve expanding or narrowing the range of issues that the mix of actors is addressing (Wondolleck and Yaffee 2000, 111). Participants also have to be willing to agree to disagree and avoid stereotypes. At the same time, participants need to respect the differences that do exist in order to establish long-term relationships. For example, Tampa Bay avoided emphasizing water supply or growth management issues, areas where there was little agreement among state or local officials. Instead, they focused on issues of common interest such as habitat restoration and nutrient reductions in order to find ways to improve and expand their efforts.

Because collaboration is limited to issues of mutual interest, it is less effective in addressing controversial issues. Consequently, it may be an inappropriate strategy for addressing a watershed’s important problems. Inland Bays is an excellent example where the actors work together in areas such as research, education, and habitat restoration. However, it was less effective in addressing more controversial issues related to residential and commercial development or nutrient loadings from the poultry industry. Moreover, the final Inland Bays CCMP was carefully crafted to avoid threatening vested interests. As one respondent observed: “The Delaware CCMP is really a nothing document. It is vague, it is loose, and maybe that is, in retrospect, all we could have gotten with the process we used.” However, this was necessary otherwise the agricultural industry would not participate. Respondents in Narragansett Bay also questioned the value of trying to use a consensus-based process to try and resolve long-standing conflicts. As these findings suggest, collaboration may not be an appropriate implementation strategy for addressing all watershed problems.

My data also suggests that it may be more effective to use several focused or targeted efforts instead to trying to use one large committee to address a wide range of issues. When collaborative efforts are implemented through one large committee, the frequent contacts among the individuals and organizations create strong ties. It also
offers some measure of centralization and control and a central point of contact. However, this approach presents several important problems. In Narragansett Bay, it proved costly for some actors to participate in endless discussions that failed to address issues of importance to their organization. As one participant noted: “some groups are present for some issues and absent for other issues, so there is not true democracy or consensus, especially with a large stakeholder group.” The wide range of issues also meant that membership in the decision-making process was limited to representatives of stakeholder groups, which often lacked the authority to commit their membership to decisions, rather than working directly with potential collaborators.

While information moves quickly among organizations with strong ties, the spread of new information, ideas, and opportunities typically come through weak or nonredundant ties (Burt 1992; Granovetter 1973). This suggests that a series of separate collaborative efforts targeted at specific problems allows a greater number of organizations to be involved in the overall effort, which increases the size of the interorganizational system and the opportunities for joint action.

Each organization will also be involved with different combinations of organizations. This increases the number of weak or nonredundant ties linking organizations together. It also allows collaborators to be included directly in the decision-making process. For example, Tampa Bay created a separate nutrient management consortium and the interagency monitoring program, which allowed the participants to work directly with one another in a way that would not be possible if they relied on the TBEP to make all decisions. This reduces transaction costs while allowing potential collaborators to negotiate directly with one another, adding additional certainty that the agreements would be implemented.

Not All Problems Should Be Addressed at the Watershed Level

Practitioners should also recognize that every problem is amenable to being addressed at the watershed level (Wondolleck and Yaffee 2000, 48). The problems best addressed at the watershed level appeared to be those where contextual conditions made the problem unique in some way such that the combination of actions taken to address the
problem in one watershed are different from those in other watersheds. For example, Lake Tahoe, Salt Ponds, Tampa Bay, and Tillamook Bay all have a unique approach to addressing problems that is tailored to their watershed’s unique contextual conditions. Problems related to carrying capacity (e.g., residential and commercial development) and cumulative impacts appeared to be particularly well suited to a watershed approach. For example, Lake Tahoe and Salt Ponds managed cumulative impacts from residential and commercial development by developing carrying capacities for the watersheds.

Equity considerations also enter into the decision about whether a problem should be addressed at the watershed level. It appears that there should be some justification for treating a class of actors (e.g., industry, homeowners, farmers, etc.) in a watershed different from similar actors in other watersheds if public officials are to impose differential costs and legal requirements on them due to their geographic location.

**Important to Focus Efforts in Ways that Create Value**

Practitioners should also be strategic and focus their efforts on collaborative processes with the potential to generate public value. The framework noted in this chapter argues that organizations participate in collaborative processes when their perceptions of the value created exceeds that of the expected transaction costs and problems associated with implementation.

Unfortunately, it was clear that some respondents viewed collaboration as an end in and of itself. For example, the NBEP’s mission is to foster partnerships and collaboration but the actions do not address any specific problem. Instead, the staff viewed their mission as simply undertaking collaborative projects. This is just one of many examples where respondents appeared to succumb to the institutional processes noted by DiMaggio and Powell (1983). Many respondents have come to believe that collaboration with broad stakeholder involvement is the preferred resource management strategy. As a consequence, little thought is given to whether these activities are appropriate or generate public value beyond that which created if they working independently. The following chapter examines the ways that collaboration created public value and the common implementation problems.
Endnotes


2 For differing perspectives on the strengths and limitations of the “garbage can” model see: Bender, et al. 2001; and, Olsen 2001.

3 This helped keep psychological problems such as stereotyping, cognitive bolstering, defensive avoidance, escalation of commitment, and groupthink from increasing the transaction costs associated with a group decision-making (Palumbo and Maynard-Moody 1991; Janis and Mann 1977; Janis 1972).

4 Heterophily is the opposite of homophily and reflects the degree to which the individuals who interact are different in important attributes (Rogers 1995, 287). Heterophilous communication has important information potential because it connects socially dissimilar individuals. Accordingly, while homophilous communication facilitates the diffusion of an innovation within a network, heterophilous communication can accelerate the diffusion between different networks (Rogers 1995, 288).

5 Another type of interdependence noted in the literature is commensal interdependence would exist where organizations are dependent on the same resources for their existence (Alexander 1995).

6 For a classic discussion of sources of power see French and Raven (1959).

7 Hardy and Phillips (1998) further argue that three forms of power affect collaboration: (1) formal authority; (2) control of critical resources; and, (3) legitimacy.


10 The relationship between humans and nature has been the focus of a great deal of philosophical discourse (e.g., Zimmerman, et al. 1998; Cahn and O’Brien 1996; Caldwell 1990, 1979; and, Milbrath 1989). Some ardent environmentalists view ecological systems in purely objective terms and see humans as intruders and destroyers of these systems. At the other end of the continuum, are those individuals who view environmental problems in purely subjective terms. This view argues that both human and ecological systems are constantly changing and that environmental problems are no different than other social problems in policy areas like crime, poverty, health, transportation, and education. These philosophical differences can lead individuals to adopt very different perspectives on the nature and causes of environmental problems (Hemple 1996).

11 Hemple (1996, 52) argues that three overlapping perspectives are prevalent in the environmental policy literature. The contamination perspective argues that environmental problems are simply caused by pollution or contamination of the natural environment. People with this perspective tend to divide actions affecting nature into two categories; clean and dirty. Where contamination occurs, you clean up the environment where it has not occurred you treat pollution at its source.

   The eco-simplification perspective views environmental damage as a matter of lost biodiversity resulting from the continued development of the natural environment. This perspective does not deny that contamination occurs. Rather, it argues that this focus obscures the more important problem of the loss of biodiversity or habitat.
The natural resource consumption perspective is most closely aligned with the traditional natural resource management paradigm. People who share this perspective view effective resource management as a problem of determining the maximum sustained yield, minimizing externalities, and improving our accounting for natural resource damages (Hemple 1996, 52-57).

12 Bardach (1996) suggests that there are several common threats to an agency’s turf that limit its willingness to participate in collaborative processes. The proposed activity could: (1) create threats to job security or career enhancement; (2) challenge an organization’s professional expertise; (3) lead to a loss of policy direction, organizational priorities, or leadership; (4) undermine traditional organizational priorities or create unwelcome competitors for resources; (5) create anxiety over being held accountable for outcomes that they have no direct control over (Bardach 1996, 178-179).
CHAPTER SEVEN
PUBLIC VALUE ADDED BY COLLABORATION

The final element of the proposed framework looks at the ways that public value was created and the implementation problems commonly associated with the collaborative activities discussed in Chapter Five. While collaboration creates public value in many ways, the concept is poorly developed. As a result, some researchers simply rely on participants’ self-reported views of whether these activities were “successful” (e.g., Wondolleck and Yaffee 2000). This can be problematic. Leach and others (2000a) note that the views of watershed coordinators tend to be more biased than those of other participants. It was also clear from these data that respondents frequently use different measures of success. There are also many ways to view the implementation problems and costs associated with a collaborative process.

This chapter discusses the ways that collaboration creates public value as a result of organizations working together that cannot be obtained achieved by working alone (Bardach 1998). The analysis resulted in a conceptual framework that highlights the different ways that public value is created at the individual, organizational, network, and societal level. A greater appreciation of these sources of public value may help practitioners design more effective collaborative processes. Moreover, while many of the variables noted in Chapter Six can influence implementation success, this chapter focuses on the prominent implementation problems observed in the six watersheds.

The Concept of Public Value

The literature offers two general rationales for why collaboration produces societal benefits (Huxham 1996a). The first is self-interest. Organizations collaborate because they can achieve something that cannot be achieved in any other way. This need not, and should not, imply that self interest is at the expense of other organizations (Huxham 1996a). These data suggest that collaboration is limited primarily to win-win or win-no-lose situations in that organizations search for opportunities for mutual gain or are willing to participate with limited gain if the transaction costs are relatively low. The
potential for win-lose situations is reduced because collaboration is a voluntary activity and organizations typically interact as equals. Thus, within a collaborative process, participants often have symmetric power relationships even though there may be asymmetric distributions of resources or power when viewed from the perspective of the larger interorganizational system. While researchers disagree over whether asymmetric or symmetric relationships stimulate collaboration (e.g., Kickert, et al. 1997), there is broader agreement that collaboration is often the result of complementary relationships. Collaboration also appears to be strategic in nature. In order to maintain collaborative relationships, collaborators have to be willing to agree to disagree and be willing to respect their differences. When this was the case, it was often possible for actors with a history of conflict to find ways to work together.

The second rationale employed by researchers is a moral one. It rests on the belief that important public policy problems cannot and should not be tackled by a single organization or level of government acting alone (e.g., Huxham 1996b). Collaboration helps ensure that a wider range of interests are involved in addressing these issues. This enhances the democratic features of our polycentric federal system, builds social capital, and encourages a civil society by building new interpersonal and organizational relations involving a wide range of governmental and nongovernmental institutions and the public.

The organizational theories discussed in Chapter Two offer additional rationales for collaboration. The principal-agent model is based on contracts specifying what agents should do and what principals are expected to do in return (Chubb 1985). Since agents have more information than principals, monitoring and other control techniques are essential to prevent strategic behavior (Waterman, et al. 1998; Perrow 1986). At the heart of resource dependency/exchange theory is the argument that organizations exist in an environment with limited resources. Therefore, organizations are dependent to varying degrees on other organizations for critical resources (Alexander 1995; Foa, et al. 1993; Rhodes 1981; Pfeffer and Salancik 1978; and, Benson 1975). Collaboration is a way to obtain needed resources. Transaction cost theory argues that transaction costs are the most significant determinants of a governance form (Osborn and Hagedoorn 1997; Alexander 1995; Zaheer and Venkatraman 1995). Collaboration results when it allows organizations to maximize the benefits associated with transactions (Dickson and Weaver
1997; Park 1996; Alexander 1995; Williamson 1985). Institutional theory suggests that participants come to view collaborative processes as being the most effective way to solve important economic, technical, and strategic problems. Isomorphic processes encourage organizations to adopt these practices (Osborn and Hagedoorn 1997; DiMaggio and Powell 1983). Collaboration also provides a process that spreads and institutionalizes rules, resources, and practices among the members of an interorganizational field (Phillips, et al. 2000).

Regardless of the rationale for collaboration, at the heart of each explanation is the idea that collaboration produces some value, real or perceived, for the organizations participating in these activities. Building on the work of Moore (1996, 10), Bardach (1998, 9) argues that collaboration should only be used when the activities add public value and produce better organizational performance or lower costs than can be achieved without it (Bardach 1998, 17). In some cases, this may be relatively simple because there was no other practicable way to achieve similar outputs or outcomes without collaborating. In other cases, collaboration involved a conscious and voluntary choice by organizations to work together because they believe the activities will produce value.

Huxham (1996b) uses a similar concept of collaborative advantage that focuses on the outputs of collaboration that cannot be achieved in any other way other than collaboration. It also occurs when an organization, through collaboration, is able to achieve its own objectives better than it could alone. In some cases, collaboration might achieve higher level objectives for society as a whole rather than just a single organization (Huxham 1996b).

A related concept is relational rents, which is grounded in transaction cost economics, and it is consistent with the concept of competitive advantage (Dyer and Singh 1998). Relational rents are possible when partners combine, exchange, or invest in idiosyncratic assets, knowledge, and capabilities. It also results when governance mechanisms are employed that lower transaction costs and permit the realization of rents produced by the synergistic combination of resources (Dyer and Singh 1998; Park 1996; Zaheer and Venkatraman 1995; Williamson 1985).

The public value, collaborative advantage, and relational rent conceptualizations are generally consistent with one another. Unfortunately, the public value and
collaborative advantage concepts are still poorly developed. The relational rent concept is better developed than the other two concepts but it tends to ignore many of the intangible ways that collaboration creates public value.

The analysis of the implementation activities described in Chapters Four and Five suggests that the public value concept should be multi-dimensional and recognize that value is created in different ways at the individual, organizational, network, and societal levels. Some levels of analysis have received little attention. For example, many network studies examine dyadic relationships between individuals or organizations (e.g., Wasserman and Galaskiewicz 1994). Less comparative research examines the effectiveness of interorganizational networks or the impacts these relationships have on society at large. There is also a general lack of research that measures network performance or examines how specific features of a governance structure influence outcomes, regardless of how they are measured (e.g., Milward and Provan 1998; Provan and Milward 1995; Provan and Sebastian 1998).

Previous network research tends to focus on a limited set of values such as social capital and trust (e.g., Leana and Van Buren 1999; Tsai and Ghoshal 1998), learning and innovation (e.g., Kraatz 1998; Simonin 1997), or improved policy outcomes (Milward and Provan 1998; Provan and Sebastian 1998). A few studies examined the relationship between network structures and their ability to create different types of public value (Milward and Provan 1998; Provan and Sebastian 1998; Alter and Hage 1993). However, there is no widely accepted framework for conceptualizing how collaboration creates public value. In terms of watershed management, research suggests that these activities can create public value in numerous ways (Born and Genskow 2001; Leach, et al. 2000a; Wondolleck and Yaffee 2000). Accordingly, Leach and others (2000b) suggest using multiple measures to examine how these activities create public value.

When developing such a framework, it is important to recognize that there may be important disconnects between changes in policy outcomes and institutional performance (Imperial 1999a, 1999b; Zaheer and Venkatraman 1995; Levin 1986). In other words, a policy may be faulty but be implemented effectively. Conversely, the policy may be well designed but is implemented in a manner that generates untenable transaction costs. Accordingly, while practitioners may ultimately be concerned with whether collaboration
results in measurable changes in environmental conditions, this is only part of the implementation challenge. Collaborative activities must also be designed in a manner that minimizes transaction costs while also recognizing that these activities can also improve watershed governance or generate other forms of public value.

**Sources of Public Value**

While improving environmental conditions was often the driving force behind initiating collaborative activities, most respondents failed to identify improved environmental conditions when asked about the value generated by implementation efforts. Instead, respondents focused on a wide range of intangible benefits related to enhanced watershed governance such as “improved trust,” “new personal relationships,” and “improved coordination.” Others noted that the efficiency or equity of a program or process was sometimes improved through economies of scale, technical specialization, or improved organizational capacity. Respondents also reported that collaboration improved decision making and the allocation of resources at the organizational or network level. In other instances, the creation of new collaborative organizations increased stability while providing a mechanism for organizing and managing collaborative activities occurring in the watershed.

Table 7.1 illustrates the basic types of public value generated by the collaborative implementation activities described in Chapter Five. These concepts are interrelated and often span the individual, organizational, network, and societal levels.

**Policy Outputs and Outcomes**

Collaboration creates public value by generating additional policy outputs and outcomes, which in this study improved environmental conditions. Understanding policy outputs and outcomes required looking across levels of analysis. At the individual level, collaborative processes might improve job performance. At the organizational or network level, outputs were produced that otherwise would not be possible. In other cases, organizations produced outputs more quickly (e.g., ODFW staff working in ODF) or at less cost (e.g., using volunteers), which resulted in “more bang for the buck.” The
Table 7.1: Potential Sources of Public Value from Collaboration

<table>
<thead>
<tr>
<th>Level</th>
<th>Public Value</th>
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</table>
| **Individual** | • Increased job satisfaction and motivation  
• Learning, adaptation, and change  
  – Learn new skills (e.g., professional development)  
  – Better decisions & judgement  
  – Improved job performance  
• Social capital  
  – Social networks among individuals results in trust, reciprocity, and reputation |
| **Organizational** | • Additional policy outputs  
• Learning, adaptation, and change  
  – Innovation adoption & policy change (e.g., organizational change)  
  – Organizational learning (e.g., collaborative know how)  
  – Policy-oriented learning  
• Increased organizational capacity  
  – Increase organizational efficiency/effectiveness (e.g., improved service delivery)  
  – Improved decision making & resource allocation (e.g., improved program management)  
  – Develop new programs or modify mission (e.g., ability to survive and flourish)  
  – Leveraging new resources  
  – Improved internal and external communication  
• Social capital  
  – Social networks among organizations results in trust, reciprocity, and reputation |
| **Network**   | • Additional policy outputs  
• Learning, adaptation, and change  
  – Innovation generation and diffusion  
  – Policy-oriented learning  
• Increased network capacity  
  – Increased communication among network members  
  – Policy integration (e.g., coordination & shared policies)  
  – Leveraging resources for the network or its members  
  – Leveraging policy networks (e.g., improved lobbying)  
• Social capital  
  – Social and organizational networks results in trust, reciprocity, and reputation  
  – Institutional infrastructure |
| **Societal**  | • Improved policy outcomes  
• Policy-oriented learning  
• Social capital  
  – Social and organizational networks result in trust, reciprocity, and reputation  
  – Institutional infrastructure  
• Increased civil society  
  – Citizen involvement in government institutions, volunteerism  
  – Develop new institutions (e.g., NGOs)  
  – Improved political representation and accountability  
  – Citizen satisfaction with government institutions |
network itself, perhaps through a newly created collaborative organization, might generate its own resources that support implementation and improve environmental conditions. Collaborative organizations can also provide the slack resources necessary to organize and manage collaborative activities that increase organizational outputs. This was particularly true where a collaborative organization encouraged, organized, and supported implementation.

The determination of the extent to which collaboration improved environmental conditions proved to be a complicated methodological problem (See Imperial and Hennessey 2000). Instead, the analysis focused primarily on identifying the regulatory and nonregulatory activities used to implement watershed management plans that had some promise of improving environmental conditions, enhancing watershed governance, or producing societal benefits. This included actions taken individually or collaboratively that offered some promise of direct or indirect environmental improvements. When viewed from this perspective, the six watershed management programs were generally viewed as being effective (Imperial and Hennessey 2000).

Interestingly, while improving environmental conditions was typically the rationale for beginning collaborative efforts, respondents rarely pointed to improved policy outcomes when asked about the benefits of watershed management or the collaborative activities used to implement their programs. Instead, respondents tended to highlight the improvements in watershed governance discussed in the following sections.

Job Satisfaction and Motivation

One way value was created at the individual level was by improving job satisfaction and motivation. Respondents often reported that they enjoyed developing new personal relationships. Others reported that they enjoyed working in “teams” because it allowed them to learn new skills and use talents that are not utilized in regular job assignments. Respondents also reported that collaborative efforts often broke down political and bureaucratic barriers between agencies; frequently a source of frustration for respondents. Collaboration also improved motivation by providing an opportunity for personal renewal where staff members moved beyond normal organizational routines,
developed new relationships, and potentially learned new skills or deployed skills in new ways. It could also lead to new career opportunities or create additional job security (Bardach 1998). Since these activities could improve job satisfaction and motivation for some workers, it is reasonable to suspect that it could also improve their productivity and performance. It is also reasonable to conclude that the learning and skill development embedded in collaborative activities improved future job performance.

**Learning, Adaptation, and Change**

Another source of value is the learning, adaptation, and change resulting from collaborative activities (Kraatz 1998). Collaboration promotes and encourages learning in various ways through knowledge sharing arrangements and sponsoring demonstration projects that test new policies, programs, or practices, which subsequently can be diffused among network members. All of the cases contain examples of policy-oriented learning (Sabatier and Jenkins-Smith 1999, 1993; Jenkins-Smith 1988; Weyant 1988), the type of social learning discussed in the environmental policy literature on adaptive management (e.g., Lee 1995, 1993; Holling 1978; and, Gunderson, et al. 1995), and the important role that epistemic communities can play in policy development and implementation (e.g., Hass 1992, 1990; Thomas 1997). As a result of participating in collaborative activities, participants are often better informed. This allows them to make better choices about future courses of action and improves the likelihood that they will solve future watershed problems (Wondolleck and Yaffee 2000, 23).

Individuals learn new skills and are exposed to new information and ideas from their partners (Dyer and Singh 1998). The same is true for organizations. In fact, many respondents reported that they had a better understanding of issues and problems as well as how other organizations operated. As one local official in Tampa Bay noted: “I think the estuary program has a nice balance of management and technical expertise that it has now become a good sounding board. I am always seeking and needing technical advice and it is nice to know that I have an agency and the management board to sound off on and seek advice from.” This was particularly evident where there is a history of collaboration or conflict, which suggests that it is the ongoing interaction of individuals
and organizations that promotes learning. This is consistent with observations from the literature on policy-oriented learning, epistemic communities, and adaptive management.

Collaboration also stimulates changes in policies and the diffusion of new practices. Organizations participating in collaborative efforts are likely to take the concepts, ideas, policies, and practices developed through collaborative processes and incorporate them into their ongoing operations (Phillips, et al. 2000). Thus, collaboration can stimulate the diffusion of innovations (Rogers 1995). For example, the CRMC adopted many of the policies developed for the Salt Ponds SAMP on a statewide basis while the RIDEM made changes in its OSDS regulations that applied statewide. In Tampa Bay, the Florida Yards and Neighborhoods public education program and the interagency monitoring program were extended beyond the watershed’s boundaries.

Collaboration can also lead to the development of “collaborative know how,” the specialized knowledge and experience gained through experience that allows the collaborator to gain greater benefits from future collaboration (Simonin 1997). This experience involves many aspects of an organization’s collaborative history and includes the frequency, intensity, and longevity of the interactions as well as the types of organizations involved in these relationships. As a result, individuals and organizations are better at identifying potential collaborators, negotiating the form and specifics of future collaborative agreements, managing and monitoring relationships, transferring knowledge, and knowing when to terminate relationships (Dyer and Singh 1998; Simonin 1997). However, developing collaborative know-how requires more than just experience. It requires internalizing the lessons (positive and negative) in a manner that allows them to be applied to future situations (Simonin 1997).

Collaboration can also combine similar (homophilous) individuals or organizations (e.g., town planners, water quality monitoring programs, habitat restoration programs, etc.). This can facilitate the diffusion of ideas, practices, or technologies within the interorganizational system (Rogers 1995, 287; Alba 1982) and promote policy-oriented learning (Sabatier and Jenkins-Smith 1999, 1993). Collaboration could also promote heterophilous communication by connecting socially dissimilar individuals and organizations (e.g., engineers, planners, politicians, managers, scientists, and the lay persons). This can accelerate learning and diffusion between networks that promotes
societal-level learning (Rogers 1995, 288; Alba 1982). One example of the learning that can occur at the network and societal level is the development of epistemic communities, networks of professionals from various disciplines and backgrounds that share normative principals, beliefs, and values (Thomas 1997; Haas 1992, 1990). While the epistemic community may constitute a relatively small proportion of an agency, profession, issue network, policy community, or advocacy coalition, they can have a disproportionate affect on organizational learning and behavior (Thomas 1997). Since collaboration often involves the members of an epistemic community, the activities are likely to influence learning among professionals.

Organizational and Network Capacity

Researchers have also noted that collaborative watershed management efforts improve problem-solving capacity at the organizational and network level (Leach, et al. 2000a; Steelman 1999). Agencies are constantly in need of developing their capacity to address resource management problems. Capacity is also increased by improving the performance of workers, adding new resources (e.g., personnel, material, or technology), restructuring how work is done and organized, and by changing the way services are delivered (Wondolleck and Yaffee 2000, 43; Bardach 1998, 22; Jennings and Krane 1994; and, Agranoff 1991).

Collaboration can also develop an organization’s capacity for problem solving. This occurs by improving communication among organizational sub-units and enhancing communication with other organizations (Jennings and Krane 1994). Collaboration can also help organizations implement projects in a timely and cost-effective manner. One local official in Tampa Bay provided an illustrative example of the type of problem local officials confront:

“A significant project this city has put in its plan for the NEP, the local NEP, is a lake restoration effort and the city and regional water management district, SWFWMD, each contributed $5 million to restore this body of freshwater that discharges directly into Tampa Bay and the restoration plan called for significant reduction in nitrogen loading to the Bay if we were going to clean up this lake. We spent 3 years getting permits from FDEP and COE to allow this project to go
forward. We exceeded our pledges 2 or 3 fold as far as engineering and staff time to get these permits. We essentially delayed the project. More importantly it cost the project additional capital expense. . . . with no net environmental benefit that can be correlated to it. . . . This project was treated no different than an individual wanting to build a marina, it was treated no different than a private sector development . . . yet this project was totally dedicated to the clean up of a lake and its direct impact on the clean up of the bay. Yet, it was never considered in that way. There was given no credit, there was no consideration given to the objective of the project in the permitting process.”

Collaboration becomes an important strategy for improving program effectiveness. It allowed the actors to minimize the aforementioned problems and reduced the transaction cost that otherwise would have occurred.

Collaboration can also help organizations overcome other obstacles to policy implementation. Narragansett Bay used collaborative arrangements to avoid the state’s cumbersome personnel, contracting, and purchasing procedures. As one respondent noted: “We have huge problems spending money. Just spending money. . . . We’ve had situations where we’ve gotten $100,000 of federal money and a year later we’re still trying to get it through the system to work with the University [of Rhode Island] or someone and its just getting glitched up through the bureaucracy.” To avoid these problems the NBEP passes a portion of its EPA funding through the NEIWPCC to remove it from the state’s purchasing system. A similar arrangement allows the NBEP to hire selected staff without going through the equally cumbersome personnel system.3

Collaboration can improve program efficiency. As one respondent in Tampa Bay noted: “One benefit of collaborating was this economizing. The other was that we needed to be sure we were measuring the same thing. We even share equipment now.” In some instances, volunteer labor and donations reduced project costs. For example, the CIB estimates that the $1 a year lease on James Farm is worth more than $45,000 per year and the volunteer hours dedicated to reforestation, trail maintenance, and facility development at James Farm saved around $5,500. The CIB also received donations in labor, supplies, and equipment from contractors and construction companies to support restoration work. The CIB also estimates that its volunteer monitoring program provides more than $60,000 in free labor annually (CIB 1999).
Service delivery was also improved (Agranoff 1991). An excellent example was in Lake Tahoe when the TRPA delegated some permitting authority at the local level thereby reducing the number of permits an applicant needed to obtain, which reduced their transaction costs. While resources used for permit review and enforcement are largely being replaced by the costs of training and monitoring local officials, the hope is that the initial start-up costs will go down allowing the TRPA to shift more resources to addressing regional issues.

Collaboration allows organizations to contribute their expertise, skills, and resources to develop capacity in other organizations (Wondolleck and Yaffee 2000, 42). For example, the NBEP took steps to improve the RIDEM’s problem-solving capacity by funding a staff person to rewrite the OSDS regulations and participate in the denitrification taskforce (RIDEM 1997, 18). The NBEP director is often tasked to special projects and been called in to help decide where grant funds should be allocated. The NBEP also represents the RIDEM in various stakeholder processes (RIDEM 1998a).

The capacity for collective action and problem solving at the network level can also be improved through collaboration (Malysa 1996; King and Olson 1988; and, Honadle 1981). Shared policies and other coordination mechanisms improved policy integration, which allowed resources to be allocated more efficiently. The habitat restoration plan developed by Tampa Bay is good example. It redirected projects around a common set of priorities that produced greater environmental improvements from existing expenditures.

The network itself may leverage resources that facilitate collective action. In the Inland Bays, Tampa Bay, and Tillamook Bay, new collaborative organizations were created to oversee implementation. Their staff organizes, coordinates, and supports collaborative activities, thereby absorbing the transaction costs that participants would otherwise incur. Collaboration also improves interagency communication and coordination in ways that allow the partners to leverage new resources. As one University of Delaware researcher reported “I have received quite a bit of money from the EPA that I probably wouldn’t have received if it weren’t for the NEP.” Similarly, at one of the TCPP’s first meetings, a participant noted that a $500,000 grant was available through the U.S. Forest Service but the application deadline was in two weeks. Several
of the meeting participants then arranged to get together to determine if they were eligible for the grant. If they were, they planned to work together to develop the grant proposal. In Tampa Bay, a U.S. Fish and Wildlife office representative noted that their office was in a better position to obtain the agency’s discretionary project level funding as a result of the TBEP’s shared policies. Collaboration also allows the partners to leverage their respective policy networks and lobby more effectively. The best example is Lake Tahoe where the Tahoe Transportation and Water Quality Coalition created the Lake Tahoe Joint Federal Legislation Agenda in order to coordinate their efforts to lobby congress.

Collaborative organizations and shared policies are also be important forms of institutional infrastructure that others can build upon, which makes them an important source of social capital. For example, the development of shared priority sites for habitat restoration allowed Florida’s land acquisition programs and other funding agencies (e.g., SWFWMD) to link their funding decisions to those policies.

**Social Capital and Civil Society**

Respondents frequently reported that an important benefit of collaborative implementation was the new personal relationships and corresponding trust that facilitated ongoing interactions and future collaborative efforts. One respondent noted: “I think the most important aspect of these collaborations is that it helps people get to know each other and try to work together. That to me is the #1 benefit.” Another in Tampa Bay suggested: “I think we have created a meaningful partnership where participants trust each other and where they have a lot of peer pressure to make this work.” In Tillamook Bay, one respondent observed: “It’s created a dialog. It’s created a process. It’s created a table for people to come together around and that’s extremely valuable for a community.” One interest group leader in Lake Tahoe reported, “We negotiate some of the disputes through, some of the people involved in the coalition now have relationships and they can set up these informal meetings to work out problems without it being a formal process.” In fact, previous research on watershed management efforts has often found improved trust and relationships to be an important benefit of implementation efforts (Leach, et al. 2000a; Wondolleck and Yaffee 2000).
The analysis concluded that this “social capital” was generated at all four levels by networks of individuals and organizations, which in turn generated conditions of trust and reciprocity (Jeffries and Reed 2000; Leana and Van Buren 1999; Tsai and Ghoshal 1998; Putnam 1995; Coleman 1990). Networks also provide opportunities for individuals to interact and talk about issues of common interest, which in many cases extend beyond the group’s functional interests. Putnam (1995) and others argue that this social capital is an important part of our democratic system. Collaborative activities also encourage a civil society by providing opportunities for citizens to volunteer time and become involved in civic institutions. It also results in new institutions, whether they are collaborative organizations or nongovernmental organizations (NGOs). These institutions ensure that specific political interests (e.g., watershed interests) are represented in future policy deliberations. They also increase accountability by helping ensure that some specific policy outcomes are achieved. This can increase citizen satisfaction with respect to the performance of government institutions and lead to an increased civil society (Wondolleck and Yaffee 2000, 7).

The social capital concept has been used to describe this source of public value (Leana and Van Buren 1999; Tsai and Ghoshal 1998; Putnam 1995; Burt 1992; Coleman 1990). The social capital of individuals aggregates into that of organizations, which comprises that of networks and collectively constitutes the social capital available to society. Viewed broadly, social capital encompasses social ties, trusting relations, and value systems that facilitate the individual and organizational actions within that context (Leana and Van Buren 1999; Tsai and Ghoshal 1998). Thus, it is something that is jointly owned rather than controlled by one party to a relationship (Leana and Van Buren 1999; Burt 1992). It includes a structural dimension consisting of a pattern of social interactions defining those individuals and organizations involved in the relationships (Burt 1992). There is also a relational dimension consisting of the trust rooted in these relationships (Tsai and Ghoshal 1998). Trust arises when actors have something at risk and it is the mutual confidence that no party to an exchange will exploit another’s vulnerabilities (Jeffries and Reed 2000; Tsai and Ghoshal 1998; Nooteboom, et al. 1997). When participants trust one another they are more willing to share their resources without worrying if they will be taken advantage of by other organizations. A positive reputation
also improves an organization’s access to scarce resources while reducing search and monitoring costs (Saxton 1997; Pfeffer and Salancik 1978). Thus, social capital is both the resources contacts hold and the structure of a network (Burt 1992, 12).

Social capital also includes a cognitive dimension consisting of the shared values, norms, or common understandings created by social interactions. Shared norms and trust can be an important governance mechanism that lowers transaction costs and promotes smooth and efficient exchanges. It can also hold together a loosely-coupled system by binding the partners in social contracts (Tsai and Ghoshal 1998; Wicks, et al. 1999). Thus, social capital is both an antecedent to and an outcome of a successful collaborative process (Leana and Van Buren 1999; Tsai and Ghoshal 1998). A “virtuous circle” of escalating trust and further collaboration can therefore develop if initial collaborative efforts are effective (McCaffrey, et al. 1995; Zaheer and Venkatraman 1995).

Social networks also produce information benefits. They determine who has access to valuable information and knowing who could use this information. Because the actors are unevenly connected with one another, collaborative information sharing makes organizations attentive to information needs. Social networks also make sure that organizations are informed earlier than they otherwise would be. This is particularly important in terms and grant applications and other opportunities that require some planning and preparation (Burt 1992).

Unfortunately, “[t]here is no magic recipe for building trust and relationships (Wondolleck and Yaffee 2000, 158).” There are also maintenance costs associated with social capital. Relationships require maintenance and the continued allocation of the slack resources to support the effort. It also requires some mechanism to help socialize new participants to the norms, values, and routines of the collaborative process (Leana and Van Buren 1999). While social capital is built slowly over time, it was noted earlier that it can be destroyed quickly as a result of activities that break the trust between partners (Leana and Van Buren 1999; Axelrod 1984). Finally, it should be noted that while trust is almost always viewed in positive terms, there is evidence suggesting that too much trust can be as bad as too little, although the “dark side of trust” remains poorly understood (Jeffries and Reed 2000).
Implementation Problems and Costs

While collaboration creates public value when implemented effectively, changes in the contextual and situational constraints described in Chapter Six can cause implementation problems and high transaction costs. Indeed, collaboration is often time consuming, costly, and stimuliates a wide range of strategic behavior with little to no corresponding benefits. There have been many attempts to identify the variables that influence implementation success. O’Toole’s (1986) review of more than 100 studies noted that policy characteristics, resources, number of actors, attitudes, and perceptions of implementing personnel are important factors. However, there is no agreement among researchers on the most important factors. Leach and others (2000a) reviewed 36 watershed studies and found more than 210 factors believed to influence the success of watershed management efforts. Previous research on the effectiveness of interorganizational networks (e.g., Provan and Milward 1995) reveals a similar lack of agreement. Rather than proposing a comprehensive set of relationships, the following sections describe the common implementation problems observed in the six watersheds.

Disposition and Skills of Implementors

Some of the most prominent implementation problems were the result of the disposition or skills of the implementors (Goggin, et al. 1990; O’Toole 1986). Collaboration can be stressful, time-consuming, laborious, and involves working with various individuals and organizations (Bardach 1998, 177). It was not surprising to discover that collaboration could decrease job satisfaction and motivation for some respondents. Reasons cited by respondents included:

- Fast pace of the planning process;
- EPA’s emphasis on benchmarks and deadlines that often fail to match the realities of a dynamic planning process and a heavy reliance on collaboration;
- Labor intensive nature of managing a decision-making process that relies on a complex committee structure;
- Reporting and procedural requirements require producing information and reports that are primarily for the EPA’s consumption and do not aid the program’s efforts;
- Low pay or benefits compared to some of their federal counterparts;
- Lack of job security;
- High stress;
- Frustration with the political nature of collaborative processes;
- Making new friends was not in the job description;
- Lack of recognition and support by upper management for collaborative activities;
- Inflexible criteria used to evaluate the performance of individuals or organizational subunits; and,
- Endless meetings were unproductive and a waste of time.

These conditions create strong disincentives for participating in collaborative activities and can cause staff turnover, which is of particular concern because staffs are often small, institutional memory resides in a few individuals, and collaborative efforts often rely heavily on personal relationships. As one Tillamook Bay respondent observed: “The money is soft and people bail as soon as they find a permanent job. It’s just a personal reality. Working year to year is hard. If they had secure funding, they would have some of the original team members. . . . It leads to a lot of wasted time and money when this turnover happens.” These problems ended up increasing the transaction costs for all involved. Others reported that the “politics” involved in these efforts was a source of frustration and disillusionment, particularly for scientists and other technical staff who reported feeling uncomfortable in political settings. This problem appeared to be more acute in regulatory efforts such as Lake Tahoe and the Salt Ponds.

It was also important that the individuals participating in a collaborative effort were supportive of a team-based work environment. Several respondents noted problems with staff who resisted participating in collaborative efforts because they did not like working in teams or viewed it as wasted effort. One Inland Bays respondent went so far as to suggest that she disliked working in teams and was not getting paid to make new friends. The data was unclear as to what type of individual tended to object to collaborative, team-based efforts. Some of these individuals were working in traditional command and control and other programs with narrowly defined functions and responsibilities and stringent oversight requirements. Other respondents suggested that younger employees tended to be more receptive to collaborative approaches than older workers. Regardless, it was clear that participation in a “successful: collaborative effort could change staff attitudes.
It was also clear that that while some organizations had a strong “culture of collaboration,” others did not reward or support collaborative behavior (e.g., Alexander 1995; Hall 1995). As one respondent in Narragansett Bay noted: “[T]here is such an institutional bias against coordinating. You don’t get brownie points for helping someone else do a good job. That’s why people don’t want to do customer service or TQM. Those are invisible successes you don’t get credit for it.” An organization’s ability to collaborate internally or with other organizations depended on developing an organizational culture supportive of collaboration. This required recruiting staff with the skills necessary to organize and manage work teams. It also requires a staff that was favorably disposed to participating in collaborative efforts. Individuals might view collaboration as a threat to their self worth if collaboration changes their organization or its responsibilities. Accordingly, some struggles are a reflection of “personalities and egos” in the sense that participants are often more concerned with the perception of “winning” or “losing” than they actually are about their turf (Bardach 1996, 179).

It was also important that upper management recognized the values and limitations of collaborative activities and rewarded employees for engaging in collaborative behavior. Respondents suggested that the failure to reward individuals or organizational sub-units and punishing them when collaboration reduced the resources available for core programs was an important disincentive. Others suggested that top management is sometimes reluctant to share credit with other organizations or fails to recognize any source of public value beyond environmental improvements. Collaboration is also a risky endeavor since it requires ceding some control, sharing risks, and becoming dependent upon others for success (Himmelman 1996, 28).

Implementation problems related to staffing and recruitment, personnel management, budgeting, contracting, and grants management created other common implementation problems. The problems were often amplified when staff lacked the requisite professional skills. This was most evident in Tillamook Bay where staffing and managerial problems plagued the early years of the planning process because they hired a director who had scientific qualifications but lacked the management skills necessary to effectively manage the staff and budgets. The director was also incapable of building the
“team-oriented” environment necessary for this type of planning effort and staff morale was reported to be low. One respondent described the situation this way:

“You throw someone like that [lacking management experience] into a really complicated management system . . . and then they hired Ph.D. ivory tower research scientists. They were highly talented individuals but they never gelled into a team at all. Overlay that with a highly complex budget scheme. The NEP and county budgets were totally different. They were impossible to mesh. . . . The director was also not experienced at dealing with consultants. They ate this project alive.”

These problems caused a great deal of frustration among committee members who knew that their time was being wasted. As one respondent noted: “If I were to make one recommendation, it would be to ensure that the director has experience with managing an office, not a good scientific background. No one ever hires a director.”

In other cases, staff lacked the requisite training and skills to manage collaborative decision-making. As one Narragansett Bay participant noted:

“I won’t get into particular names, but some of the personalities in the bay project [NBP] didn’t necessarily have very good consensus building skills or meeting facilitation skills. That was a problem. Certain individuals were really trying to ram their ideas using the stakeholders to buy in . . . It doesn’t work that way. They found out towards the end that it wasn’t going to work, but it was too late.”

Conversely, the TBEP’s director was effective at managing the planning process and working behind the scenes to address the concerns of particular actors. As one respondent noted: “We [TBEP participants] were fortunate to hire an executive director who had the art of negotiating and was not combative with anyone and was able to put together a good staff.” It was also beneficial that the director worked on Tampa Bay’s SWIM plan and had personal relationships with many of the key actors.

These findings underscore the importance of having a director and staff with the requisite administrative skills to manage personnel, grants, and budgets. It was also important that they had the interpersonal and facilitation skills necessary to resolve disputes and broker agreements. They also needed political skills to encourage collaboration while avoiding conflicts. At the same time, the director needed the
leadership and the argument and persuasion skills necessary to encourage the actors to work together voluntarily on actions that were not required and steering individual efforts towards collective goals (Majone 1989). In short, administering a watershed management effort was a complicated administrative endeavor requiring some formal training in areas like policy analysis, planning, and public administration as well as a background in environmental sciences.

**Resources**

It takes resources such as time, money, equipment, staff, technical expertise, and legal authority to get things done and different organizations often contribute different resources (Wondolleck and Yaffee 2000, 198). A frequent finding of watershed management research is that resource problems such as a shortage of money, staff, or time was an obstacle to effective implementation (Leach, et al. 2000a; Wondolleck and Yaffee 2000; Lubell, et al. 1998). These constraints are not limited to governmental organizations. Representatives of NGOs often face greater constraints and are heavily reliant on volunteer participation. Even when staff or funding is available, the way governments allocate and account for these expenditures creates obstacles to collaboration (Wondolleck and Yaffee 2000, 57). Accordingly, it was not surprising to find that the lack of slack resources and the absence of a stable, flexible funding source were mentioned frequently as significant implementation problems.

**Slack Resources**

One of the most formidable constraints was the lack of the slack resources necessary to organize and participate in implementation (Alexander 1995; Hall 1995; Goggin, et al. 1990). As one respondent observed:

“\textmd{I see that meeting the goals is all dependent on budgets. If you don’t have the people, how are you going to meet the goals. These are ambitious and lofty goals, but I can’t guarantee that I can always be here in this office to help. If people decide to consolidate my office into another area, that will have a big impact on many resources we can commit in this area since they’ll be competing with a larger area and all it’s problems.”}
Organizations with slack resources are more likely to be predisposed to participate in collaborative activity (Alexander 1995). After all, if organizations can contribute nothing more than sending a staff member to attend meetings, then it is unlikely that the group will be able to accomplish much. The more successful collaborative efforts proved to be those with dedicated staff that organized and supported collaborative activities.

There were many examples where the presence or absence of slack resources affected implementation. In the Inland Bays, the CIB’s Executive Director was the only full-time staff member during the early years of CCMP implementation and several respondents noted that it was a challenge for him to “keep his head above water”. In recent years, funding stabilized and staff expanded. The addition of slack resources quickened the pace and expanded the breadth of implementation dramatically.

Another example concerns the development of the informal permit review process in the SAMP. As originally conceived, the CRMC would have served as the permit coordinator sending all applications to appropriate agencies and coordinating the flow of information between agencies. The problem was that the CRMC had limited slack resources (e.g., staff, funding, technical expertise, etc.) and relied mostly on RIDEM and RIDOP to review its permits. Moreover, the proposal would have caused the CRMC to coordinate a number of development activities that had little to no impact on coastal resources. There were also problems concerning the lack of information about RIDEM and local government permit requirements, which would have further complicated CRMC’s coordination efforts. Instead, the CRMC adopted an informal permit review process that takes into account the limited slack resources of the participants.

In Tillamook Bay, the proliferation of more than 80 watershed councils has created problems for federal and state agencies. Respondents suggested that staff in federal and state agencies were stretched too thin to work effectively with the watershed councils. For example, cutbacks at the NRCS resulted in staff having to cover larger geographic areas. This reduced the amount of assistance that could be offered and increased the amount of nonproductive travel time. State agency respondents identified similar problems. Respondents also noted that local capacity was often lacking. As one state official put it: “Capacity building is a central necessity. Unless we raise local
capacities these expectations will be dashed because of lack of technical capacity.”
Several respondents also noted that the way full-time equivalents (FTEs) were allocated
and budgeted provided an obstacle to collaboration since technically staff were prohibited
from helping other agencies implement their programs.

It was also clear that when slack resources existed, they were used up quickly,
often with little consideration to how they should be allocated. When the CIB’s staff
expanded to include a restoration and outreach coordinator, the scope of implementation
activity expanded dramatically but the additional staff members were quickly
overextended. One respondent in Narragansett Bay noted that the NBEP staff is also
overextended: “They [NBEP staff] get sucked into a variety of issues in DEM. The
NBEP is the only source of coastal technical expertise in DEM.” A respondent in
Tillamook Bay characterized the danger of overwhelming TCPP’s staff this way: “What
we have to be careful with is it takes twenty seconds to give someone else twenty hours
of work.” In other cases, decisions by EPA caused state officials to expend limited slack
resources. As one state-EPA official observed, “there are too many irons in the fire.
There are too many things all going on simultaneously and nothing ever gets done.”
These findings suggest that practitioners in a watershed management effort should
carefully consider how they utilize their limited slack resources.

Financial Resources

The most common response by respondents when asked about what could be done
to improve implementation was to provide more resources with fewer restrictions on how
they should be allocated. As one state official put it: “What it will all depend on is
people’s budgets. If they don’t have the money, all bets are off.” This was not
surprising. O’Toole (1986) found in his analysis of over 100 implementation studies that
over half identified financial resources as an important variable influencing success.
Resources are also cited as an important factor related to network performance (e.g.,
Alexander 1995; Hall 1995). Leach and others (2000a) found resources to be an
important factor influencing the effectiveness of watershed management efforts (See also
Wondolleck and Yaffee 2000).
It was clear that there were significant differences in the availability of implementation funding. One of the keys to the success in Tampa Bay is that implementation funding is widely dispersed. Florida’s land acquisition programs (e.g., P2000, CARL, SOR, etc.), SWFWMD, and local stormwater utility fees are three significant sources of implementation funding. This makes their collaborative efforts less reliant on federal funding and allows local priorities to drive implementation. The partners also contribute funding to support the TBEP. This developed the capacity of the new collaborative organization while demonstrating the partners’ commitment to implementation. The same is true in the forested portion of Tillamook Bay where the ODF’s timber revenue provides significant implementation funding. In Lake Tahoe, there are also sources of federal and state grant money specifically allocated to support restoration and management and there is broad discretion in how these funds are utilized. There are also sources of state funding allocated to specifically address agricultural NPS problems in the Inland Bays. Conversely, there are only limited state funds allocated to support implementation efforts in Narragansett Bay, Salt Ponds, and the remainder of the Inland Bays and Tillamook Bay, which makes them heavily reliant on narrow federal and state categorical grant programs for implementation funding.

The stability and flexibility of the revenue streams was also important. In Lake Tahoe, Tampa Bay, and portions of Tillamook Bay, the presence of flexible and stable revenue streams enabled public officials to plan and budget with confidence. It also allowed the watershed-level priorities to drive implementation. This allowed them to make the difficult transition from having implementation consist of a collection of loosely-connected projects to systematically addressing specific problems.

Conversely, the Inland Bays, Narragansett Bay, Salt Ponds, and the non-forested portions of the Tillamook Bay lack similar revenue sources, which makes them heavily reliant on narrow federal or state grant programs. While they have been successful in leveraging funding from these programs, implementation typically consists of discrete loosely-connected projects. Moreover, the priorities, cost-share requirements, and grant restrictions constrain and shape implementation. Since the requirements of grant programs change frequently, public officials cannot plan and budget with confidence. The grant money is also dispersed among numerous federal agencies with different time
schedules and grant restrictions. This increases the transaction costs associated with locating and applying for grants. Since a significant proportion of the implementation funding is “soft” money, there tends to be a heavy emphasis on contracting out activities instead of building the capacity of collaborative organizations or partner organizations. Respondents also reported problems in satisfying matching requirements.

This suggests that the flexibility and stability was just as important as the amount of funding available because it helped practitioners develop realistic goals that allowed them to plan and budget with confidence. It also allowed practitioners to build and maintain the capacity for collaboration. This finding was consistent with the findings of other evaluations for the USDA’s Rural Clean Water Program (RCWP) in Tillamook Bay (Gale, et al. 1993) and a review of the HUA project for the Delaware Inland Bays (1998).

Changing Institutional Setting

The final set of implementation problems observed could be attributed to changes in the institutional setting. Changes often occur in organizations as they adapt to changes in the external environment. The enactment of a program signifies the starting point of an evolutionary process of experimentation, goal definition, and the search for an appropriate implementation strategy (Mazmanian and Sabatier 1983, 267). Programs will start out trying to accomplish one set of objectives and can end up accomplishing others (Pressman and Wildavsky 1984, 116). Thus, implementation evolves in a manner that strengthens the prospects of achieving long-term goals or it may result in failure if the organizations are unable to adapt to environmental changes (Mazmanian and Sabatier 1983, 269; and, Kirst and Jung 1982).

Many of the contextual and situational factors noted in Chapter Six change over time. Factors that once encouraged implementation may change in a manner that creates disincentives or constraints on what can be accomplished. For example, Congress or a state legislature may change agency priorities or federal and state agencies might change their funding priorities or impose new restrictions that prevent the actors from pursuing their shared policies. As one respondent in Tillamook Bay noted:
“I think the potential danger is that in any big group like the NEP you’ve got all these people who are supposed to be working together. They want to communicate. They want to spend money effectively. But each one of those people has a whole other job and whole other set of requirements. And the minute the legislature changes their mind about something, this may not be the focus either.”

The courts can also change agency priorities and reshape collaborative efforts. For example, as a result of a lawsuit, the DNREC was forced to adopt a total maximum daily loading (TMDL) for the Inland Bays. Developing pollution control strategies to implement the TMDL’s recommendations is now the priority for state and local officials rather than implementing the CCMP.

These examples illustrate a few ways that changes in the factors noted in Chapter Six can cause implementation problems. Conversely, changes in the institutional setting could reinforce and enhance collaborative efforts. This underscores the importance of understanding the relationships proposed in Chapter Six and draws further attention to the dynamic and evolutionary nature of collaborative processes.

Implications for Researchers and Practitioners

There are clearly many ways that collaboration creates public value. It produces policy outputs and outcomes that otherwise are not possible. It can reduce costs in terms of time and money needed to produce these outputs and outcomes. Respondents also noted that collaboration led to improvements in job satisfaction or motivation of the staff involved in these efforts. Collaborative activities also stimulated a wide range learning, adaptation and change. It can also develop capacity of organizations and networks to solve problems by improving internal and external communication, the effectiveness of programs, decision-making and resource allocation, and the ability to leverage resources. Perhaps the most important benefit is the improved trust and personal relationships that result, which enhances the ability to collaborate in the future.

While collaboration creates public value, it can generate high transaction costs because it is time-consuming, and creates opportunities for strategic behavior. Implementation problems can occur due to the disposition and skills of implementors and the lack of slack staff resources. Implementation was also enhanced when stable and
flexible sources of funding were present. Conversely, problems result when implementors are forced to rely on narrow federal and state grant programs and activities are constrained by their priorities and grant restrictions. Other implementation problems are the product of changes in the institutional setting. Many of the contextual and situational factors noted in Chapter Six also change over time. While some changes enhance implementation, others increase transaction costs and create disincentives.

These findings have several implications. Researchers must recognize the wide range of public value that can be created by collaborative efforts. Research that focuses on one type of public value to the exclusion of others may lead to faulty conclusions about whether collaborative efforts have been effective. A greater understanding of the ways that collaboration creates public value is also needed. Researchers need to move beyond using respondents’ self-described perception of “success” (e.g., Wondolleck and Yaffee 2000) and conceptualize and operationalize the various ways that collaborative activities create public value (e.g., Leach, et al. 2000b).

A greater understanding of the value created by the different collaborative activities is also needed. Some activities are likely to be more effective at stimulating some types of value than others are. This information would benefit practitioners interested in creating a specific type of public value. It is also important to gain a better understanding of how the factors discussed in Chapter Six influence the degree to which different types of public value are created. It is also possible that factors beyond those discussed here influence the ability to generate specific types of public value. Moreover, a factor that leads to the development of one type of public value may limit the creation of other forms of public value. This information would help practitioners make better decisions about when and where to utilize collaboration as an implementation strategy.

A greater understanding of the ways that public value is created would also benefit practitioners. While some practitioners view the time it takes to develop trust and personal relationships as an investment that enhances future activities, others viewed it as inherently wasteful, time-consuming, and costly. Some practitioners viewed improvements in organizational or network capacity as an important benefit of collaborative process, however, EPA officials were less inclined to recognize the benefits associated with improving watershed governance, choosing instead to focus on whether
or not the activities improved environmental conditions. Thus, some participants viewed improvements in the governance process in positive terms, while others were less likely to acknowledge these benefits.

The same can be said for the transaction costs associated with collaborative activities. Some participants viewed the transaction costs in positive terms, suggesting that they amounted to investments that paid dividends in the future by enhancing their ability to govern and implement future collaborative efforts. Others practitioners were reluctant to participate in collaborative efforts because they did not believe the benefits associated with collaborative efforts exceeded the transaction costs necessary to achieve them. This was particularly true when participants focused primarily on improved environmental conditions to the exclusion of sources of public value.

The different perceptions of the “value” associated with collaboration are important. Judgements about whether to participate in collaborative efforts are often based on the “perceptions” of the transaction costs and sources of public value resulting from these efforts. A greater appreciation of the potential sources of public value may increase a practitioner’s willingness to become engaged in these activities. Conversely, an improved understanding of the costs may lead to better decisions about when collaboration should be employed as an implementation strategy.

Endnotes

1 Intangible benefits of collaboration are not limited to the public sector. There are a wide range of intangible benefits that result from networks of private firms as well such as learning and social capital (Simonin 1997).


3 These personnel and contracting problems are serious. In a recent issue of Governing (1999), the state received the worst rating in the country for its human resource management system.

4 For more discussion of these changes see: Gray and Ariss 1985; Hrebiniak and Joyce 1985; Astley 1985; Astley and Van de Ven 1983; Mazmanian and Sabatier 1983; Browne and Wildavsky 1983; Majone and Wildavsky 1979; and, Miles and Snow 1978.
CHAPTER EIGHT
SUMMARY AND CONCLUSIONS

This study was oriented towards examining actual practices and problems associated with using collaboration to implement watershed management programs. It also examined the process of collaboration as well as the public value created as a result of these efforts. Given the lack of generally accepted theories of collaboration, the study was developmental in nature and used a qualitative, comparative case study research design to systematically analyze data collected during my field research. The analysis focused on developing conceptual frameworks and formal propositions grounded in this study’s empirical data and previous research.

Using Collaboration as an Implementation Strategy

The analysis revealed the wide range of regulatory and nonregulatory implementation activities that improved environmental conditions directly or indirectly in each watershed. Many of these activities were collaborative in nature. Even when implementation efforts were undertaken by a single organization, their actions were often influenced or constrained by other collaborative activities. It was also clear that collaborative efforts were often interrelated in complex ways.

A conceptual framework was developed based on the levels of action proposed by Kiser and Ostrom (1982) that identified the different ways collaboration was used as an implementation strategy. A number of collaborative activities at the operational level were observed that improved environmental conditions. Common activities included joint actions related to restore habitat, acquire land, and install BMPs and other environmental infrastructure. Collaboration also improved permitting processes as well as public education and training. Many operational activities were influenced or constrained by joint actions at the policy-making level. Organizations were frequently engaged in a wide range of efforts to share knowledge and information, pool staff and financial resources, and develop shared policies and norms that guided collaborative efforts at the operational level. Each watershed was also involved in an additional set of
collaborative activities focused on institutionalizing shared policies. This occurred in many ways such as MOUs and incorporating shared policies into ongoing decision-making processes. New collaborative organizations were also created to organize, coordinate, and support collaborative efforts at the operational and policy-making levels.

A separate theoretical framework was proposed to explain the different patterns of collaborative activity in each watershed. The analysis combined the findings from this analysis with those stemming from previous research to develop a series of formal propositions that can be operationalized, tested, and refined through subsequent research. The framework proposes that five sets of contextual factors are particularly important: (1) the physical environment; (2) configuration of problems; (3) institutional setting; (4) situational history; and, (5) programmatic context. The combination of contextual factors created a distinct mix of actors, problems, and policy solutions that produces a pattern of interactions and opportunities for collaboration in each watershed. The contextual factors also create incentives and constraints that influence whether the particular mix of actors in each interorganizational system can find opportunities to work together in order to improve watershed governance.

Once opportunities for collaboration exist, organizations must become engaged in a group decision-making process to collectively decide to undertake a collaborative activity. The framework proposes that organizations collaborate when an opportunity fitting the collective constraint set exists, there are no practicable alternatives allowing the actors to act alone to achieve similar objectives at less cost, and the status quo condition is perceived as being unacceptable. This decision-making process is modeled as a modified form of Cohen, et al.’s (1972) garbage can whereby decisions are the product of the interaction of a set of situational factors related to: (1) the mix of actors; (2) the mix of problems and policy solutions; (3) the decision-making process utilized; and, (4) the expected outcomes of the collaborative activity. The combination of these situational factors can create incentives for the participants to find opportunities for joint action. They also create a collective constraint set that limits the participants’ ability to take advantage of an interorganizational system’s collaborative capacity.

The framework argues that organizations will collaborate when the activities result in public value that is perceived to be greater than the associated transaction costs.
and implementation problems. Collaboration can create public value in many ways at the individual, organizational, network, and societal levels. Collaboration can produce additional policy outputs and outcomes. It can also improve watershed governance by: (1) improving job satisfaction and motivation; (2) encouraging learning, adaptation, and change; (3) developing the problem-solving capacity at the organizational and network level; and, (4) creating social capital and encouraging a civil society.

While collaboration creates public value, it can cause implementation problems and impose transaction costs because it is time-consuming and a wide range of strategic behaviors can occur. Four common implementation problems were observed. The disposition and skills of implementors often effected their ability to effectively undertake collaborative activities. It was also important that the participants in a collaborative process had the slack resources necessary to contribute to these activities. It also appeared to be important that there was a flexible and stable source of implementation funding that allowed the participants to use collaboration to systematically address watershed problems. The dynamic nature of the institutional setting created other implementation problems as changes in the contextual and situational factors modify the constraint set in ways that make it difficult to collaborate effectively.

While collaboration can be a useful implementation strategy, it was also clear that there were limitations on its use. Organizations may prefer to pursue other strategies that allow them to fully pursue their agendas by going to court, lobbying a legislature, or acting unilaterally. When collaboration is used as an implementation strategy, it is primarily limited to win-win and win-no-lose situations. As a result of the collective constraint set, it is possible that the search process will not generate many alternative solutions or even a single plausible one because there is no activity that completely satisfies the collective constraint set (Axelrod 1997; Chisholm 1995). Even when the participants find opportunities that satisfy their constraint set, there is no guarantee that implementors have the skill or resources to implement the activity effectively.

This suggests that practitioners should use collaboration wisely. Even when opportunities exist, collaboration may not be a good idea. When used incorrectly or in inappropriate situations it can cause more problems than it solves. Collaborative decision making can distort information and participants may bargain to the lowest denominator.
such that no group’s interests are threatened. Collaboration also has the potential to increase transaction costs with little corresponding public benefit. Accordingly, this study joins with Bardach (1998, 17) in arguing that collaboration should only be valued when it produces better organizational performance or lower costs than can be achieved without it (Bardach 1998, 17). Bardach’s (1998, 17) advice is instructive:

“We should not be impressed by the idea of collaboration per se. That collaboration is nicer sounding than indifference, conflict, or competition is beside the point. So, too, is the fact that collaboration often makes people feel better than conflict or competition. I do not want to oversell the benefits of interagency collaboration. The political struggle to develop collaborative capacity can be time consuming and divisive. But even if no such struggle were to ensue, the benefits of collaboration are necessarily limited.”

Even the most imaginative practitioner will be constrained by the realities of a federal system that places government organizations at the federal, state, and local level in conflict with one another. These organizations often represent different constituencies and may have competing or conflicting values and missions. There is always the underlying tension of whether federal, state, regional, or local government priorities should govern decision making at the watershed level. Because these fundamental conflicts exist, there will always be limits on how much these actors are or should be willing to sacrifice for the sake of collaboration, no matter how noble the goal. Moreover, no amount of creativity will overcome the shortage of resources (e.g., staff, money, etc.) that serves as obstacles to government action or the reality of how funding is allocated in our federal system (Bardach 1998, 17). Therefore, practitioners are cautioned against viewing collaboration as some sort of magical elixir that will improve environmental conditions or enhance watershed governance in all situations.

**Problems with Traditional Implementation Research**

The study also demonstrates the value of a networked approach to examining policy implementation. Existing second and third generation implementation models do a poor job of explaining the collaborative processes described in this study. For example, while Sabatier and Jenkins-Smith’s (1999, 1993) advocacy coalition framework (ACF)
was developed in part to explain the conflict, policy change, and learning that occurred in Lake Tahoe during the 1970s and 1980s, it does a poor job explaining the collaborative activity that is now occurring.

Implementation researchers also continue to exhibit “federalitis” in that they remain largely preoccupied with federal programs at the expense of state and local programs. Researchers also tend to examine on how statutes structure the implementation of “new” programs. One of the benefits of a networked approach is that it forces researchers to broaden their focus beyond the initial implementation of a federal or state statute and examine the much wider range of implementation activities that occur at different governmental levels. In this regard, a networked approach tends to view implementation and administration as two sides of the same coin.

Another problem with traditional implementation research is that while the policy environment in which implementation occurs has evolved and changed, the questions asked by many researchers remains relatively unchanged. The policy environment has changed considerably in the last 35 years. There is the tendency for programs to accumulate around policy problems over time, as was the case in this study (Elmore 1985). Today, the fundamental nature of the implementation “problem” has moved from creating new agencies and programs to networking and modifying existing programs given the requirements of competing federal, state, and local objectives. Evidence of this trend can be seen in the growing importance researchers place on intergovernmental management and networks. The trend is important because it introduces new interorganizational relationships and theoretical questions. In essence, it is like adding new players to a game that is already in progress. This raises different questions and increases the likelihood that games will be played at various levels or be embedded or “nested” within one another.

The study also supports the argument that implementation tends to occur in networked settings (Hall and O’Toole 2000; O’Toole 2000, 1995; Kickert, et al., 1997; Menzel 1987; O’Toole and Montjoy 1984; Hjern and Porter 1981). Unfortunately, implementation research tends to view the process from the perspective of one node in a network, thus focusing primarily on the moves of one player in the implementation “game” (e.g., Bardach 1977). Top-downers emphasize the moves of federal players
while bottom-uppers argue that the moves played by state and local officials are most important. This is like trying to learn chess by looking at the moves of only the white or the black pieces. To be good at chess you need to understand how the moves and strategies of the white pieces interact with those of the black. Clearly, ignoring these interorganizational processes limits insight and can result in weak or counter productive recommendations (Bressers, et al. 1995b, 7).

Directions for Future Implementation Research

The limitations of traditional implementation research help explain why a growing number of researchers are adopting new approaches to examine the role of interorganizational networks and governance processes. Hopefully, the growing interest will mark the transition to a “fourth generation” of implementation research that self-consciously focuses on understanding the interorganizational processes embedded in policy implementation. As a result, the old debate surrounding politics and administration takes on new dimensions as attention shifts from questions related to organizational management to problems of cooperation in the face of the incentives and constraints embedded in network relationships (Cline 2000; Hjern and Porter 1981). It also draws attention to the ‘missing link’ between the expression of governmental intention and the achievement of results observed by Hargrove (1975).

This study demonstrates one way that a “networked” approach focusing on collaborative processes can improve our understanding of interorganizational policy implementation. Other lines of inquiry and theoretical perspectives also contribute to our understanding of interorganizational policy implementation. For example, a recent review of the implementation literature by O’Toole (2000) noted that institutional analysis (e.g., Ostrom 1999, 1990), governance (e.g., Lynn 2000), and network (Milward and Provan 2000, 1998, 1993; O’Toole 1997) research often contributes to the understanding of interorganizational policy implementation. Similarly, Chapter Two illustrates some of the ways that research in diverse areas including intergovernmental management (e.g., Agranoff 1996; Agranoff and McGuire 2000), interorganizational relations (e.g., Hall 1995), organizational change (e.g., Hrebinjak and Joyce 1985; Daft
and Weick 1984; Astley and Van de Ven 1983), and the diffusion of innovations (e.g., Rogers 1995) improve our understanding of interorganizational policy implementation.

Rather than continuing efforts to reconcile top-down and bottom-up approaches to policy implementation, a more productive approach appears to be to build upon the growing research on interorganizational processes grounded in different disciplines and to encourage “a thousand flowers to bloom.” Additional reviews of this broad base of literature are needed that identify common findings and theoretical relationships. This will bring new ideas, theories, and methodological approaches to studying implementation questions. It will also inject new life into traditional implementation research, which has become dangerously close to becoming inbred as it continues to recycle old ideas in a fruitless quest to reconcile competing top-down and bottom-up approaches. Linking implementation research to the broader research on interorganizational processes could also help return implementation research to the level of prominence it once held in the field of public administration by contributing to a broader understanding of important questions such as how to manage organizations in network settings (Agranoff and McGuire 2000).

**Future Collaboration Research**

This study also suggests avenues for additional research on collaborative processes. The study illustrates the importance of understanding not only how the process of collaboration occurs but also the product of these efforts. The fact that collaboration is a complex, dynamic, and evolutionary process suggests a continued need for detailed case studies similar to those that were the hallmark of early first generation implementation studies (e.g., Pressman and Wildavsky 1984). Qualitative studies may be particularly useful in helping to identify how particular contextual and situational factors influence the collaborative process. Research in other policy settings will also help identify additional collaborative activities at the operational, policy-making, and institutional level and improve the understanding of the ways that these activities improve public value at the individual, organizational, network, and societal level.

There is also a need for the type of large-N studies that are frequently lacking in both implementation and collaboration research (Goggin, et al. 1990). Aside from
practical problems and limitations, there are distinct advantages to doing large-N studies of collaborative processes whether they be in a watershed setting (e.g., Leach, et al. 2000a, 2000b; Lubell 2000; Lubell, et al. 1998) or in other policy areas. Larger comparative studies will help identify the influence of various contextual and situational factors. These comparative studies are also necessary to begin testing and refining the propositions proffered in Chapter Six.

There are also well-developed techniques for measuring the properties and structure of networks or individual nodes (i.e., organizations) that comprise a network. One of the frequent criticisms of this quantitative research is that it tends to be atheoretical and is driven more by the mathematical modeling than it is by theories linked to the structural properties of interorganizational networks. Nevertheless, these measures may prove useful in improving our understanding of a network’s collaborative capacity. For example, the density of an interorganizational network may be analogous to its collaborative capacity and organizations with a high degree of centrality may be more likely to be involved in collaborative relationships. A particularly fruitful line of research may be to link the structural properties of interorganizational networks to important questions surrounding collaboration or other interorganizational processes.

Researchers also need to focus more clearly on why practitioners choose to collaborate. This study suggests that practitioners collaborate because they believe it creates value that cannot be achieved by working alone. An alternative explanation is that they choose to collaborate because of the isomorphic processes noted by DiMaggio and Powell (1999, 1997). While the former is oriented towards generating additional public value and views collaboration as a means to an end, the latter offers the possibility of creating implementation problems and imposing unnecessary transaction costs by viewing collaboration as an end in and of itself.

Future research also needs to pay closer attention to the ways that collaborative activities create public value. It is not enough to rely on generally defined perceptions of “success”. Researchers need to develop a better understanding of the ways that collaboration creates public value at the individual, organizational, network, and societal level. Conversely, it is also important to understand the implementation problems that are inherent in the process in order to provide better guidance to practitioners. For
example, the finding that a staff member’s involvement in collaborative activities can increase or decrease a worker’s job satisfaction or motivation has important implications for staffing and recruitment. A greater understanding of the ways that these activities create value or generate transaction costs an implementation problems is also important because it will help practitioners to design more effective collaborative processes.
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APPENDIX A
SAMPLE DISCUSSION GUIDE – TILLAMOOK BAY

Informant: ______________________ Date: __________________________
Organization: ____________________ Phone #: ________________________
Email: __________________________ Interviewer: _____________________

Before starting the interview, make sure to do the following:

- **Review the information summary sheet**: Ask permission to tape the interview; tell them that the
  information they provide will be kept confidential and their name will not be used in the report. If it is a private firm, advise them not to provide confidential business information (CBI) without notifying you first and signing a disclosure form.

- **Summarize our project and its basic areas of inquiry**: Project funded by Congress with the funding passed through the EPA to the NAPA; We are one of about a dozen projects looking at innovations in environmental protection including watershed governance (4 project teams doing cases studies), efforts to reform permitting processes (facility wide permitting, project XL, ISO 14000), air and water quality trading programs, the Performance Partnership Agreements (PPAs) and Performance Partnership Grants (PPGs), and other efforts to “reinvent” environmental protection. Here in Oregon our focus is on the Tillamook Bay NEP and the performance partnership that will be used to implement the program, collaborative efforts to restore and protect salmon habitat, how performance based management and the Oregon Benchmarks are working in the environmental area, and other innovative state and local programs that are looking to improve the way we protect and manage environmental resources. Our report to the NAPA will be combined with those of the other project teams in NAPA’s report to the Congress and EPA, which is due in May 1999.

- **Ask if they want to see the final report**: Get their business card and email address and ask if they would like to be notified when the final report is completed. Our report will be available on NAPA’s web site along with those of the other project teams. You will also be notified when the NAPA has finished their final report to Congress and the EPA.

Section I: Background Information

First, I have a few questions about your organization and its relationships with other organizations [Note: in some cases, the underlined words should be replaced with information about the person being interviewed or the specific watershed program being studied; in other cases, the underlined words are reminders or highlight a specific aspect of the question]

1. **COULD YOU TELL ME A LITTLE BIT ABOUT YOU, YOUR ORGANIZATION, HOW IT OPERATES, AND YOUR ROLE WITHIN IT?** [Probes: how long they have worked there; the organization’s activities; organizational structure; how do their activities relate to other departments; staffing and personnel; where does their funding come from; the organizational culture; innovativeness; Get their organizational chart, budget, work plan, annual report, or other documents that describe the organization, its history, and scope of activities if available]
2. **WHAT ARE THE ORGANIZATIONS YOU REGULARLY WORK WITH? COULD YOU TELL ME ABOUT THESE WORKING (OR POLICY) RELATIONSHIPS?** [Probes: federal, state, local, NGOs; funding relationships; program relationships; why do you interact with these organizations; is anything exchanged (e.g., money, staff, information); what are the interdependencies between organizations; who generally supports you politically; who generally opposes you politically; what difference does the coordination make; are there areas where coordination could be improved]

Section 1A: Optional Introductory Questions

**Note:** The following set of questions are provided as guidance to help you explore the role that different organizations play in managing land use or protecting water quality or habitat in the watershed or elsewhere in the state. They are also designed to help us better understand why different people are involved in the watershed planning effort and the different roles they play. Use these questions on an as needed basis.

3. **COULD YOU DESCRIBE THE ROLE YOUR ORGANIZATION PLAYS IN MANAGING LAND USE OR PROTECTING WATER QUALITY OR HABITAT IN THE TILLAMOOK BAY WATERSHED OR ELSEWHERE IN THE STATE? HOW DO THESE ACTIVITIES RELATE TO THE TILLAMOOK BAY NEP?**

[Is it a regulatory program? what activities require a permit; What types of environmental problems (NPS, wetlands, ISDS, habitat, etc.) do their regulations address; walk me through the permit process; how long does it take to get a permit; how are permits reviewed/issued internally; is there a public comment period; how does an applicant appeal a decision; is there a high degree of public satisfaction with your permit process; how do you monitor the effectiveness of your permitting activities; what types of data do you track; how do you coordinate with other permitting programs; how do you look at the cumulative impacts of regulatory decisions; are there any major agency conflicts]

[Is it a restoration program? could you describe a few recent projects; how did you decide to undertake the project; what is the objective of the project; if it is a demonstration project, who are they demonstrating to; how will they diffuse the information learned from the demonstration project; how do they evaluate the effectiveness of particular restoration projects; how do they monitor the effectiveness of these efforts over time; do you normally work with other organizations when selecting, designing, or implementing a restoration project; how formal/standardized are these coordination efforts or other interorganizational relationships; what difference does the coordination make (value added); are there areas where coordination could be improved; are there any major turf fights or agency conflicts we should know about; make sure to get a list of projects or report on their activities]

[Do they purchase land? where does its funding come from; how much money; how do they determine which land to purchase; what role do watershed planning efforts have in shaping these priorities; do they interact with other organizations when deciding which land to purchase; how formal/standardized are these coordination efforts or other interorganizational relationships; what difference does the coordination make; are there areas where coordination could be improved]

[Are they primarily a planning agency? what types of planning do you do; how do the plans influence agency(s) decision making; how do they coordinate their planning efforts with other agency(s) activities; how well coordinated are the regulatory programs in the state; are there any major turf fights or agency conflicts we should know about; what difference do you think this coordination makes; are there areas where coordination should be improved]
[Are they an NGO? What type of organization is it; what is there membership in terms of size and composition; are they engaged in lobbying efforts (if they are asked for some examples to illustrate); how do they ensure that they represent the interests of their membership; how do they monitor the activities of federal, state, local agencies; how effective do they think the land acquisition/permitting/restoration/planning efforts are; how effective is the coordination between the federal/state/local programs; are there any major turf fights or agency conflicts; what do they see as the strengths and weaknesses of these programs; what would you like to see changed; what do they see as their role in the watershed management efforts (partner/opposition)]

[Are they a political appointee? Why did you get involved politically; What are the politics of environmental issues in the region; how effective do they think the land acquisition/permitting/restoration/planning efforts are; how effective is the coordination between the federal/state/local programs; are there any major turf fights or agency conflicts we should know about]

[Are they a concerned citizen, scientist, or other person? Why did you get involved; how effective do they think the land acquisition/permitting/ restoration/planning efforts are; how effective is the coordination between the federal/state/local programs; are there any major turf fights or agency conflicts we should know about; why have they reached these conclusions; what do they see as their strengths and weaknesses]

4. OPTIONAL QUESTIONS DESIGNED TO EXPLORE A PARTICULAR ASPECT OF THEIR PROGRAM, OTHER WATERSHED/PLACE-BASED MANAGEMENT EFFORTS, REINVENTION ACTIVITIES OF INTEREST TO NAPA, SECTION 6217, ETC.

[Notes: Based on our background reading and other interviews, questions may arise that pertain to a particular program/organization. You should try and work these questions into this discussion or elsewhere in the interview]

Section II: The Watershed and Its Problems

Note: You only need to ask a selected set of participants this question. It is primarily designed to help you better understand the problems and to see how the participants describe their watershed

5. HOW WOULD YOU CHARACTERIZE THE TILLAMOOK BAY WATERSHED TO SOMEONE WHO IS UNFAMILIAR WITH THE REGION? WHAT ARE THE ECONOMIC, DEMOGRAPHIC, AND ENVIRONMENTAL TRENDS?  [Probes: changes in water quality/land use/habitat over time; health of the ecosystem (getting better or worse); main environmental problems; causes of problems; uncertainties/lack of information about problems; how good was existing scientific information about the problems and their causes and affects; major industries (local economy); health of the local economy (getting better or worse); culture; ask if they know of any good reports describing these trends and get copies]
Section III: The Planning Process

HOW INVOLVED WERE YOU IN THE DEVELOPMENT OF THE TILLAMOOK BAY CCMP?

Very involved [Go to question 6]
Somewhat involved [Go to question 9]
Not very involved [Skip to Section IV].

6. COULD YOU DESCRIBE HOW THE TILLAMOOK BAY NEP GOT STARTED? [Probes: were there any previous planning efforts for the watershed; are there any subsequent planning efforts for the watershed; who was the lead agency; why was it selected to be the lead; who drove the process during the early stages of the planning process; how were the stakeholders/committee members identified; who determined the committee membership; did the committee structure change over time; who decided what issues/problems to address; who decided what research to fund]

7. COULD YOU DESCRIBE THE GENERAL PROCESS USED TO DEVELOP THE CCMP? HOW WAS IT DEVELOPED, REVIEWED, AND APPROVED? [Probes: who actually wrote the plan, its action plans and recommendations were there problems with the approach; what programs did you look to find solutions to the water quality and habitat problems; what role did scientific evidence play; what role did legal issues play; were there alternative polices/recommendations evaluated; how were implementation priorities determined; is there anything you would have changed about the process]

8. WHAT CONFLICTS EMERGED DURING THE DEVELOPMENT OF THE CCMP? COULD YOU BRIEFLY DESCRIBE THESE CONFLICTS? HOW WERE THEY RESOLVED? [Probes: who were the parties to the conflicts; what were the causes of the conflicts; when was the conflict resolved; how was the conflict resolved; did the parties deal with technical and legal uncertainties; if the conflict was resolved, do all stakeholders view the results as acceptable; what appear to be successful strategies for resolving the conflicts that emerged; were third party facilitators/mediators used to resolve the conflicts]

If somewhat involved skip to here

9. WHEN DID YOU FIRST GET INVOLVED IN THE PLANNING PROCESS? HOW WOULD YOU DESCRIBE YOUR LEVEL OF INVOLVEMENT? [Probes: what factors influenced your level of involvement; why were you involved; what were the advantages and disadvantages associated with participating; have you been criticized for not being more involved; what limits your involvement; what would get you to become involved; did your organization formally commit to the management plan’s implementation]

10. DID YOU SERVE ON ANY COMMITTEES? WHAT WAS YOUR UNDERSTANDING OF THE ROLES OF THE DIFFERENT COMMITTEES? [Probes: how was membership on the committees decided; why did you sit on these committee(s); would have liked to serve on a different committee; what was the purpose/function of this committee; did the role of these committees change over time; how much control over the substance of the plan did the committee have]

11. HOW WERE DECISIONS MADE AS YOU MOVED THROUGH THE PLANNING PROCESS? WHAT DID YOU LIKE OR DISLIKE ABOUT THE PROCESS? [Probes: were decisions made by consensus or was some other decision rule used; what constituted consensus; how was consensus developed and maintained; what are the strengths and weaknesses of this approach; how did you decide what problems to address; how did you decide what research to fund; how did you resolve disputes and disagreements; can you describe an example; how satisfied were you with the decision making process that was utilized; did maintaining consensus become more important than the substance of the policies/recommendations]
12. HOW MUCH INFLUENCE DO YOU THINK YOU OR YOUR ORGANIZATION HAD OVER THE SCOPE AND SUBSTANCE OF THE CCMP AND ITS POLICIES/RECOMMENDATIONS? WHO HAD THE MOST INFLUENCE? [Probes: were all of the major stakeholders actively involved in the decision making process; did the participation of some stakeholders vary over the lifetime of the planning process; did you review and comment on draft action plans/recommendations; did you or your organization formally submit comments on the draft management plan; did you or your organization formally comment on the management plan at a public meeting or hearing; how responsive were they to your comments]

Section IV: Public Participation Activities

HOW KNOWLEDGEABLE ARE YOU ABOUT THE PUBLIC PARTICIPATION ACTIVITIES UTILIZED DURING THE DEVELOPMENT OF THE CCMP?

Extremely knowledgeable [Go to question 13]
Very knowledgeable [Go to question 14]
Somewhat knowledgeable [Go to question 16]
Not very knowledgeable [ Skip to Section V]

13. WE HAVE PREPARED A SHORT HANDBOOK TO HELP US UNDERSTAND THE SCOPE OF THE TILLAMOOK BAY NEP’S PUBLIC PARTICIPATION EFFORTS. COULD YOU TAKE A MINUTE AND IDENTIFY THE ACTIVITIES YOU HAVE UTILIZED? [Note: only ask a few of the more knowledgeable informants for each watershed planning effort]

IF VERY KNOWLEDGEABLE SKIP TO HERE

14. WHICH PARTICIPATION TECHNIQUES WAS THE MOST EFFECTIVE IN BUILDING LOCAL INVOLVEMENT AND PUBLIC PARTICIPATION DURING THE PLANNING PROCESS? WHICH WERE THE LEAST EFFECTIVE? [Probes: was there a strategy behind the selection of these techniques; what factors seemed to influence the effectiveness of participation techniques; what are the biggest obstacles to effective public participation and local involvement; what can be done to overcome these obstacles]

15. AS YOU MOVE INTO THE IMPLEMENTATION PHASE, WHICH PARTICIPATION TECHNIQUES WILL YOU RELY ON FOR LOCAL INVOLVEMENT AND PUBLIC PARTICIPATION? [Probes: Is there a strategy behind the selection of these techniques; what factors seemed to influence the effectiveness of participation techniques; what are the biggest obstacles to effective public participation and local involvement; what can be done to overcome these obstacles; what are the benefits and costs of these activities]

IF SOMEWHAT KNOWLEDGEABLE SKIP TO HERE

16. HOW WOULD YOU RATE THE OVERALL EFFECTIVENESS OF THE TILLAMOOK BAY NEP’S PUBLIC INVOLVEMENT AND EDUCATION EFFORTS? [Probes: what information could be used to support these conclusions; how do you monitor the effectiveness of your participation efforts; what lessons have been learned; what recommendations would you make to other watershed management programs in the area of public participation]
Section V: Implementing the Watershed Management Plan

HOW KNOWLEDGEABLE ARE YOU ABOUT THE IMPLEMENTATION OF THE CCMP?

Very knowledgeable [Go to question 17]
Somewhat knowledgeable [Go to question]
Not very knowledgeable [ Skip to Section VI]

17. WHAT IS THE CURRENT STATUS OF THE CCMP? [Probes: when should it be approved; are their any major obstacles left; are there any major conflicts surrounding the current draft; who have been the biggest supporters; who have been the biggest opponents; what is EPA telling you about their approval of the CCMP; what will the CCMP’s legal status be]

18. COULD YOU DESCRIBE THE TILLAMOOK COUNTY PERFORMANCE PARTNERSHIP AND HOW IT WILL BE USED TO IMPLEMENT THE CCMP? [Probes: Who was involved in creating it; where did the idea come from; is this approach used elsewhere in Oregon; where does the legal authority come from; what is it’s legal status; is it an agency of county government; who will fund the partnership; what activities will it undertake; how will its activities implement the CCMP action plans; did you need to prepare a CCMP first in order to create the partnership; how will the participants revisit the CCMP’s recommendations; how will priorities be revised in response to new information; how will the CCMP be modified over time]

19. WERE OTHER INSTITUTIONAL APPROACHES CONSIDERED FOR IMPLEMENTING THE CCMP? WHY WAS THE PERFORMANCE PARTNERSHIP APPROACH CHOSEN? [Probes: nonprofit organization; agency of county government; located in the DEQ; located in the coastal program as a SAM plan; who advocated the different approaches; who were the biggest supporters and opponents of this approach; has EPA expressed support or opposition to this approach]

20. WHAT ARE THE POTENTIAL STRENGTHS OF THE PERFORMANCE PARTNERSHIP APPROACH? WHAT ARE THE BIGGEST OBSTACLES TO IT BEING SUCCESSFUL? [Probes: funding; regulatory authority; legal issues; political support; public support; staffing issues; has it created any conflicts; ]

21. HOW WILL YOU MONITOR AND TRACK THE PROGRESS OF THE CCMP’S IMPLEMENTATION? COULD YOU DESCRIBE THE SYSTEM AND THE TYPES OF DATA THAT ARE COLLECTED? [Probes: are their any NGOs who actively monitor the plan’s implementation; how important is it to have these groups;; how important is such a tracking system]

If somewhat knowledgeable skip to here

22. WHAT ACTIONS HAVE YOU TAKEN OR PLAN TO UNDERTAKE TO IMPLEMENT THE CCMP’S ACTION PLANS? COULD YOU BRIEFLY DESCRIBE THESE ACTIVITIES? [Probes: why did you take these actions; was it implemented in the manner stated in the plan or modified; who implemented the recommendation; where did the funding come from; what is the timeframe; what was the driving force behind its implementation; was it implemented to fulfill other federal, state, or local requirements; was there political pressure to implement it; was there pressure from participants to implement the recommendations; what changed a result of these activities (i.e., agency decision making); how does your organization benefit from its implementation; how should the implementation efforts improve the environment; what role do NGOs play in the implementation of these recommendations]
23. WHEN THE CCMP IS COMPLETED, HOW WILL IT INFLUENCE DECISION MAKING IN YOUR ORGANIZATION? [Probes: does it influence the preparation of annual work plans and budgets within your organization or others; were there any efforts to prepare an annual interagency work plans or coordinate the spending of discretionary funds; what other purposes does the plan serve (e.g., source of technical information, statement of policy, etc.); how do you maintain consensus for implementation priorities and actions]

24. WHAT DO YOU THINK THE BIGGEST OBSTACLES ARE TO IMPLEMENTING THE CCMP? [Probes: was it the substance of the recommendations that caused their lack of implementation; was there a lack of political will; was there public opposition; was there resistance from industry; were there budgetary constraints; were there staff constraints; were the information costs too high; were the coordination costs to high; was the organizational structure or culture an obstacle; have you been criticized for not implementing some of the recommendations]

25. COULD YOU PLEASE DESCRIBE THE LEVEL AND SOURCES OF FUNDING DEVOTED TO THE CCMP’S IMPLEMENTATION? TO WHAT EXTENT HAVE IMPLEMENTATION ACTIVITIES BEEN SHAPED BY AVAILABLE FUNDING SOURCES? [Probes: what are the sources of this funding; have they been able to get non EPA funding from state, local, fund raising, foundations, etc.; have economic incentives been effective in attracting funding and encouraging implementation of BMPs; what have been some of the problems in finding funding; obstacles to spending funding; how much of the funding was kept for staff; how much went to consultants, NGOs, scientists, etc.; find out what activities they are funding, what they don’t have money to fund, but would like to; how much funding is really needed to address nutrient and habitat problems]

Section VI: Effectiveness of the Watershed Management Efforts

I would now like to ask you a few questions about examining the overall effectiveness of the CCMP’s implementation

26. ARE YOU OPTIMISTIC THAT THE IMPLEMENTATION OF THE CCMP WILL LEAD TO POSITIVE CHANGES IN ENVIRONMENTAL CONDITIONS? WHAT WOULD YOU USE TO SUPPORT THESE CONCLUSIONS? [Probes: areas where progress has been made; data to support conclusions; examples, anecdotal evidence; what would it take to demonstrate these positive outcomes; does a watershed approach lead to better environmental conditions at less cost than could be achieved through traditional regulatory programs]

27. DO YOU THINK THE TILLAMOOK BAY NEP HAS IMPROVED INTERORGANIZATIONAL COORDINATION? WHAT OUTCOMES OR RESULTS WOULD YOU POINT TO SUPPORT THESE CONCLUSIONS? [Probes: examples; before vs. after; interpersonal relationships; more information sharing; have turf fights and other conflicts subsided; is there more trust; have relationships become more formalized; is there more consistency between federal, state, and local policies; has improved coordination allowed the state to deploy traditional regulatory tools more effectively or efficiently; does improved coordination allow other management tools to be utilized more effectively; how well did EPA and the state EPA interact with one another and other agencies and institutions in the watershed; how are disputes settled; how are agreements enforced; how are conflicts resolved; are there areas where coordination can be improved; get copies of any MOAs/MOU or other formal interagency agreements]
28. DO YOU THINK THE TILLAMOOK BAY NEP HAS IMPROVED THE CAPACITY TO SOLVE COMPLEX ENVIRONMENTAL PROBLEMS IN THE FUTURE? HOW HAS CAPACITY IMPROVED? [Probes: has staff capacity (size, expertise, experience) improved; has financial capacity improved; has the ability to resolve disputes improved; what are some examples of changes in capacity from the onset of the planning process, the approval of the plan, and after implementation efforts]

29. HAS THE TILLAMOOK BAY NEP LED TO THE EFFECTIVE USE OF LOCAL GOVERNMENT AUTHORITIES AND RESOURCES TO REDUCE NONPOINT POLLUTION DIRECTLY OR INDIRECTLY? [Probes: training programs, changes in local ordinances; changes in local land use plans; changes in funding patterns for sewage treatment plant upgrades; changes in priorities for sewering; adoption of environmental protection ordinances]

30. HAS THE TILLAMOOK BAY NEP ADDRESSED INFORMATION NEEDS FOR ENVIRONMENTAL DECISION-MAKING? WHAT INFORMATION IS STILL NEEDED? [Probes: are the computer models adequate; what types of data are needed by federal, state, and local decision-makers; how do the information needs of federal, state, and local decision makers vary; how useful is the data and models for designing watershed management activities; how does the data and the models improve accountability; how do the data and models improve public understanding; how do the data and models help assess results of watershed management efforts]

31. IF YOU COULD PLAY KING FOR A DAY, WHAT WOULD YOU CHANGE EITHER IN THE WAY THE PLAN WAS DEVELOPED OR THE WAY IT WILL BE IMPLEMENTED? [Probes: specific problems and mistakes; lessons learned; information needs; funding needs; staff needs (training, education, capacity); new regulatory authorities; improved coordination]

32. WHAT DO YOU THINK THE TILLAMOOK BAY NEP’S GREATEST ACCOMPLISHMENT(S) ARE SO FAR? TWENTY YEARS FROM NOW, WHAT DO YOU THINK PEOPLE WILL SAY ITS GREATEST ACCOMPLISHMENT WAS? [Probes: what difference has it made; how will things be different; specific programmatic or environmental improvements; long-term institutional changes; lessons learned; factors influencing success; how realistic are these expectations]

33. IN YOUR OPINION, WHAT WILL PROVE TO BE THE BEST MEASURES OF THE TILLAMOOK BAY NEP’S SUCCESS OR FAILURE? [Probes: what data is needed to evaluate the outcomes of the plan’s implementation; what are the problems with evaluating the plan’s implementation; obtain copies of any reports on implementation activities]

Section VII: Using the Watershed Approach

Thank you for being so patient, I only have a few more questions

One of things that will be in our final report are some recommendations to Congress, the EPA, state environmental agencies, and other parties about using a watershed approach to address environmental problems. Any insights you could provide would be helpful

34. WHAT DO YOU SEE AS THE MAJOR STRENGTHS AND LIMITATION OF THE “WATERSHED APPROACH”? [Probes: can you think of examples where a focus on watersheds influenced agency decision making or priorities (positively or negatively); can you think of any examples where it didn’t influence decision making but you think it should have; what problems are best solved through a watershed approach; can you think of any problems you are currently confronting where the watershed approach is inappropriate; is there adequate information; are the computer models adequate]
35. **WHAT ARE THE REASONABLE EXPECTATIONS FOR WHAT CAN BE ACHIEVED WITH A “WATERSHED APPROACH”?** [Probes: is it a useful alternative or supplement to traditional programs; do you think a watershed approach has led to better environmental conditions than would have been achieved through traditional regulatory and voluntary programs alone; can these efforts lead to better environmental conditions at less cost than could be obtained by traditional EPA/state EPA programs alone]

36. **WAS THE TILLAMOOK BAY NEP’S EFFORTS ENHANCED OR IMPEDED BY THE POLICIES, ACTIVITIES, AND INSTITUTIONAL CHARACTERISTICS OF EPA, STATE AND LOCAL AGENCIES, OR THE DEQ?** [Probes: civil service system; grant restrictions; contracting procedures; statutory requirements; governor’s political support; what is/should be the relationship with traditional command and control programs (e.g., TMDLs, NPDES permitting, funding under the SRL program); what is/should be the relationship with voluntary/cost-share programs (e.g., 319 funding, USDA funding); statutory or regulatory policies that impede or enhance watershed efforts]

37. **HOW DOES THE TILLAMOOK BAY NEP ENSURE THAT IT IS ACCOUNTABLE AND RESPONSIVE TO THE PUBLIC’S NEEDS?** [Probes: how can EPA, state agencies, and the public be sure that the results that were planned, modeled, and promised are achieved; how can these programs be made more responsive]

38. **WHAT STEPS COULD BE TAKEN TO FURTHER SUPPORT THE IMPLEMENTATION OF THE “WATERSHED APPROACH” IN OREGON AND ELSEWHERE?** [Probes: types of institutional, statutory, policy changes necessary; who should be the lead agency(s); what should be the role of the EPA and state EPA; is additional legal authority needed; are additional regulatory authorities needed; what types of additional resources (staff, money, etc.) are needed; at what stage of the process is the EPA and state EPA’s participation needed; how should EPA and state EPA staff be involved in the process]

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**Section VIII: Concluding Questions and Remarks**

Thank you for being so generous with your time and for sharing your experiences with me. It was a very informative interview and I learned a lot. The information you have shared will help us greatly.

39. **GIVEN OUR PROJECT’S FOCUS ON LEARNING ABOUT INNOVATIONS IN ENVIRONMENTAL PROTECTION, IS THERE ANYTHING ELSE YOU FEEL I SHOULD KNOW ABOUT THE PROGRAMS I HAVE ASKED ABOUT?** [Probes: any new state, regional, or local initiatives that you think are particularly innovative; any good examples of innovations or demonstration projects diffused to other programs]

40. **GIVEN WHAT WE HAVE DISCUSSED, CAN YOU THINK OF OTHER PEOPLE THAT WE SHOULD INTERVIEW TO GAIN A BETTER UNDERSTANDING OF THESE ISSUES?** [Probes: where possible find people with different opinions than the person being interviewed; get the phone number/email addresses for these people]

Is it O.K. if we contact you again if we have some additional questions? Thanks again. Please feel free to contact me if you have any questions about our study.
APPENDIX B
OUTLINE FOR THE DETAILED CASE STUDIES

Program Setting: This section will provide the reader with the background information for the case study. These are the basic points we will want to touch on. It will be very descriptive and much of this information can be found in technical publications and program documents. Assume the reader has never visited the location and is unfamiliar with the region, its population, environmental problems, and the institutional framework (i.e., set of programs in place to manage these problems).

I) Physical environment
   A) Basic description of the watershed
      1) Area (land and water)
      2) Counties/states covered
      3) Population
      4) Need a good map we can scan in
      5) Need a good summary table
   B) Ecological system
      1) Important resources (in other words, why are we trying to manage/protect the system)

II) Socio-economic environment
   A) Population trends
      1) Increasing or decreasing
      2) Cause of the change
   B) Local economy
      1) What are the major industries
         (i) If it is a particular type of industry, why is it located here (e.g., Is there a reason why it is a poultry or dairy or phosphate mining area?)?
         (ii) How important is the industry to the local culture (historically or today)
      2) Who are the big employers?
      3) Economy getting better or worse?
   C) Culture
      1) Any particular elements of the local culture that are important to the case?
   D) Income/economy relative to the state/country
      1) Income figures
   E) Look for figures that could be illustrative of trends/changes, differences
   F) Think of tables that can be used to illustrate this data
      1) City/county data book and reports will be the best source of information. State web sites may also have an almanac with data. You can aggregate the data at the county level.
      2) Eventually we will settle on a standard format for the tables (or a limited section of the table will be standardized. For now, I want you to be creative in terms of they types of information you include.

III) Institutional Environment (organizations/interorganizational arrangements)
   A) This section is important because we want to emphasize how different the institutional frameworks that these programs work within are.
   B) Descriptions of the major stakeholders and their organizations or programs that were present at the start of the planning process.
      1) Primarily we are interested in the state water quality and resource management programs that have a specific watershed focus or otherwise have a lot of involvement in the development or implementation of this watershed program.
      2) We are also interested in any NGOs, local government programs, or other organizations that are actively involved in the development and implementation of the watershed management program
3) It should be written to allow a pre/post comparison so that we can talk about how the program resulted in changes to this institutional arrangement as a result of its implementation.
   (i) One of the things we will want to point out is how the planning effort led to changes in the organizations involved (e.g., new cooperative relationships, changes in regulations, new programs, etc.) if applicable.
4) Essentially, this section is your opportunity to introduce the main characters in your story. Remember that the reader will be unfamiliar with how the programs are organized in the state.
   (i) Highlight their statutory/legal authority and obligations
   (ii) What functional activities do they perform (permitting, education, research, habitat restoration, provide funding)
   (iii) How is the organization/program organized (e.g., centralized vs. decentralized vs. polycentric)
       (a) Are there regional offices?
       (b) Organizational structure
       (c) Organizational culture
       (d) Funding relationships
   (iv) If there are many programs within an organization (e.g., state-EPAs) highlight those that are critical players in the case
   (v) Describe any ongoing relationships, partnerships, etc. between the organization and others if it is relevant to the case discussion.
   (vi) Try to do some comparison/contrast to highlight the differences in orientation or philosophy
       (a) Do some programs have a history of being involved in collaborative efforts?
       (b) Are some programs more flexible and oriented more towards change and innovation
       (c) Are some programs more bureaucratic or resistant to change?
   (vii) Highlight any important history among the organizations
       (a) Are there any ongoing conflicts between the programs or political battles (e.g., turf battles between the agencies)
   (viii) Is there any other contextual information that is important for the reader to understand these relationships
   (ix) Look at question 3 on the Tillamook discussion guide for more discussion of the different aspects of different types of programs.
5) My guess is a couple of paragraphs per program should suffice. The length will correspond to the complexity.
6) Use endnotes heavily in this area to provide additional clarification and to direct readers to more detailed descriptions of the programs
   (i) Make sure to reference all applicable sections of the federal and state codes in case NAPA or anyone else wants to find the enabling statutes and/or regulations
7) Try to keep the number of programs that get a detailed discussion to a minimum
   (i) 4 – 6 organizations/programs in most cases but include all of those that will be mentioned frequently throughout the case
8) You can lump some together to further simplify
   (i) It might be possible to lump the counties together or the local governments.
   (ii) You might be able to discuss a number of different state-EPA programs in the same general description and simply highlight those that are most involved.
9) If the development of these programs and the timing of these developments are critical to the story make sure these developments are included either here or later in the discussion. In some cases, the development of an organization is a key element of the case. These developments can be discussed later on in the case discussion.
10) Unless the programs to foster watershed stewardship groups or encourage the watershed approach are a key to understanding the case, you can put the description of these programs in the section which follows the discussion of the implementation of the watershed management program.
C) Reference the minor stakeholders in the text. Possibly use a table to summarize them. This would be a different table than the one described below.
D) At least one table summarizing the major stakeholders. I will try to provide some working examples. Feel free to be creative and we will see which format seems to work best and then everyone will use the same format. These will likely be multi-page tables that highlight some important differences between the programs and what actions they took to implement the management plans.

IV) Environmental Problems
A) Use this section to tie the previous three together and set the stage for why they have a program to manage the watershed
B) What was the condition when the watershed program started
   1) Historical changes in the watershed or resource base.
      (i) Changes in water quality.
      (ii) Changes in habitat.
      (iii) Changes in other problems.
   2) Need to provide some foundation so that when you talk about the changes that have occurred you can discuss whether it is appropriate to attribute the changes +/- to the watershed program
   3) It may make more sense to talk about some of the trends in the what has been achieved section of the implementation section.
C) Explain in lay terms the central problem(s) or issue(s) that is the focus of the planning effort and what the cause and effect relationship is
   1) Are the problems getting better or worse?
   2) What are the causes of the problems?
   3) Why don’t current programs address these problems?
   4) What isn’t know about the problems or the cause and effect relationship
   5) If there is uncertainty, what is the source of this uncertainty? Can science help reduce this uncertainty? What is the timeframe for reducing this uncertainty?
D) Discuss whether the problems were well understood at the beginning of the process
   1) Clearly an important benefit (or possibly failure) of many of these efforts is an improved understanding of the cause and effect relationships of different problems
   2) Later in the text you should clearly address the issue of what was learned (if anything) from a scientific standpoint
E) You should think about putting together a table that identifies the problems and the causes of the problems.

Planning Process: This section should focus on telling the story of the development of the watershed management plan/program. Focus is oriented more towards the implementation side so I don’t need to be overly detailed on the process side. The issues that appear to be of most interest are the use of science, public participation, coordination, and the relationships between organizations. The goal is to provide enough background information to set the stage for the analytical sections at the end.

I) Is this the first plan or the latest in a series of planning efforts?
A) Many of our cases have a long history of management plans preceding the one we are interested in. Make sure we talk about those as well and whether anything happened as a result of them
   1) What did these programs do compared to the current one
   2) How were these programs administered and organized compared to the current one
   3) What were the funding levels and commitments compared to this one
   4) What were some of the other differences between these programs and the current ones
   5) Discuss any previous evaluations of these plans
B) What is different about the current approach
C) Note: not all of this information need go in the text here. Instead, you might want to use some of these comparisons in your analysis section to highlight improvements or limitations in the current program
D) Make sure to use endnotes to direct the reader to other discussions of these previous planning efforts

II) What was the driving force behind the planning process? What is the origin of the central problem? How did the program come into existence? How did the project get started?
A) Where did the problem come from?
1) If this is the latest in a series of planning efforts, what is the cause of the problem that is affecting the watershed
2) Highlight any history of the problem that is critical to understanding the context of the planning effort

B) Was there demand for the plan and where did it come from (top or bottom)?
1) Was the planning process forced on local officials or did they seek out the funding/program
2) Was the local community a driving force in starting the program
3) Were a few key individuals involved in getting it started? If they were, did they stick with the program?

C) Was it the product of some sort of focusing event?
1) Program was created to address some sort of worsening problem

D) Who lobbied to get the federal funding/designation/legislation? Was it the same group that ended up developing the plan?

E) Where there any concerns about the role of the federal government (+/-)or taking federal money?
F) How does this fit into the larger state watershed planning initiatives (if any)?

III) The planning process
A) Sequential discussion of how they go from day 1 to a plan being adopted
B) Where did the money come from?
1) If it was a federal program, what requirements did the program have to meet?
   (i) Were these requirements appropriate?
   (ii) Were the requirements consistent with the historical approach that was taken in previous planning episodes
2) For the NEP’s I will supply text of the planning process requirements that can be cut and paste into the paper.
3) How much was spent on developing the management plan. Do we have any idea how much was spent in different areas?
4) Did funding make it more likely that the planning process would succeed
5) Did the funding levels present any challenges of its own?
   (i) Too little funding to do certain tasks
   (ii) Money was so large it created grants management/tracking problems
6) Was the planning effort able to leverage funding from different sources to help develop the plan?
   (i) Did the stakeholders contribute their own resources (financial or otherwise)?
   (ii) Were they able to leverage funding to start implementing projects prior to the plan's adoption?

C) Where were they housed from an organizational standpoint
1) Note: this will require a similar description like those found in the institutional arrangement section. May want to combine with the following section on the organization of the advisory committee structure
   (i) Is it located in a public agency, the product of an interorganizational partnership, a chartered nonprofit, etc.
   (ii) What were the consequences of having the program located where it was
   (iii) Were there other possibilities?
2) Who actually developed the plan?
   (i) How many staff (or in general what type of staff did they have)
   (ii) Where was the staff located?
   (iii) What was the relationship between the staff and other key stakeholders

D) Organizational arrangement used to develop the management plan
1) What role did the EPA (head quarters and region) play in designing and conducting the planning process?
   (i) Provided funding?
   (ii) Technical assistance?
   (iii) Was an active partner at the table?
   (iv) Were the participants happy with the role EPA played or would they have liked a different role?
2) What role did the state-EPA play in designing and conducting the planning process?
(i) Provided funding?
(ii) Technical assistance?
(iii) Was an active partner at the table?
(iv) Were the participants happy with the role EPA played or would they have liked a
different role?

3) What was the committee structure and how was it organized?

(i) How formal was the structure?
   (a) What rules governed membership?
   (b) How formal were the rules? (shared understanding/by-laws/written into statute)
   (c) Who decided who got to sit on particular committees?
   (d) Was the status of different committee members an issue?
      (i) Some might be directors of an agency while others might be a citizen
      (ii) Did the formality of the process influence any of these problems
   (e) Was it important just that an organization was represented or was it important which
      person in particular represented the organization on the committee

(ii) What type of advisory committee structure was used?
   (a) Include a figure that illustrates the structure if it involves multiple committees
   (b) What were the roles of the different committees?
   (c) Did the structure change over time?
   (d) Was it formal or informal?

(iii) Were any key groups left out of the committee structure?
   (a) What problems did this cause?
   (b) How did they decide on who represents various stakeholders?
   (c) Were some groups underrepresented?
      (i) Industry, large landowners, and developers are typically underrepresented
      (ii) Farmers who are often a very diversified are often represented by a few groups
           that rarely speak for all of the farmers
      (iii) What steps were taken to assure the stakeholders represented their
           constituencies? Do they represent their constituencies?
      (iv) Is there a tendency for the programs to want to interact with likes rather than
           with those who share different interests?
           1. Greater comfort zone and trust if they interact with those who have similar
              interests and perspectives on a problem
           2. Could be one reason land owners, industry, farmers, minority groups are
              underrepresented
           3. Could be a big problem because it fosters group think
   (d) Did they pick the wrong groups to be represented

(iv) Did the participants in the committee structure approach the process from different
     perspectives?
   (a) Some groups/individuals may be personally affected (e.g., oyster grower whose beds
       are closed
   (b) Different attitudes towards risk. Farmers might be risk adverse because they bear the
       costs of being wrong while the environmentalist may be a risk taker because they
       don’t (in actuality or perception) directly pay the costs of being wrong
   (c) Some may have different definitions of the problems and the underlying cause and
       effect relationships
   (d) Were some more likely to trust science than others

E) How were decisions made during the planning process?

1) How formal were the rules governing decision making? (shared understanding/by-
   laws/written into statute)

2) Did they use consensus (unanimity of something else) or some form of voting (majority, super
   majority, special rules)?
   (i) Was the goal consensus (outcome) or was it really consensus building (a process) seeking
       consensus but the outcome is more important
   (ii) Were the voting procedures appropriate given the issues trying to be resolved?
(a) For example, if the problem is intractable and has large distributional consequences it may not be possible to find a win-win solution so consensus might not be the best alternative.

3) Did they follow their rules or did they change and evolve?

4) What opportunities did the committee structure/decision making process create for stakeholders to engage in strategic behavior?
   (i) Rent seeking
   (ii) Free riding
   (iii) Shirking
   (iv) Turf acquisition

5) What were the costs (staff, time, money, etc.) associated with this process?

6) What were some of the other +/- consequences of the decision making process utilized (e.g., consensus)
   (i) Did it result in more support for the plan?
   (ii) Did it lead to the least common denominator
       (a) When faced with a challenge to a recommendation or the wording of a recommendation did people fight or simply take the path of least resistance

F) How long did the process take?
   1) What was the timeframe for the process?
   2) Who set the timeframe? How much flexibility or pressure was there to stay on schedule?
   3) Was it enough time? Was caused the time? Any way to shorten the time?
   4) Did they meet the timeframe that was set at the beginning of the project?

G) What issues did the program address?
   1) How did they decide on priority issues (NEP makes them put them in the EPA Management Conference agreement)?
   2) Did other issues pop up along the way that they had to deal with? What focusing events generated the new issues?
   3) Did the program bite off more than they can chew in terms of issues or problems? In other words, would it be better to characterize the planning process as a strategic or synoptic approach?
      (i) Did they include too many issues (or not enough)?
      (ii) Is it a question of breadth versus depth?
      (iii) If they were strategic or comprehensive in their approach was this appropriate given the problems in the watershed?
      (iv) Are there examples of issues that were avoided that proved to be a wise (or unwise) decision?
      (v) What was the relative +/- of being strategic or comprehensive?
   4) Was the focus mainly on the water body (estuary or lake), the upland area (streams, tributaries, habitats, land use), or both (a sign of integration)
      (i) Focus of research
      (ii) Focus of issues
      (iii) Focus of management actions

H) What conflicts emerged during the planning process
   1) What was the cause of these conflicts
      (i) Were the conflicts rooted in history (lack of trust between parties)
   2) How important were interpersonal relationships in being either the cause or solution to conflicts?
   3) Were the conflicts related to differences between stakeholder interests?
   4) Were the conflicts of a type that could be resolved through win-win solutions?
   5) Did the program try to avoid focusing on areas of conflict?
      (i) Focus on what folks could agree on rather than focus on resolving differences?
   6) Did the program try to use the planning process to resolve long standing conflicts?
      (i) Was this a wise choice?
   7) Who resolved the conflicts?
      (i) Was a facilitator, mediator, or some other outside party brought in?
   8) How were the conflicts resolved?
Was it through argument and persuasion?
(i) Was it through exerting influence over the process?
(ii) Was it by picking the least common denominator or watering down the language to
nullify its intent?
(iv) What do the conflicts say about the level of consensus developed during the planning
process?

I) Was it clear at the start what the “plan” would be?
1) Was it going to be regulations, an element in the state guide plan, a nonbinding advisory
document, etc.? How did its status influence the process?
2) Did the participants have a “oh no not another plan” attitude and decide that they wanted
more than just a plan?
3) Did its status (what ever that was though to be) influence how people behaved in the planning
process?

J) How was the plan put together?
1) What role did the stakeholders play in this process
   (i) Did they write the plan or did they respond to staff’s versions of the plan
2) Was the development of the plan an iterative process
3) Was it a long process
4) How were conflicts resolved in drafting the plan
5) Who seemed to have the most influence on the substance of the plan and what it contained?
   (i) Was this due to their expertise?
   (ii) Their political power or control over resources
   (iii) Was it their threat of walking away from the process
   (iv) Was it the fact that the plan couldn’t be implemented without their support
   (v) Were these reasons legitimate or illegitimate
      (a) Should others have had more influence?
      (vi) Were there others who should have had more influence but didn’t

6) Is the lack of knowing what your implementation funding is going to be an impediment to
developing an effective plan?
   (i) Does this lead to the everything and the kitchen sink approach
      (a) Put it all in there since you will only use the plan to try and obtain future funding so
         you don’t want to cut off your options (big lesson from 319)
   (ii) Does it also mean that folks can avoid discussing tough issues such as what should be the
         priorities of what to fund
      (a) If you new how much money there was folks would argue over what to fund
   (iii) It probably changes the dynamics of negotiating the plan and leads to plans that one
        would not reasonably expect to see things get implemented. The question then is why to
        do the plan and are some aspects more important than others
        (a) Perhaps we can help identify where folks should be spending time arguing and where
           not to bother since it will be meaningless later on

7) What is the timeframe of the plan? One year, five years, twenty years?
   (i) Is the timeframe appropriate?

K) How was the plan approved
1) What were the steps?
2) What were the provisions for public input?
3) Were their controversies regarding the approval process?
4) Were their parties who felt their comments were not addressed?
5) Is it appropriate for the NEPs that EPA goes last and takes up to 120 days to make their
decision?
6) Who signed the plan? What provisions were there to ensure that the stakeholders were going
to do their part to implement the plan?
7) How did the program ensure that the plan was consistent with other programs/policies
   (i) Did they consult with other agencies who were not formally part of the planning process
   (ii) What was the measure of consistency? Is it consistent if it is more environmentally
        protective?
L) The plan itself (Not necessarily in the write up, but something to consider. Maybe discuss in the implementation section)
1) Is it clear and concise?
2) Does it contain all necessary information?
3) Is it easy for the lay person to grasp and understand?
4) Is it easy to hold agencies accountable for their failure to act?
5) Is there a use for the plan in the future given how the implementation process works?

M) What does the plan contain?
1) Summarize the plan and the issues it addresses
   (i) What is the functional/substantive scope of the plan
   (ii) What are some of the major recommendations or problem areas
   (iii) Does it have clear goals/objectives that can be used to measure success
2) Does the plan make the connection between land use and growth management and the water quality/habitat issues
   (i) Is the plan primarily focused on actions that will improve upland habitat, near shore habitat, in water habitat
      (a) Was the focus mainly on the water body (estuary or lake), the upland area (streams, tributaries, habitats, land use), or both (a sign of integration)
3) Does the plan prioritize actions?
   (i) What provisions are there to ensure that folks follow these priorities
   (ii) How does the plan avoid the tendency towards the use of random acts of environmental kindness and/or random acts of good government that the actors then say are the implementation of the plan
   (iii) How do the participants ensure that people will follow the plan when it is being implemented?
4) Some sort of table summarizing the plan and issues would be useful as an appendix or table in the text
   (i) See the Salt Ponds article for an example
   (ii) I have prepared a draft of some of these already. I will post these online soon

N) What is the status (or function) of the plan once it was approved?
1) Once folks signed the plan, what does that mean? [In some cases this discussion is the beginning of the next section]
2) Who took action to approve the plan

O) Cross cutting issues: These are topics we will address in the analysis section of the case study and in the cross-case analysis. You might want to inject some of this discussion here to set the stage for the discussion in the analysis section.
1) What did the program do to enhance local involvement and public participation?
   (i) Describe and assess the methods the interested parties used to build effective local involvement and public participation
   (ii) What was the public involvement/outreach strategy? Was there a strategy?
   (iii) Were there problems with getting broad public involvement?
      (a) What role did the setting play in these problems?
   (iv) Where there problems with implementing an effective public outreach program
      (a) What role did the setting play in these problems?
2) What role did science play in the planning process?
   (i) Try to make the distinction between scientific and time and place information?
      (a) What was learned from a scientific perspective that might be applicable elsewhere? (basic research)
      (b) What new time and place information was collected? (applied research and monitoring local conditions/problems)
      (c) What information was most useful? Why?
      (d) What big questions were left unanswered?
   (ii) How was the scientific research coordinated? Was it coordinated well?
      (a) Were there problems keeping the research focused on management issues?
   (iii) What role did models play in the development of the management plan?
      (a) What were some of the problems with the modeling that was done?
(iv) How much does the program rely on volunteer monitoring data to fill information needs?
   (a) Are there problems with managing volunteers
   (b) Are there problems with using the data
   (c) Are the problems with recruiting and retaining volunteers
   (d) Who organizes them
(v) What were the problems with making science-based decisions
   (a) Were there things that science couldn’t answer?
   (b) Were the questions that were being asked ones that science could answer or were they “transscience” questions that could be asked in the language of science but required human values and judgements to answer
   (c) Does the research raise more questions than it answers?
(vi) What was learned that will improve decision making in the future?
(vii) What major issues were left unresolved or subject to future research?
3) Did the planning process improve interorganizational coordination?
   (i) How did it improve coordination?
      (a) What strategies were used to improve coordination?
   (ii) What are the costs of the coordination efforts?
   (iii) What value has been added as a result of coordination efforts?
      (a) What is gained as a result of these efforts?
   (iv) Has the process improved trust between agencies?
      (a) What is the value of the improved trust?
   (v) Have the coordination efforts affected the scope of problems that agencies are dealing with
      (a) Have the “old dogs learned new tricks”
(vi) Have the coordination efforts enabled the agencies to address the problems they normally deal with more effectively?
      (a) Does coordination at the watershed level enable agencies to deploy traditional regulatory, public education, restoration projects more effectively? Why? Why not?
      (b) Has it improved their capacity to address problems
(vii) Has improved coordination allowed agencies to deploy new management tools (regulation, grants, loans, education, restoration, etc.)
(viii) Does coordination at the watershed level allow parties to address new problems?
(ix) Have coordination efforts improved the consistency between goals, policies, and regulations of the EPA, state-EPAs, and other federal, state, and local government agencies?
4) What role did demonstration projects play during the planning process?
   (i) Were demonstration projects used to test ideas or build support for the plan?
   (ii) Were the demonstration projects continued past the expiration of funding?
   (iii) Were the demonstration projects typical of the types of projects undertaken to implement the plan?
   (iv) Did others adopt the projects with their own funding? In other words, was anything demonstrated or learned?
   (v) Did the program run a mini-grants program to try and enhance local community involvement in the program?
P) Note: there will eventually be an analytical section with strengths/limitations and lessons learned section that summarizes this experience. However, I think it will follow the section geared towards NAPA’s questions. It may help to prepare this analytical section as you work on the implementation section. Some of the other related questions that follow this draft outline may also be helpful in helping you think through your analysis.

IV) Cases with a long history between developing the plan and today (Salt Ponds and Tahoe)
   A) You can keep the discussion shorter and focused more towards the strengths and weaknesses and even cite other studies that looked at the +/- of the process
   B) You can use endnotes to elaborate on the findings of other researchers or to highlight areas where you disagree with the findings of previous research
   C) It may be more prudent to discuss a good deal of the plan’s implementation in historical terms
1) Salt Ponds: Can track the previous case discussing/updating the discussion of the implementation process. It can then switch to a discussion of the rewrite and then go to the analytical section.
2) Tahoe: Probably should discuss the history as it has evolved through several phases and the causes of the major shifts. Then note the more recent shift towards the collaborative process/restoration plan in recent years and the likely causes of these shifts. The implementation process would then talk about how the program works today and some of the issues like attempts to get funding for the restoration program.

D) Use endnotes to refer the reader to detailed discussions of the planning process where they exist.

E) For the Salt Ponds and Tahoe, this section and the following section will be more oriented towards

1) First section detailing the history of how we got from the initial stages to today
   (i) Would include the planning, immediate implementation, and the changes that have occurred over time
   (ii) Identify all of the key factors influencing these changes as well as other key events
2) Following section will describe what is going on today and current activities under way.
   (i) Describes how the program works in practice and highlights how things are either the same or different today
   (ii) Identify all of the key factors that influence these changes.
3) You will need to be creative and figure out what the best way will be to organize a discussion of the answers to the questions posed in this section and the following section

Implementation: This section will highlight the implementation of the management plans in general terms with a discussion of the role of collaboration in other sections.

I) Notes
   A) Implementation experience varies. In some cases, they are in the early stages.
      1) In these cases, this section will primarily describe the approach to implementation and highlight some of the innovations that the program has enacted and speculate about the challenges that the actors will confront
      2) Many of the implementation experiences and the institutional framework or approach is very different than the planning process. You should highlight these differences.
   B) In other cases there will be long history of implementation (e.g., Salt Ponds and Tahoe)
      1) See the end of the previous section
      2) Most of the previous section would simply be to walk the reader through all of the different changes that have occurred over time. This section would then discuss the unique features of the two regulatory programs, the relationship between different programs in implementing the plan, and highlight some of the unique elements of the regulatory program
   C) For Tillamook and Tahoe look at the discussion guide for additional questions that highlight many of the issues related to implementation. These questions and their ordering may help you to organize your presentation of the following material in the implementation section.

II) Institutional framework (e.g., organizational/programmatic/network) used to implement the management plan
   A) Organizational arrangement used to implement the management plan
      1) Elaborate on the differences from the one used to develop the plan
      2) What role did the EPA (head quarters and region) play in designing and conducting the planning process?
         (i) Provided funding?
         (ii) Technical assistance?
         (iii) Was an active partner at the table?
         (iv) Were the participants happy with the role EPA played or would they have liked a different role?
      3) What role did the state-EPA play in designing and conducting the planning process?
         (i) Provided funding?
         (ii) Technical assistance?
         (iii) Was an active partner at the table?
(iv) Were the participants happy with the role EPA played or would they have liked a
different role?

4) How was it organized?
(i) Is it the same organizational arrangement used to develop the plan?
(ii) Is it a centralized, decentralized, or a polycentric (i.e., networked) approach?
(iii) Were other options considered?
(iv) Who advocated this approach? Who opposed this approach?
(v) What is the +/- of this approach?
(vi) How formal is the structure?
   (a) What rules governed membership?
   (b) How formal were the rules? (shared understanding/by-laws/written into statute)
   (c) Who decided who got to sit on particular committees?
   (d) Was the status of different committee members an issue?
      (i) Some might be directors of an agency while others might be a citizen
      (ii) Did the formality of the process influence any of these problems
   (e) Was it important just that an organization was represented or was it important which
      person in particular represented the organization on the committee

(vii) What type of advisory committee structure was used?
   (a) Include a figure that illustrates the structure if it involves multiple committees
   (b) What were the roles of the different committees
   (c) Did the structure change over time?
   (d) Was it formal or informal?

(viii) Were any key groups left out of the structure?
   (a) What problems did this cause?
   (b) How did they decide on who represents various stakeholders
   (c) Were some groups underrepresented
      (i) Industry, large landowners, and developers are typically underrepresented
      (ii) Farmers who are often a very diversified are often represented by a few groups
           that rarely speak for all of the farmers
      (iii) What steps were taken to assure the stakeholders represented their
           constituencies? Do they represent their constituencies?
      (iv) Is there a tendency for the programs to want to interact with likes rather than
           with those who share different interests?
           1. Greater comfort zone and trust if they interact with those who have similar
              interests and perspectives on a problem
           2. Could be one reason land owners, industry, farmers, minority groups are
              underrepresented
           3. Could be a big problem because it fosters group think
   (d) Did they pick the wrong groups to be represented

(ix) Are some stakeholders more or less involved now than they were in the planning
     process?
   (a) Has the CAC had trouble as the program moved into the implementation phase
   (b) Are some participants no longer involved in the plan’s implementation
   (c) How did they sustain the interest of the stakeholders and keep them involved in the
      implementation process?
      (i) If interest fell off, why is that the case?

5) How is this organization held accountable for the plan’s implementation?
6) Are all of the parties with implementation responsibility included in this structure
7) If the program is housed within an organization, how are the other parties involved in the
   plan’s implementation
8) What role do NGOs play in the plan’s implementation
9) Is this approach the one that was envisiononed when the plan was adopted or did it evolve on its
   own and now works in unintended ways?
10) We will want to highlight any differences between the organizational arrangement used to
    develop the plan and the one used to implement the plan

B) Where does the implementation funding come from?
1) Which programs?
   (i) Federal, state, local
       (a) If primarily federal, what about the ability of the state and locals to pay for
       (b) Is the federal money being used to substitute for state dollars argument valid
   (ii) What problems are there with the way this funding is administered
   (iii) If it is federal money, is there a match in real dollars or only in-kind services
   (iv) Has the program been effective at leveraging funding from different federal, state, and
       local funding sources?
   (v) What is the +/- of these funding sources?
   (vi) Has this funding pattern changed over time? What were the causes of these changes?
   (vii) Is a yearly project by project competitive grant program the most appropriate given the
       types of implementation actions we are talking about
       (a) Does this encourage a few large projects to reduce transaction costs or encourage
           many small grants. Is one more like than the other given the plans in our study.
   (viii) Is there enough flexibility in these programs
2) How stable is the implementation funding
   (i) Is there enough stability to plan projects into the future
   (ii) What is the planning timeframe that we are talking about (years or months)
   (iii) How much of their revenue is stable vs. variable project monies
3) How much are implementation activities shaped by available federal funding sources and the
   grant allocation procedures
   (i) Do the constraints on the federal money encourage folks to spend money in one area
       when it might be better spent in another
   (ii) How much the constraints attached to this funding interfere with implementation efforts
   (iii) Do these programs encourage random acts of environmental kindness or random acts of
       good government that may sound good but are not of sufficient magnitude to have a
       lasting impact addressing the problem
   (iv) Is a yearly grant program the most appropriate timeframe for designing and implementing
       the types of projects that these programs address
   (v) Does it favor the few large projects or the many small projects approach
4) Do the participants in an interorganizational arrangement contribute their own resources
   (financial or otherwise) to fund the staff for the interorganizational arrangement? How much?
5) Is the funding level adequate?
   (i) What are the obstacles to financing the implementation process
   (ii) What is their best guess on what implementation will cost vs. how much they have now
   (iii) Is it primarily a staffing issue or a money for projects issue
       (a) If staffing, how much of the problem is self imposed
       (b) Are there ways to save the parties money by making administrative processes more
           efficient
       (c) Is there staff, but it simply requires changing agency priorities and reallocating
           existing staff resources
       (d) Could staff be added or are other things like the state civil service system and caps
           on FTEs or resistance to taking on new federal positions obstacles
   (iv) Are there certain fixed costs while others allow for economies of scale?
       (a) All programs may have similar staffing needs but dramatically different
           implementation costs on the project side
       (b) Is giving all NEPs the same level of baseline program funding fair?
   (v) If it’s a money for projects problem, what type of grants management capability is there
       if funding were to be dramatically be increased
   (vi) If they are a nonprofit, is there an emphasis on fundraising
6) Does having a plan help the programs compete more effectively for grant monies
   (i) Does it improve the chances federal/state agencies will allocate project monies
   (ii) Does it help to have projects already identified that you know other state and local actors
        agree on
   (iii) Does it help you compete more effectively for grant monies or does everyone have a plan
        these days
Does having the plan give you any special treatment under the existing grant programs

Are there obstacles for the program in terms of applying for grants or accepting funding
(i) Managing grants
(ii) Need legislative approval
(iii) Have trouble with match requirements

What does the organization/program do?
1) What does it spend its money on?
   (i) Staffing vs. research vs. projects vs. decision making (permitting)

2) What functions does the program perform
   (i) Permitting
      (a) What changes occurred as a result of the plan
   (ii) Fund or plan restoration projects
      (a) What has changed in terms of the way restoration projects are designed or funded?
   (iii) Public education
      (a) What has changed in terms of the nature of public education activities?
   (iv) Research?
      (a) Has the emphasis of research shifted in the implementation phase?
   (v) Technical assistance?
      (a) Have the technical assistance efforts changed in any way?
   (vi) Provide grants/loans?
      (a) Has anything changed in the way of funding priorities or grant allocations (e.g., Section 319 or revolving loans)
   (vii) Seek grants or loans for other actors
   (viii) If it doesn’t perform some of these functions, should it?
      (a) Do the programs avoid some of these functions because they feel they would be conflicts of interest (e.g., permitting program advocating restoration projects that it must permit)
   (ix) Are some functions given inadequate attention because they are not central to an agencies core mission or activities (public education would be nice, but a permitting agency has to get permits out the door as quick as possible)

Has the focus of the program changed over time?
   (i) Did it start out doing one thing and end up as a very different program

How is the plan’s implementation being monitored or enforced?
1) What opportunities are there for organizations to monitor each other’s implementation actions (behavior)
2) What provisions if any are there for ensuring accountability/oversight to ensure that actors are implementing their recommendations
3) What punishment/reward system is there for actors’ behavior
4) What enforcement provisions are there? Which seem to be most effective?
   (i) Peer pressure (self enforcement)
   (ii) Verbal sanctions
   (iii) Lawsuits
   (iv) Agency actions (cease and desist orders, fines, etc.)
5) What opportunities do the organizational structure/decision making process create for stakeholders to engage in strategic behavior?
   (i) Rent seeking
   (ii) Free riding
   (iii) Shirking
   (iv) Turf acquisition

Cross-cutting issues: These are topics we will address in the analysis section of the case study and in the cross-case analysis. You might want to inject some of this discussion here to set the stage for the discussion in the analysis section.
1) What did the program do to enhance local involvement and public participation during the implementation process?
   (i) Describe and assess the methods the interested parties used to build effective local involvement and public participation
(ii) What was the public involvement/outreach strategy? Was there a strategy?
(iii) Were there problems with getting broad public involvement?
   (a) What role did the setting play in these problems?
(iv) Where there problems with implementing an effective public outreach program
   (a) What role did the setting play in these problems?
(v) Did the CAC experience problems and a change in roles as it moved from planning to implementation
   (a) Does/should the CAC have a role in the implementation structure
(vi) Have the public involvement efforts moved us closer to a civil society
   (a) Increased opportunities for local involvement in their institutions and government decision making processes

2) What role did science play in the implementation process?
   (i) Is research still a big focus of the program’s efforts? [Try to make the distinction between scientific and time and place information]
      (a) From a scientific perspective, what was learned during the implementation process that might be applicable elsewhere? (basic research)
      (b) What new time and place information has been collected? (applied research and monitoring local conditions/problems)
      (c) What information was most useful? Why?
      (d) What big questions were left unanswered?
   (ii) How is the scientific research coordinated during the implementation process? Was it coordinated well?
      (a) Were there problems keeping the research focused on management issues?
   (iii) What role do models play in the implementation of the plan?
      (a) What makes the model(s) useful/non useful?
   (iv) How much does the program rely on volunteer monitoring data to fill information needs?
      (a) Are there problems with managing volunteers
      (b) Are there problems with using the data
      (c) Are the problems with recruiting and retaining volunteers
      (d) Who organizes them
   (v) What are the problems with making science-based decisions during the implementation process
      (a) Were there things that science couldn’t answer?
      (b) Were the questions that were being asked ones that science could answer or were they “transscience” questions that could be asked in the language of science but required human values and judgements to answer
   (vi) What has been learned during the implementation process that will improve decision making in the future?
   (vii) What major issues were left unresolved or subject to future research?

3) Did the implementation process improve interorganizational coordination?
   (i) How did it improve coordination?
      (a) What strategies were used to improve coordination?
   (ii) What are the costs of the coordination efforts?
   (iii) What value has been added as a result of coordination efforts?
      (a) What is gained as a result of these efforts?
   (iv) Has the process improved trust between agencies?
      (a) What is the value of the improved trust?
   (v) Have the coordination efforts affected the scope of problems that agencies are dealing with
      (a) Have the “old dogs learned new tricks”
   (vi) Have the coordination efforts enabled the agencies to address the problems they normally deal with more effectively?
      (a) Does coordination at the watershed level enable agencies to deploy traditional regulatory, public education, restoration projects more effectively? Why? Why not?
      (b) Has improved coordination allowed agencies to deploy new management tools (regulation, grants, loans, education, restoration, etc.)
(c) Has it improved their capacity to address problems
(vii) Have coordination efforts improved the consistency between goals, policies, and regulations of the EPA, state-EPAs, and other federal, state, and local government agencies?

4) Information management/reporting/modeling
   (i) How have modeling efforts improved the decision making/planning/evaluation process
   (ii) What are some of the information management problems
       (a) Making monitoring results more accessible
       (b) Turning monitoring information around in a timely fashion so that you are not reporting two, three, four-year old data
       (c) Old technology
       (d) Incompatible data collection methods
       (e) Relationship of these problems to the state in general (see governing magazine special report)
       (f) Do they have good GIS data
       (g) Do they have good database integration
   (iii) How much does the program rely on volunteer monitoring data to fill information needs?
   (iv) Are the reporting requirements burdensome
   (v) Is there a disconnect in the scales of reporting
       (a) EPA wants data at a scale that isn’t useful to states
   (vi) What are there information needs related to tracking and monitoring problems

F) Note: there will eventually be an analytical section with strengths/limitations and lessons learned section that summarizes this experience. However, I think it will follow the section geared towards NAPA’s questions. It may help to prepare this analytical section as you work on the implementation section. Some of the other related questions that follow this draft outline may also be helpful in helping you think through your analysis.

III) Implementation Success: What has changed?
A) When addressing these questions it may help to:
   1) Think in terms of three sets of changes
      (i) Changes in processes (e.g., the way decisions are made)
      (ii) Changes in outputs (e.g., permits, projects, grants, etc.)
      (iii) Changes in outcomes (e.g., changes in water quality)
      (iv) It may be possible to document changes in some areas but not in others
      (v) In some cases we may have to make our best guess while in others we may have firm evidence. In your write ups you will need to be careful in terms of how firmly you state some of these conclusions
      (vi) Pay attention to whether participants seem to gauge their success in terms of process, output, or outcome measures
      (vii) Pay attention to whether the participants measures of success are easily quantified
   2) Think in terms of time frames
      (i) What type of timeframes are being used to evaluate the program’s success
      (ii) Are these timeframes consistent with those of decisionmakers in state/federal agencies or legislatures?

B) What are the major accomplishments of the program in the implementation phase?
   1) For the most part you can use what they brag about in their documents and what people bragged about in the interviews
   2) Want to give people a clear picture of the types of implementation activities. Any ways you can think of to illustrate this (e.g., table summarizing the types of projects or chart showing where money has been spent)
   3) How much money has been dedicated to implementation. Is there even a way to track this type of commitment? Would this type of tracking improve accountability?

C) Process: What changed in terms of how decisions are made?
   1) While it may not be possible to find data related to program outcomes and the output oriented data may not be instructive, one intermediate measure of effectiveness might be the degree to which the plan’s implementation led to changes in the way decisions were made.
Presumably, improved management of the watershed can not occur unless some changes have been made to the original decision making framework. These changes should be the easiest to document. Changes might include changes in policies/laws/regulations, changes in the procedures used to make decisions, changes in the participants involved in decisions, changes in the priorities for action, changes in the information used to make decisions. An important question for you to consider is whether these changes have become institutionalized and incorporated into larger decision making processes so that the changes are no longer dependent upon the persons involved in making the decisions.

2) What changes have occurred in different types of programs (this discussion should track the discussion of the institutional framework in first section of the paper):
   (i) Regulatory/permitting
   (ii) Restoration
   (iii) Planning
   (iv) Public Education
   (v) Grant programs
   (vi) Land acquisition

3) How does the plan influence decisions of other organizations?
   (i) Changed policies
   (ii) Changed procedures
   (iii) Changed priorities for funding projects (restoration, land acquisition, etc.)

4) Have these changes been institutionalized?
   (i) How have these changes been incorporated into ongoing decision making/management programs (e.g., comprehensive plans, strategic plans, regulations, annual work plans, capital improvement programs, priority lists)?

5) Have any of these changes improved the likelihood that better resource management decisions will be made in the future?
   (i) What were these changes?

6) How does the program help to ensure the consistency between goals, objectives, and priorities over time?

7) If it is too soon for changes, what is the likelihood of changes given the approach that has been taken
   (i) What appear to be the big obstacles

8) Were the changes that occurred in decision making processes the ones the plan envisioned or did it just evolve on its own and now works in ways unintended by the drafters of the plan?
   (i) How have these

9) Do they use processes such as the E.O. 12372 review process or some other consistency review procedure to ensure that other federal funding programs are consistent with the plans?

10) Any effort to incorporate the plan into other statewide planning or regulatory requirements
    (i) Incorporate into the state planning requirements
    (ii) Incorporate into state CZM program
    (iii) Incorporate in comprehensive land use plans

D) Outputs: What types of projects are being funded?
1) What are the outputs of the implementation process
   (i) Permitting program: Examples would include permits, enforcement actions. Have any of these changed? Perhaps the program streamlined the permitting process.
   (ii) Action plans: Many programs simply implement a number of projects that may implement pieces of different action plans
   (iii) Education: number of meetings held, number of newsletter distributed, etc.
   (iv) Land acquisition: amount of land purchased, dollars invested
   (v) Habitat restoration: acres of sites restored, dollars invested

2) Do the extent that we can document these outputs and any changes for the good or bad that occurred in these as a result of implementation that would be great

3) Question is whether these activities are occurring in any systematic manner
   (i) Are these just random acts of environmental kindness or random acts of good governance
   (ii) Is there any reason to believe that these projects will lead to a cumulative benefit
(iii) Are the projects too small and too dispersed to make a dent in the problem
(iv) Is there any reason to believe that the projects are having an impact on what ever the strategic limiting factor is for solving the particular problem

4) Are they following what is in the plan or funding projects that are closely related to what is contained in the plan.
   (i) What is the value of the recommendations in the plan if everyone does what they want anyway
   (ii) Is there any relationship between the priorities of the plan and what is being done to implement the plan

5) Are they following the priorities as specified in the plan or simply doing whatever they can get money to do?

6) Is it just an exercise to rationalize the things you were doing anyway and claim credit for implementing the plan or is it resulting in actions that would not have been done otherwise

7) Is the lack of knowing what your implementation funding is going to be an impediment to developing an effective plan?

E) Outcomes: Are the problems getting better or worse?

1) Tie into earlier discussions
   (i) Historical discussion of changes in environmental problems
   (ii) Earlier discussion of the specific goals and objectives of the plan

2) How are they monitoring implementation? What are their performance measures?
   (i) Is there a tracking system?
   (ii) Do they have performance measures against which you can judge progress?
      (a) What is the +/- of these measures?
   (iii) What are they doing in response to the monitoring data?
      (a) Have they made any dramatic changes in response to monitoring data?
   (iv) What are the problems with monitoring implementation activities?
   (v) If there are no clear performance measures or no real way to periodically measure progress, then what information is being used as the basis for making changes in regulations or other changes in implementation?
   (vi) If there is good outcome data, is progress being made

3) Is it possible to link the progress being made to the collection of programs described in the case? Is it possible to link progress to the watershed management program in particular? Explain why it isn’t?
   (i) Would it be possible to document cause and effect relationships?
      (a) For example, there might be a long lag time between cause and effect.
      (b) The science may still be unclear
   (ii) Would it be possible to separate the effects of one program from the others

4) How are folks in the interviews characterizing success?
   (i) What are their criteria?
   (ii) What do they point to?
   (iii) What problems with measuring success do they point to?

5) Are their other intangible outcomes you think are due, at least in part, to the watershed management programs
   (i) Improved intergovernmental relations
   (ii) Improved trust between staff in agencies
   (iii) Fostering a civil society by providing opportunities for civic activism and involvement in their communities
   (iv) Are these viewed as more or less important than the environmental changes by the participants in these efforts

6) Has success varied over time?
   (i) Have certain factors changed that have improved or reduced implementation effectiveness?

7) Is ongoing scientific research a major activity?
   (i) How do you measure the success of these efforts?

8) What information is needed to better assess performance

F) Adaptability
1) Is the plan still used?
   (i) What are its primary functions or uses?
      (a) Technical information resource
      (b) Source of historical information
      (c) Source or priorities
      (d) Source of ideas for projects
      (e) Starting point for the next planning process
   (ii) How familiar are folks with the provision of the plan
   (iii) How is the plan used today vs. when it was first adopted
   (iv) How quickly was it out of date?
   (v) What did folks find most useful/least useful about the plan and its contents
2) Are there any provisions for modifying the plan based on what is learned either as a result of research or through implementation experience?
3) How often is the plan modified?
4) How long do modifications take?
5) Is there even a process to be followed for modifying the plan?
6) Is there any requirement that the parties periodically evaluate the goals, objectives, and success of the plan?
7) What do these experiences say about the difficulty in doing performance-based management?
8) What do these experiences say about the difficulties in practicing adaptive management?
9) What does these experiences say about what the content of the plan is/should be?

G) Obstacles: Sources of implementation problems
1) Note: much of this discussion may be in the analysis section too.
2) At some point, I will replace this with a more systematic set of potential obstacles that is tied to the literature. This will facilitate our cross-case analysis. For now, be creative and don’t worry about linking things to the literature.
3) What are some of the reasons that people have not implemented recommendations in the plan (Conversely it might help to also think in terms of why they funded what was enacted. Presumably every reason why they didn’t do something could be turned around into a reason why something was implemented)
   (i) Politically unpopular or risky (uncertain of public/industry reaction)
   (ii) Too costly or funding sources were not available
   (iii) Lack of other resources (staff, technology, etc.)
   (iv) Folks no longer think it is a good idea (learned how to build a better mousetrap)
   (v) No political will to make the necessary changes
   (vi) Attention has moved elsewhere to a new planning process or new priorities
      (a) TMDLs
      (b) 6217
      (c) CW action plan
      (d) Some focusing event has dominated the agenda (Flooding/Salmon in OR)
   (vii) Public opposition
   (viii) Industry or other interest group opposition
   (ix) No one ever really cared about the issue anyway (it was in the plan for show but no one actually intended to do anything
   (x) Peripheral issue that none of the key influential actors cared about
   (xi) There are no regulatory requirements driving the actions
   (xii) No staff pushing for the actions
   (xiii) Staff were opposed to the actions
   (xiv) Other staff problems (lack of knowledge, experience, etc.)
   (xv) Information or transaction costs to implement it were too high
      (a) Required another interagency collaborative planning process which would require too much in terms of organizational resources
      (xvi) Institutional/organizational problems
         (a) Requires too many internal changes
         (b) Doesn’t mesh well with existing programs
         (c) Resistance to change
(d) Cultural barriers
(e) Structural problems
(f) Lack of slack resources
(xvii) Lack of leadership

IV) Current status
A) Before moving on to the analysis you should clarify where things stand today
B) What are the big issues, conflicts, actions pending
C) What challenges seem to be looming on the horizon
D) What questions remain unanswered
E) Basically, you should outline some of the big questions that remain such that it would say what the reader should be interested in if they were to go and do a follow-up study a few years from now. What should they look into?
F) This section should only be a few paragraphs long and be designed primarily as a segue to the analysis section

Preliminary Analysis: Designed to begin identifying issues for further analysis in the cross-case analysis. It also responds to issues of concern to the Academy.

I) Importance of contextual factors
A) Importance of scale
   1) How did the population size and density influence the development/implementation of the watershed management program?
   2) How did the area and configuration of the watershed influence the development/implementation of the watershed management program?
B) Institutional capacity and complexity
   1) How did the existing institutional arrangement and history of the institutions shape program development and implementation?
   2) Did the program improve the region’s ability to solve environmental/resource management problems?
C) Culture/Socio-economic conditions
   1) Did the culture of the region influence the watershed management program?
   2) Did the socio-economic environment influence the watershed management program?
D) Nature of problems
   1) Did the history of the problems influence the watershed management program?
   2) Did the nature of the problem influence the watershed management program?

II) What influenced the implementation process most?
A) What factors seemed to have the biggest influence on implementation effectiveness?
   1) Funding?
   2) Political will?
   3) Staffing?
   4) Statutory authority
   5) Leadership?
   6) Organizational factors (structure, slack resources, culture, etc.)?
   7) Interorganizational relationships?
   8) Personal relationships?
B) What role did financial assistance and incentives play in implementation?
   1) What are the funding needs associated with plan implementation?
      (i) How much funding would be needed to reduce NPS relative to current expenditures?
      (ii) Where will this money come from?
      (iii) What is the likelihood that there are ways to generate this level of funding
      (iv) Is state revolving loan money a viable solution?
   2) How were incentives used to encourage implementation? Could they be used more effectively?
      (i) Which incentives seem to work best? Which do not appear to be effective?
   3) To what extent did public funding and other incentives shape watershed management?
      (i) Were these influences +/-
(ii) Did it influence their cost-effectiveness?
(iii) Did it improve their ability to implement their plans?
(iv) Did it result in any undesired behavior?

C) Which statutory or regulatory authorities (federal, state, or local) seemed to facilitate or inhibit the watershed management efforts?
   1) Provide examples and suggestions for changes that could be enacted
   2) Identify any model legislation that other states might utilize

D) Are there performance measures and is there data to evaluate progress towards these measures?
   1) What is the availability, reliability, and usefulness of the monitoring data that is available?
   2) What are the challenges associated with assessing performance
   3) If there are no performance measures or monitoring data is missing, what problems (or opportunities) does this present?

E) What strategies do the interested parties use to cope with technical and legal uncertainties and to adjust the watershed management effort as new information becomes available
   1) Are the programs able to practice adaptive management
      (i) What are the obstacles to utilizing this management strategy
   2) What are some of the consequences of making mistakes?
   3) How do they balance the needs of accountability with the need to maintain flexibility
   4) If there is a lot of adaptation such that the management plan is quickly outdated, then what function does (or should) the management plan serve? Does this have implications for planners working in these programs?

F) What EPA and state “reinvention” activities facilitate or are they facilitated as a result of watershed management activities? Do these reinvention activities pose threats, challenges, or obstacles to watershed management activities?
   1) Efforts at performance based management
   2) Streamlining permitting processes
   3) NEPP agreements
   4) Reinvention labs

III) Overall Success [Done mostly for the Academy]

A) Risk-reduction
   1) What part of the environment is the program designed to improve and what evidence is there that this has occurred?
   2) To the extent that there is the absence of direct evidence of improvements?
   3) Is there indirect evidence that decision making processes have changed with the expectation that these decisions will lead to improvements at some point in the future

B) Cost-effectiveness
   1) A comparison of the cost-effectiveness of the watershed management program and the typical “baseline” approach to managing the problem.
   2) Where possible, the analysis should distinguish among the costs born by government agencies, regulated entities, and individuals
   3) Researchers should also distinguish between one-time start up costs and ongoing costs
   4) Basically an efficiency measure.
      (i) Might be useful to distinguish between administrative efficiency and market efficiency

C) Certainty of effect
   1) A characterization of the likelihood that the management approach will achieve its goals

D) Predictability of the process
   1) A characterization of the extent to which the management approach creates predictable conditions or requirements in order to plan and budget with confidence

E) Equity
   1) A characterization of the distribution of costs and benefits – very broadly defined
   2) Those approaches where costs and benefits fall to the same actors are generally more equitable than those where one group pays for another’s gain (fiscal equivalence)
   3) Distributional equity is concerned with different entities ability to pay and whether different actors should be treated differently.
      (i) This might be an issue in some cases.
(ii) For example, all estuary programs are treated the same yet they have different capacities to generate implementation financing or all counties are treated the same even though they have vastly different tax bases.

(iii) You should explore this side of the question as well.

4) In some case it will be useful to discuss ways in which the innovation changes the distribution of benefits and costs from the “baseline” approach

F) Accountability [Our criteria]
   1) Degree to which the program can be and is held accountable for achieving its objectives
   2) We will operationalize it in two or more dimensions one of which is the NAPA criteria below
   3) Transparency to the public [NAPA]
      (i) The degree to which the innovation clarifies or obscures the general public’s view of decision-making processes and environmental impacts.
      (ii) Only a piece of the accountability question

G) Effect of the program on problem solving capability
   1) The extent to which the innovation builds or erodes useful skills, knowledge, or relationships among people and institutions with responsibilities for problem solving
   2) Basically a capacity question.
      (i) Does the program, build, enhance, or erode the participants capacity to solve environmental resource management problems

H) Potential for short and long-term gains
   1) An assessment of the overall significance of the innovation, both for places in which the innovation has been tried and in other places which it could be replicated
   2) It appears to include two dimensions
      (i) Effectiveness of the program
      (ii) Transferability to other place-based settings

I) Adaptability
   1) Degree to which the program has the ability to adapt and respond to changes in environmental conditions
   2) Degree to which the program promotes social learning among those involved in the process

J) Identify the tradeoffs among these criteria
   1) Strength in one area might lead to a weakness in another. Classic example is the tradeoffs that often occur between efficiency and equity

IV) Did the effort lead to better environmental conditions at less cost than would have been obtained by traditional EPA/state programs alone?
   A) Highlight what this program adds that the others don’t do
   B) How much value was added as a result of these efforts
      1) Is the value worth the cost
   C) Is it possible that it will result in higher costs today with the hope being that it will reduce expenditures over the long term (e.g., welfare to work programs)?

V) What lessons can be learned that are applicable to other watershed or place-based management programs?
   A) Does the watershed management program represent a useful alternative or supplement to traditional regulatory programs?
   B) What are the staffing/training needs for a watershed management program
   C) Other things to think about:
      1) Are the programs asked to do too much or solve problems that the watershed approach is not well suited to address?
      2) How does the scale of the program influence its design and operation?
      3) What combination of tools appear to be most effective in addressing nonpoint source pollution
VITA
MARK T. IMPERIAL

I. ACADEMIC BACKGROUND

Minor: Environmental Science
Committee: Robert Agranoff (Chair), Roger Parks, Greg Lindsey, and Rosemary O’Leary

Specialty: Coastal Resource Management and Water Quality Management

Minor: Business

II. RESEARCH ACTIVITIES

PUBLICATIONS

Refereed Journal Articles


(with Alan Desbonnet, Virginia Lee, Pamela Pogue, David Reis, James Boyd, Jeffrey Willis).


**Manuscripts in Preparation**


(with Tracy Yandle) “Marching Towards Leviathan, Embracing The Market, and Romancing the Commons: Three Competing Paradigms for Fisheries Management” in preparation for the journal *Marine Policy*


**Reports and Other Publications**


**Non-Refereed Articles**


**Thesis**

*Public Participation in the National Estuary Program: A Descriptive and Empirical Analysis.* (Kingston, RI: University of Rhode Island, Department of Marine Affairs, Masters Thesis. May 1993).

**CONFERENCE PAPERS AND MAJOR PRESENTATIONS**


**CONTRIBUTOR TO REPORTS**


EDITORIAL


HONORS/AWARDS

*Advanced Graduate Student Travel Grant Award*, American Political Science Association (APSA). Awarded August 2000 to attend and present a paper at the 2000 Annual APSA Meeting.

*Teaching Excellence Recognition Award*, School of Public and Environmental Affairs, Indiana University. Awarded April 2000 in recognition of teaching excellence.


REVIEWER:

Peer Reviewed Journals:
- *Coastal Management*
- *Environmental Management*
- *Public Works Management Journal*
- *The Annals of Regional Science*

Conference Papers:
- Academy of Management

Publishers:
- Island Press
- International Thompson Publishers

Government Reports:
- U.S. Environmental Protection Agency
RESEARCH EXPERIENCE:

Project Director. Environmental Governance in Watersheds. Independent subcontractor to the National Academy of Public Administration on their Learning from Innovations in Environmental Protection Project. Project run out of 800 N. Smith Rd., 4Q, Bloomington, IN 47408.
February 1, 1999 to September 2000

Project Description:
- One of 16 research teams selected to examining innovations in environmental protection. This project examined the development and implementation of six watershed management programs for the: Delaware Inland Bays (DE), Lake Tahoe (CA, NV), Narragansett Bay (RI, MA), Salt Ponds (RI), Tampa Bay (FL), and Tillamook Bay (OR). Data was collected primarily from field interviews and archival records. The analysis of the case studies relied on evaluative criteria supplied by the Academy as well as derived from the literature. The project will result in a final report entitled *Environmental Governance in Watersheds: The Importance of Collaboration to Institutional Performance* that includes six detailed case studies, a main report consisting of the comparative cross-case analysis, and various appendices and supporting materials.

Responsibilities included:
- Developed the research protocol and supervised data collection and analysis
- Prepared some case studies and assisted in the preparation of the others
- Developed the cross-case analysis and co-authored the main report.
- Supervised a staff of eight graduate research assistants
- Administered all aspects of the contract.

Research Associate. Institute for the Study of Government and the Nonprofit Sector. School of Public and Environmental Affairs. Indiana University, Bloomington, IN 47405.
July 1 1998 – Present

Project Description:
- The project, funded by the Grantmaker Forum Research Task Force, is designed to develop a database of previous research on service learning and volunteer public service programs in the United States. This research will then be examined in an attempt to better understand what is known and not known about the implementation of these programs.

Responsibilities include:
- Developed a ProCite database containing previous research on service learning and volunteer public service programs in the United States;
- Supervised the daily work of the graduate assistants on the project;
- Made several presentations on the results of research to the Grantmaker Forum Research Task Force
- Participated in the development of three reports for Grantmaker Forum, and other peer-reviewed and edited manuscripts for publication and presentation at appropriate conference forums based on this research.

Graduate Research Assistant. Coastal Resources Center, University of Rhode Island Graduate School of Oceanography. Narragansett, Rhode Island 02882.
December 1989 – November 1991

Project Description:
- The five-year comparative estuaries project was funded by Sea Grant. It focused on the examining the long-term management of five estuaries in the United States in order to better understand the governance of the estuarine systems and the outcomes of the management programs.

Responsibilities included:
- Researched water quality and coastal management programs including those developed under the provisions of the Clean Water and Coastal Zone Management Acts as well as the Great Lakes and the Chesapeake Bay Programs;
- Developed peer-reviewed and edited manuscripts for publication and presentation at appropriate conference forums.
GRANTS:

(with Timothy Hennessey and Robert Agranoff) “Environmental Governance in Watersheds.” Grant awarded by the National Academy of Public Administration as part of their Learning from Innovations in Environmental Protection Project.

Authored two successful proposals to work as a subcontractor for the University of Rhode Island Coastal Resources Center on projects funded by the United States Environmental Protection Agency (EPA) and the United States Agency for International Development (AID)

Authored many successful grant proposals for federal and state funding while working as a Marine Resource Specialist for the Rhode Island Coastal Resources Management Council.

III. TEACHING

Assistant Professor Department of Political Science, University of North Carolina – Wilmington, Wilmington, North Carolina 28403-3297
August 2001 – Present.
Undergraduate: Environmental Politics
Graduate: Administrative Theory

Associate Instructor School of Public and Environmental Affairs, Indiana University, Bloomington, Indiana. 47405.
Undergraduate: Introduction to Public Management (9 semesters), Managing Behavior in Public Organizations (1 semester), Environment and People (1 semester), and Watershed Planning and Management (1 semester)

Teaching Assistant School of Public and Environmental Affairs, Indiana University, Bloomington, Indiana. 47405.
September 1994 – May 1995
Undergraduate: Introduction to Public Affairs

IV. PROFESSIONAL PRACTICE

EMPLOYMENT:

Consultant to the National Academy of Public Administration. Washington, DC 20005
February 1999 – August 2000
Project: The project will result in a final report entitled Environmental Governance in Watersheds: The Importance of Collaboration to Institutional Performance that includes six detailed case studies, a main report consisting of the comparative cross-case analysis, and various appendices and supporting materials.

Consultant to the Coastal Resources Center. University of Rhode Island’s Graduate School of Oceanography. Narragansett, Rhode Island. 02882.
August 1995 – January 1996
Project: Contributed to the development of an evaluation framework to be used by the University of Rhode Island Coastal Resources Center (CRC) in its International Coastal Resource Management Project. In particular, the evaluation framework was used to evaluate implementation activities in Ecuador.
Consultant to the Coastal Resources Center, University of Rhode Island’s Graduate School of Oceanography, Narragansett, Rhode Island. 02882.

September 1994 – March 1995

Project: Developed a working paper that examined the EPA’s National Estuary Program to determine whether it could serve as a model for developing countries. The working paper was delivered at a meeting of officials from the Coastal Resources Center (CRC), EPA, U.S. Agency for International Development (AID), and individual estuary program. Based on the meeting, the CRC, in cooperation with the EPA and AID developed a training program for developing countries.

Marine Resources Specialist. Rhode Island Coastal Resources Management Council, Oliver Stedman Government Center, Wakefield, Rhode Island 02879.


Responsibilities included:
- Developed new regulations for wetlands and habitat protection, shoreline erosion, stormwater management, erosion and sediment control, and marinas and recreational boating facilities;
- Served as the agency contact person for a variety of federal, state and local resource management programs;
- Evaluated proposed development projects, reviewed municipal comprehensive land use and harbor management plans, and reviewed federal consistency determinations for consistency with our agencies policies;
- Coordinated the development of Rhode Island's Section 6217 Coastal Nonpoint Pollution Control Program for approval by EPA and NOAA; and,
- Developed public outreach activities including public workshops, slide shows, informational brochures, and fact sheets. Edited the newsletter Coastal Features.

Intern. Essex County Division of Solid Waste Management. Newark, New Jersey.

Summer 1989

Responsibilities included: Performed oversight for Essex County's transfer stations, data entry and processing, preparation of the semi-annual report, and monitored the construction of the Essex County Resource Recovery Facility.

PROFESSIONAL ORGANIZATIONS:

- The Coastal Society
- Academy of Management
- American Political Science Association (APSA)
- Association for Public Policy Analysis and Management (APPAM)
- American Society for Public Administration (ASPA)
- Policy Studies Organization

V. PUBLIC SERVICE

STATE OF INDIANA:

Member. Indiana Nonpoint Source Taskforce, Land Development Subcommittee. Indiana Department of Environmental Management, Indianapolis, Indiana 46206

August 1996 - Present

Activities: The Indiana Nonpoint Source (NPS) Task Force is responsible for guiding the development of Indiana’s revised Section 319 NPS management plan. The Land Development Subcommittee is responsible for developing the land use section of the revised management plan. This section of the management plan deals primarily with stormwater and erosion and sediment control issues.