Retrospective Governance Analysis for the Narragansett Bay Watershed and Airshed Project

Analysis of Governance Response to Ecosystem Change in the Narragansett Bay Watershed

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Executive Summary

The Environmental Protection Agency (EPA) Office of Research and Development develops and tests methods for use in environmental problem solving, which includes consideration of biophysical, social and environmental governance complexities. The governance analysis conducted by Lighthouse Consulting Group is designed to help EPA's Office of Research Development's Atlantic Ecology Division (AED) to better understand the evolution of governance structures and refine strategies and tactics for delivering knowledge in forms and formats that key governance institutions can use. This report is one of a series of work products produced by Lighthouse Consulting Group as part of the project. The final deliverables comprise:

- Summary timeline of the governance history for the Narragansett Bay watershed in a format that can be displayed and maintained on a website;
- Eleven governance stories that were used to develop a detailed timeline;
- Detailed timeline with 1,564 entries related to the history of governance in the Narragansett Bay watershed;
- Digital archive consisting of 1,438 documents with approximately 125,724 pages of searchable digital material (Adobe PDF files);
- Report with details of the project methodology with recommendations for how it would be used to investigate other watershed settings; and
- Final report that documents the changing governance networks in the Narragansett Bay watershed that describes how these networks change in response to changes in the ecosystem as well as other socioeconomic and political factors.

This report focuses on the last deliverable listed above.

Research Design

This study was designed to build upon previous research conducted by the project team, which has worked on Narragansett Bay governance issues from both a practitioner and researcher perspective since the early 1980s. The data collection and analysis for this study focused on compiling, updating and expanding timelines from previous research based on the documents identified in this study. The history was too rich to produce a comprehensive timeline related to all bay governance issues. Instead, the team focused on the problem of water pollution control in upper Narragansett Bay and associated rivers. In analyzing the governance history, the team drew on stories that were already familiar to the research team as well as stories that were identified during the review of the literature and historical documents for this study. The team used 11 regional governance episodes to guide their data collection and in development of the timeline:

- Walter Shea's 1947 plan.
- Before and after the Narragansett Bay Comprehensive Conservation and Management Plan (CCMP).
- Blackstone River.
- New England River Basins Commission and the Type II Level B Plan.
- Watershed stewardship in the Taunton River and Mount Hope Bay.
- Open space and regional land capability planning.
- Section 208 planning.
- Total Maximum Daily Load (TDML)
- Mercury Total Daily Maximum Load and the history of metals impacting Narragansett Bay.
- Before and after the 2003 Greenwich Bay fish kill.
- History of Fields Point and the Narragansett Bay Commission.

Given the historical focus of this research, the main data source was the vast collection of archival records that document the history of the watershed governance efforts over time. This included books and monographs, journal articles, government plans and reports, legislation, policy documents, and digital newspaper archives of events in the watershed. The data collection efforts identified over 1,438 documents with approximately 125,724 pages of searchable digital material to support the timeline. The team used systematic qualitative techniques to examine relevant portions of these data. It developed 11 separate timelines — one for each of the regional governance episodes. From these, the team developed a consolidated timeline containing over 1,564 unique entries. Each entry marks an important event or change in the network governance processes. Next, the team developed a reflective essay for each of the governance episodes. These essays helped in making sense of the analyses of the qualitative data and in identifying cross-cutting themes.

The analysis focused on analyzing the rich history of network governance reflected in the consolidated timeline and on identifying trends that cut across the 11 governance episodes. The goal was to develop an analytical framework that could be generalized to other watershed settings or other focal issues beyond the issue of water pollution control.

Watershed Governance and the Changing Patterns of Intergovernmental Relations

This report's focus on governance networks reflects the physical reality that large landscapes such as the Narragansett Bay watershed seldom correspond to the political boundaries that are used to mitigate and manage human impacts on these ecological systems. The term *governance* refers to the collection of institutions and resources used to achieve direction, control and

coordination among individuals (and organizations) that have varying degrees of autonomy to advance the joint objectives of network members. Network governance is, therefore, a mechanism for shaping, changing or managing the patterns of intergovernmental relations that exist as a result of the development and modification of federal, state and local programs designed to address the problems impacting Narragansett Bay. The report reveals an amazingly rich, if not long-forgotten, history of bay governance with the earliest examples dating back to the late 1800s. The power of the historical perspective is that, when viewed over a long period of time, it becomes clear that the bay's governance network is constantly evolving. New institutions, programs and planning processes are created or reconfigured, as others cease to exist.

What is striking about the Narragansett Bay governance history is that the shifting patterns of intergovernmental relations are remarkably similar to those observed in a variety of policy areas (Wright 1978, 1988). A strength of the report is that it builds upon Wright's (1988) framework to describe the development of the Narragansett Bay governance system. This generalizable framework is based on identifiable and distinct patterns of intergovernmental relations:

> ***1800s – 1930: Conflict and Early Network Development***: Conflicts during this period were the result of an imprecise specification of the limits of federal, state and local authorities. The operating assumption was largely that federal, state and local authorities were mutually exclusive. Intergovernmental conflicts resulted during the search to sort out roles and specify boundaries of authority.
>
> ***1930s – 1950s: Cooperation, Concentration and Continued Infrastructure Expansion***: This period marked a shift toward more cooperative approaches to problem solving brought on by the Great Depression and World War II (WWII). There was growing recognition that the federal government had an important role to play in solving local problems (e.g., the New Deal era programs). There was also growing recognition that there were central, shared, and often overlapping functions of all levels of government. Intergovernmental relations became increasingly specific, focused and highly functional.
>
> ***1950s – 1970s: Creative Expansion of Federal Planning***: This period was marked by the dramatic expansion of the federal government's role in all policy areas (e.g., Great Society programs). New programs were driven largely by federal priorities. State and local governments had little flexibility in the delivery of these creative era programs. Program planning, project grants, and expanded public participation were common in new programs. The discretion of federal grant administrators expanded dramatically, administrative and fiscal requirements become increasingly rigid, and matching requirements shifted a growing financial burden to recipients.
>
> ***1970s – 1980s: Competition and Devolution***: The creative era's proliferation of grants and new intergovernmental relations tools such as partial preemption and unfunded mandates led to growing conflicts at the state and local levels. There was also growing competition about whose priorities should drive programs. There was a growing gap

between promise and performance in creative era programs. Meanwhile, some new programs emerged that offered greater discretion and flexibility at the local level.

1980s – 1990s: Contraction: Aid Cuts and Mandates: President Reagan ushered in a renewed focus on the devolution of federal authority to state and local officials. However, aid cuts and the shifting of financial burdens to state and local governments was also common. States responded by exerting much more leadership and continuing to build their capacity for addressing problems.

1980s – 2000s: Creative Era Programs During the Period of Contraction: Despite the pronounced shift toward increased state and local responsibility, this shift did not take hold in all new federal programs. Some new programs continued to have a pattern of intergovernmental relations much more emblematic of the creative era programs.

1990s – Present: Pragmatism and Collaborative Management: Two dominant patterns of intergovernmental relations largely coexist and are embodied in the statutes, rules, procedures and budgets that influence and shape how these programs operate at the federal, state and local levels. As a result, there is a complex, overlapping and interdependent set of programs at the federal, state and local levels that address most environmental problems. The current pattern of intergovernmental relations is largely pragmatic and focused on collaborative approaches to problem solving that are largely strategic in nature.

The analysis demonstrates that the patterns of intergovernmental relations during each period are distinctive and remain largely unchanged because they are the product of statutory requirements, administrative rules, budgetary processes and other procedures. These often are hard to modify unless there are fundamental changes in the statutes or programs. As a result, the different patterns of intergovernmental relations are the byproduct of the U.S. federalist system of government, which vests overlapping functions and responsibilities for problems like water pollution control in a wide range of agencies at the local, state and federal levels. Thus, the current governance network is complex and interconnected. The capacity for solving Narragansett Bay's environmental problems is widely dispersed among actors at different levels of government. For much of the historical period, leadership in addressing water quality problems in Narragansett Bay largely occurred at the state and local levels. That said, the programs initiated during the creative era period in the 1960s and 1970s clearly shaped the governance system in profound ways and encouraged the development of capacity at the state and local levels that allowed those actors to exert renewed leadership over the past two decades. This helps explain why contemporary problem solving in the watershed often requires pragmatic, collaborative approaches. It also explains why having professionals who are experienced in navigating the complicated intergovernmental network of programs is often essential to sustaining healthy and useful governance processes.

Placing the emphasis on the shifting patterns of intergovernmental relations also avoids having to make normative value judgments about the structural features of programs and whether they place primary emphasis on federal, state and local control. Instead, this analysis focuses on those general trade-offs that occur as a result of the changing patterns of intergovernmental relations.

In essence, there is no clear answer to the question of whether it is federal, state or local priorities that should guide decision making or network governance. Perspectives about success and failure are often shaped by one's views about priorities and normative judgments about which level of government should drive the decision making on a particular issue. The reality of the federal system is that network governance is a messy process shaped by competing values, priorities and perspectives that are reflected in overlapping agencies at different levels of government whose interests are all equally valid. Thus, healthy network governance processes provide a forum for resolving legitimate differences in ways that allow actors to pursue shared policies and priorities rather than having one perspective always viewed as superior to another.

Attributes of Healthy and Sustainable Network Governance

This analysis also avoids using traditional notions of success or effectiveness. Instead, the focus is on identifying attributes that foster and sustain the useful life of healthy network governance structures and processes. This analysis identified seven such attributes:

Strategic Long-term Focus: The challenge for network governance is how to sustain focus over a prolonged period of time to avoid *random acts of environmental kindness*. This typically involves issues that have a win-win or, at least, a win-no-lose dynamic to encourage participation in network processes.

Importance of Shared Problems/Solutions: Network processes are crafted around a shared sense of purpose. Problem- and solution-framing is a central focus of useful network processes.

Shared Decision-Making: The ability for one network member to compel others to participate or act in a particular manner is quite limited. Healthy and useful network processes have opportunities for members to participate in shared decision making.

Entrepreneurial Leaders: Leadership is critical to developing and sustaining useful network processes and comes in many different forms beyond the traditional view of the hierarchical leader.

Leveraging Resources: Healthy and useful network processes redeploy network resources (e.g., staff, expertise, funding, equipment, etc.) in a coordinated way to pursue shared priorities, policies and shared problems.

Network Coordinators: Governance processes focus on making joint decisions, setting shared priorities, and finding other ways to work productively together. The challenge is to achieve a level of self-organization or structure that produces the coordination and direction needed in the absence of a centralized authority.

Ability to Adapt and Reconfigure Networks: Network processes are best left to develop at their own pace and should be allowed to die when their useful life is over. This frees

up scarce resources that can be better deployed to address the shared problems of network members.

While many of the aforementioned attributes are widely supported in the literature on network governance, the team identified four additional attributes that receive much less attention in the literature:

Science is Used to Justify Policy: The gradual production of policy-relevant scientific research stimulates policy-oriented learning that helps foster shifts in how problems/solutions are framed. This, in turn, allows for new policies, programs and governance networks to take shape.

Communication and Information Sharing: There is communication and information-sharing amongst the diverse network of individuals and organizations affected by an issue or problem. This requires being sensitive to the media that is used to participate and communicate with the public and to the frequency and duration of processes.

Participatory Processes Designed to Build Support: There is a big difference between complying with public participation requirements and using it a strategy to build support for policy change and implementation. It is important to involve those affected by plan recommendations.

Local Government Involvement: Local governments have always been a key player in bay governance, as public water and sewers are public services traditionally delivered by local governments. Tension is common when federal, state and regional efforts try to influence local government actions when they are not involved in network processes. Over time, who benefits and who pays for services like public sewers has also changed in important ways and has affected network governance processes.

These attributes make the point that network governance processes require constant nurturing to ensure hard fought gains are not easily lost. Many times, the nurturing is gentle and continuous; other times, fundamental transformations are needed. Similarly, the concept of a useful life implies that disbanding a network governance process for Narragansett Bay should not be viewed as a failure. Networks, like other organizational forms, have a useful life. Just as network processes are best left to develop at their own pace, they should be allowed to die when their useful life is over. This frees up scarce network resources that can be deployed to better address other watershed problems (Imperial et al. 2016a).

This report demonstrates that addressing problems impacting Narragansett Bay today demands a level of pragmatism. Policies and programs are linked in complex ways with actors at each level of government that have important roles and the opportunity to exert leadership in different situations. Governance requires experienced professionals who can creatively navigate their own bureaucracies, who are well-versed in how to navigate the different aspects of intergovernmental relations, and who have the requisite skills to work collaboratively with other professionals from federal, state and local governments as well as with nonprofits and the private sector to leverage resources, build support, and find ways to work together to improve or restore the environment.

While efforts to improve network governance are not new, today they are more common as a result of these pragmatic realities.

Recommended Next Steps

This work provides an important understanding of the history of the Narragansett Bay governance system and how it has evolved since the late 1800s. It provides key insights into what makes the governance system healthy (or not) over the different historical periods, and it identifies the attributes of healthy network governance processes. Moreover, the framework used to describe the changing patterns of intergovernmental relations in the Narragansett Bay watershed can be used to describe the evolution of governance efforts in other watershed settings. It can also be used to understand how governance networks for other environmental policies have evolved. Similarly, most of the identified attributes are broadly applicable to healthy network processes in a variety of policy areas.

The research conducted by Lighthouse Consulting Group could have broad applicability and be of interest to practitioners involved in network governance and researchers examining these efforts. The following are recommended actions to further disseminate these research findings:

- Turn this document into an EPA unpublished report, making it available for distribution to stakeholders and agencies.
- Create and make available webinars that present the material, especially the analysis chapter of the report, supported by a master PowerPoint presentation.
- Produce peer-reviewed articles for the research and practitioner community. These articles would flow from the academic institutions and experts who were part of the project team and who also co-authored articles with EPA staff.
- Post the applicable project documents and deliverables online at a publicly accessible website.
- Transfer the JS timeline and URL to EPA or an EPA partner who would be willing to host the site; continue renting the URL and maintaining the website.

Based on the team's experience with this project and its understanding of EPA's ongoing needs in this and other watersheds, it also recommends the following:

- Add additional summary stories for bays that were not explored as part of this study but which could expand the understanding of the Narragansett Bay governance system.
- Expand the 11 summary Narragansett Bay stories from vignettes on key inflection points to "articles" for mainstream publications such as magazines and online websites and blogs.

- Use social network mapping software to visually represent the changes in the structural patterns of intergovernmental relations over time to better understand the structural changes in network processes.
- Collect and incorporate additional information related to budgets and personnel to better understand the capacity of the networks as they change over time and to better understand the changing expenditures related to water pollution control.
- Incorporate data from larger trends in water pollution control and treatment into the broader story of changing governance arrangements to better understand the linkages between efforts to improve network governance and enhanced ecosystem conditions.

This project was designed and executed with an eye toward replicability. Its earlier Methods and Lessons Learned Report concisely documents the framework, approach and process used for this work. It provides detailed instructions on how each step was implemented and, in many ways, could serve as the basis for future EPA Requests for Proposals. The research team recommends replicating this analysis in other watersheds and offers ways to do this based on EPA needs:

- Examine rural watersheds or watersheds with very different focal problems (e.g., forestry, agriculture, water supply, etc.) to further expand the understanding of how the changing patterns of intergovernmental relations apply to a much larger set of federal, state and local programs over time.
- Extend this work to other urbanized watersheds to further understand the water pollution control governance system or to expand the analysis to problems other than sewage and pollution.

A modified version of the methodology and analytical framework for this Narragansett Bay governance study could easily be used to create governance histories for other watersheds or environmental governance challenges of interest to EPA.

Chapter 1: Introduction

The EPA Office of Research and Development develops and tests methods for use in environmental problem solving. This includes consideration of biophysical, social and environmental governance complexities. Researchers in that Office's Atlantic Ecology Division (AED) collaborate with decision makers and stakeholders on problem formulation through the applications of this research to help ensure favorable environmental, societal and economic outcomes. Advancing scientific understanding and improving knowledge transfer from research and development to key environmental governance institutions are important objectives in the AED's five-year (2012 - 2016) "Narragansett Bay and Watershed Sustainability – Demonstration Project."

In the U.S. federal system of governance, environmental authorities are intentionally fragmented by media (air, water and land) and scale (federal, regional, state/tribal and local levels). This project: 1) documents the evolution of current federal, regional, state and municipal governance authorities and capacities affecting this watershed and estuarine system; 2) helps EPA's Office of Research Development identify research and development knowledge transfer opportunities; and, 3) documents historical analysis methods developed and tested as part of this governance analysis in ways that are scalable and transferable for use in other watershed and estuarine contexts that have varying governance histories. The governance analysis conducted by Lighthouse Consulting Group is designed to help EPA's Office of Research Development better understand the evolution of governance structures and refine strategies and tactics for delivering knowledge in forms and formats that key governance institutions can use.

This report is one of a series of work products produced by Lighthouse Consulting Group as part of the project. The final deliverables comprise:

- A summary timeline of the governance history for the Narragansett Bay watershed in a format that can be displayed and maintained on a website.
- Eleven governance stories that were used to develop a detailed timeline.
- A detailed timeline with 1,564 entries related to the history of governance in the Narragansett Bay watershed.
- A digital archive consisting of 1,438 documents with approximately 125,724 pages of searchable digital material (Adobe PDF files).
- A report that details the project methodology with recommendations for how it would be used to investigate other watershed settings.
- A final report that documents the changing governance networks in the Narragansett Bay watershed and describes how these networks change in response to changes in the ecosystem as well as other socioeconomic and political factors.

This report focuses on the last deliverable listed above and synthesizes the information resulting from the data collection and analysis efforts associated with the project's other deliverables.

Network Governance in the Narragansett Bay Watershed

The focus of this report is on governance networks. It reflects the physical reality that large landscapes like the Narragansett Bay watershed rarely correspond to the political boundaries used to mitigate and manage human impacts on these ecological systems (Figure 1). As early as the 1800s, it became clear that the problems generated by rapid growth and urbanization of mill towns, increasing industrialization, and the use of rivers as both a water supply and a mechanism for sewage disposal would require the attention of actors at the federal, state and local levels of government. The following decades witnessed profound development, and today the capacity for addressing problems impacting Narragansett Bay remains widely dispersed across policies and programs at different levels of government and among the watershed's 100 municipalities. As a result, few actors have been able to solve their problems by working alone (Mandell 1989; Bressers et al. 1995; Milward & Provan 2000; Teisman & Klijn 2002). Accordingly, network governance provides an important perspective to help understand how society continues to respond and help mitigate and manage human impacts on the Narragansett Bay ecosystem.

Figure 1: Narragansett Bay Watershed

The term *network governance* refers to the collection of institutions and resources used to achieve direction, control and coordination among individuals (and organizations) that have varying degrees of autonomy in order to advance joint objectives across the network as a whole (Frederickson 1996; Lynn et al. 2000; Provan & Kenis 2008 p. 231). Network governance involves such activities as organizations making joint decisions, setting shared priorities, modifying policies, improving coordination, or finding other ways for members to work together in productive ways (Wood & Gray 1991; Milward & Provan 2000; Imperial 2005a). It involves more than just the configuration of governmental and nongovernmental organizations.

Governance includes enabling statutes, organizational and financial resources, programmatic structures, and administrative rules and routines. The configuration of these shared rules creates the social architecture that provides a structure to govern relationships among organizations in network processes (Frederickson 1996; Imperial 1999a, 1999b, 2005a; Lynn et al. 2000; Milward & Provan 2000; Mandell & Keast 2007; Imperial et al. 2016b, 2016a). Governance networks are often self-governed in that no one is in charge (Mandell & Keast 2007). Network processes typically utilize participatory approaches to making collective decisions based on communication, relationships (personal and organizational), mutual interests and reputation (Powell 1990; Wood & Gray 1991; Imperial 2005a). Agreement upon network goals can be difficult because each member brings to the network a different combination of goals, constraints and resources. Network processes must also account for the fact that while power differentials may exist outside network processes, members tend to be viewed on more equal terms inside networks. Thus, network processes and structures are central to leading participants and shaping their behavior (Huxham & Vangen 2000 p. 1166; Imperial et al. 2016b). As a result, network governance is inherently political and involves bargaining, negotiation and compromise. It also tends to be strategic and centers on shared problems or solutions.

Network governance profoundly influences the patterns of intergovernmental relations among local, state and federal officials that ebb and flow over time as organizations develop, modify and adopt new strategies for network governance. While there is a tendency for many practitioners and academics to assume that network governance is a relatively new phenomenon, efforts to improve the governance of Narragansett Bay actually date back well over 100 years. For example, the first pollution control study of the bi-state Blackstone River (Kirkwood 1875) led the Commonwealth of Massachusetts to first pass laws that specifically directed the City of Worcester to abate its pollution in 1886 (Chapter 331). Again, in 1919 (Chapter 171) and 1924 (Chapter 142), it led the state to demand that Worcester separate its sewer system and begin supply purification. Frustrated by a half-century of delay and deterioration, Massachusetts intensified its efforts further in 1936 by creating the Blackstone River Valley District in order to engage 17 municipalities in a cleanup effort (Chapter 248). That same year, the Rhode Island General Assembly approved an act to establish a board that would act jointly as the Blackstone Valley Authority. Flood emergencies in the 1930s then prompted regional action on water resources in the Blackstone and other basins (Gere 1971). A 1937 study by the New England Regional Planning Commission then recommended a number of projects in Massachusetts and Rhode Island including those focused on municipal treatment, water supply protection and industrial pollution control. Massachusetts prepared its own multifaceted river basin study for the Blackstone, addressing flood control, water power, drinking water, pollution, irrigation for agriculture, recreation, and wildlife and navigation. While a policy window appeared to have opened in the mid-1930s, efforts to create an interstate compact failed to materialize, and in Rhode Island, efforts to create a regional authority to control pollution in the Blackstone and Seekonk Rivers became embroiled in political disputes. As these examples illustrate, federal, state and local officials have a long history of efforts that focused on enhancing the governance to better address the problems affecting the Narragansett Bay watershed.

The dynamic quality of network governance is readily demonstrated in Chapter 2 of this report, which describes many of the different efforts to improve network governance that have occurred

in the Narragansett Bay watershed since the late 1800s. The power of the historical perspective is it demonstrates that when viewed over a long period of time, the bay's governance network is constantly evolving as new institutions, programs and planning processes are created or reconfigured, while others cease to exist. As Genskow and Born (2006, p. 59) observed, watershed governance networks typically "ebb and flow, become dormant or extinct, and resurface with old and new participants under new names and organizational forms" (Genskow & Born 2006, p. 59). Progress is made in addressing some bay problems while other problems increase in severity or remain largely ignored until the network actors have the capacity, resources, public support or political will to alter or reconfigure the network governance arrangement. The improved understanding of human impacts on Narragansett Bay also revealed new problems that command the attention of network members and change how network members frame problems and solutions over time. The capacity (e.g., the leadership, staff, legal authority, technology, funding, etc.) for addressing bay problems is also widely dispersed and changes over time in dramatic ways (Bressers et al. 1995, p. 4). Periodically, there were also profound shifts in cognitive thinking about the complexity and interconnectedness of the modern world that led to new or reconfigured efforts to address problems in the Narragansett Bay watershed.

Consequently, governance networks for Narragansett Bay formed, disappeared, and experienced a profound change in response to new programs, problems, capacities, funding opportunities and leaders (Genskow & Born 2006). They also evolved toward increased complexity and interdependency with some efforts nested within one another, while others built on or reconfigured earlier governance efforts. This helps explain why many current efforts to improve network governance tend to be pragmatic and strategic in focus.

Research Design

The objectives of this research report are to examine the rich history of changing governance efforts and then identify attributes that sustain healthy network processes. Given the complexity of collaborative processes and the lack of precisely defined theories, the study was largely developmental and employed a qualitative, comparative case study research design that focused on developing theory that is grounded in the data and the literature (Glaser & Strauss 1967; Strauss & Corbin 1990; Agranoff & Radin 1991; Yin 1994). The study also takes an ecumenical rather than a parochial view of theory by building on previous research in a number of areas (Kiser & Ostrom 1982). This avoids the "ideological hegemony" that makes it difficult to view network governance in a manner different from that found in a particular stream of literature (Maxwell 1996). This is important because the complex and dynamic nature of governance makes it unlikely that a single theory will fully explain all aspects of network processes (Menzel 1987).

The research design examined a wide range of cases of network governance that took place in the Narragansett Bay watershed dating back to the 1870s when Providence first began drawing its drinking water from the Pawtuxet River. James Kirkwood investigated the pollution problems

of the Blackstone River for the Massachusetts Board of Health, and Providence City Engineer Samuel Gray was sent to Europe to study its waste collection and treatment methods. Some of the cases that the team researched were located entirely in either Massachusetts or Rhode Island. For example, this included research on the 1936 establishment in Massachusetts of the Blackstone River Valley District, which addressed water, sewer, flood control and other infrastructure needs in the communities discharging to the Blackstone and Ten Mile Rivers. Other cases involved larger regional efforts in which the Narragansett Bay watershed was embedded. Examples include the 1937 report on New England water resources by the New England Regional Planning Commission and the 1975 Southeastern New England Study. Some were relatively strategic and focused on a narrow set of issues (e.g., the 1957 "Hurricane Survey: Interim Report – Narragansett Bay Area" and Shea's 1946 report on the pollution of Rhode Island waters). Others were deliberately synoptic and focused on wide-ranging issues (e.g., the 1937 water resources study and the massive 1955 study titled "The Resources of the New England-New York Region" — informally referred to as the *Gold Book* Study).

Similarly, some network governance efforts focused on relatively small geographic areas within the watershed (e.g., Greenwich Bay and its small tributaries), while others focused on the entire watershed for Narragansett Bay (e.g., the Narragansett Bay Project, which produced the Comprehensive Conservation and Management Plan/CCMP under the auspices of the National Estuary Program, in 1992).

Given the historical nature of this research, the main data source was the vast collection of archival records that document the history of the Narragansett Bay watershed governance efforts. This includes books and monographs, journal articles, government plans and reports, legislation, policy documents, digital newspaper archives specific to events in the watershed. It also includes information about the history of southern New England dating from the colonial period; the activities of Massachusetts, Connecticut and Rhode Island to address fisheries, pollution control and land development more broadly; and the specific regional efforts in neighboring watersheds including the Connecticut River, Long Island Sound, and the metropolitan Boston area to address issues of water supply, pollution control and land conservation.

The research team of Hennessey, Imperial and Robadue has also worked on Narragansett Bay issues from both practitioner and researcher perspectives since the early 1980s. Robadue co-authored a history of bay governance for the Narragansett Bay Project (Robadue & Lee 1980; Needham & Robadue 1990; Olsen, et al. 1980) while Hennessey and Imperial carried out a comparative analysis of estuary and watershed management in six cases for the National Academy of Public Administration in the 1990s. Imperial was a planner for the Rhode Island Coastal Resources Management Council (hereafter referred to as the Coastal Council) in the early 1990s and assisted the University of Rhode Island's Coastal Resources Center in examining the U.S. National Estuary Programs for the relevance of those programs to international marine and coastal management (Imperial et al. 1992; Imperial et al. 1993; Imperial & Hennessey 1996, 2000a, 2000b; Imperial 1999a; Imperial et al. 2000).

The study also builds upon several prior efforts that compiled information about the environmental governance history for Narragansett Bay and, to a lesser degree, its watershed. Most of these documents include inventories (RI Water Resources Board 1970; Hughes 1989; ESS Group 2003) or case studies centered on specific policies or situations (Ingram 1971; Kumekawa et al. 1990; Needham & Robadue 1990). The research team uncovered relatively few comprehensive analyses that apply an analytical framework or a comparative perspective to review the history of Narragansett Bay governance (e.g., Imperial et al. 2000). However, it was possible to identify a number of planning and technical reports published after 1960 that included a timeline or recapitulation of information describing historical events and early efforts to analyze and address a specific problem such as management of oyster beds in Upper Narragansett Bay or treatment of wastes from the Providence metropolitan area.

The data collection and analysis focused on compiling, updating and expanding timelines from previous research based on the documents identified in this study. It quickly became evident that the history was too rich to produce a comprehensive, detailed timeline related to all of Narraganset Bay governance issues. Instead, the team elected to focus on the problem of water pollution control in the Providence River and then expanded the analysis to examine the history associated with governance stories already familiar to the research team and other stories identified during the team's review of the literature and historical documents. These stories include the emergence of the Narragansett Bay Commission and its antecedents in Providence wastewater treatment, the Narragansett Bay Project and its successor efforts — the Greenwich Bay pollution control and special area planning, post-WWII areawide plans articulated by Walter Shea of the Department of Health and those that followed. These were all spurred by the federal water pollution control laws of the 1960s and the planning efforts initiated by the passage of the Clean Water Act (CWA) in 1972 — including 303e basin plans and 208 areawide planning, the effort to create a regional basin plan in the early 1970s by the New England River Basins Commission, and attempts to introduce a watershed approach in both Rhode Island and Massachusetts in the 1990s. Other topics and story lines the team examined included: regional land use management, the Mount Hope Bay and Taunton River stories, the timeline for the Blackstone River activities that involved shared watersheds along the Rhode Island and Massachusetts border, air quality issues related to water quality and the details leading to recent judicial decisions upholding waste load reduction requirements for nitrogen (N) in the Blackstone and Ten Mile Rivers.

This led to two conclusions. First, compiling a fully comprehensive timeline and reference list for the watershed was not feasible nor would it lead to drawing ready conclusions about the dynamics of policy development and governance over time. Second, it was apparent that examining selected governance episodes in greater detail would produce rich insights. Some of these episodes were relatively short-lived. Others have long and rich histories. Ultimately, the team identified 11 episodes on which to focus in building a detailed timeline, compiling a digital library of relevant documents, and preparing vignettes to aid in analysis and enhance the understanding of the bay's governance.

The data collection efforts produced over 1,438 documents with approximately 125,724 pages of searchable digital material to support the timeline that was produced. Most of the documents are government-generated reports that were either already available online or were scanned. In addition, LexisNexis searches of specific topics in the Providence Journal (available from the early 1980s to the present) and other regional newspapers yielded several thousand news articles that generated hundreds of relevant timeline entries. The research team also incorporated the major federal and state statutes directly into the simplified online version of the timeline.

Systematic qualitative techniques were used to examine relevant portions of these data. This resulted in a consolidated timeline containing over 1,564 unique entries, which emerged from 11 separate timelines developed in researching each governance episode. Each entry marks an important event or change in the network governance processes. Reflective essays were then developed for all 11 governance episodes to make sense of the analyses of these qualitative data and to aid in identifying themes that cut across the cases. When coding and analyzing these data, the team identified quotes and short vignettes to provide context. Some of these are included in this report to add context to the historical discussion that follows. As the analysis continued, the team developed tables, figures, matrices and network displays to display data, identify trends and make observations (Miles & Huberman 1994). Cross-case analysis of the different network governance efforts was then used to deepen the understanding of the network processes used in the different efforts. The basic approach was one of synthesizing interpretations and looking for themes that cut across cases (Miles & Huberman 1994). Potential rival explanations were contrasted against one another to identify logical inconsistencies and determine their consistency with these data (Yin 1994). The chain of events was examined to help determine causality. Where possible, the team used different data sources to triangulate the findings. This further enhanced the reliability and validity of the conclusions (Yin 1994). Additional detail on the advantages and disadvantages of secondary data-gathering methods is provided in the fourth project deliverable "Summary of Methods and Lessons Learned."

The results of the analysis are summarized in Chapter 2, which provides a short discussion of the history of network governance in Narragansett Bay. What soon became clear from the timeline and the sequencing of events is that these governance efforts often involved different patterns of intergovernmental relations. When viewed over time, there were also distinct changes in the pattern of intergovernmental relations that reflect the larger changes going on in a variety of other policy areas. The changing patterns of intergovernmental relations are also the byproduct of the U.S. federalist system of government, which vests overlapping functions and responsibilities for problems like water pollution control in a wide range of agencies at the local, state and federal levels. Moreover, Chapter 2 demonstrates that the current governance network is complex and interconnected — with a capacity for solving Narragansett Bay's environmental problems that is widely dispersed among actors at different levels of government. This helps explain why contemporary problem solving in the watershed often requires pragmatic, collaborative approaches and leadership by professionals experienced in navigating the complicated intergovernmental network of programs.

The team then turned its data analysis toward the identification of attributes of governance efforts that appeared to help foster and sustain healthy network processes. This analysis revealed a series of seven attributes of the structure and processes utilized by network governance arrangements:

- Strategic long-term focus.
- Importance of a shared problem/solution.
- Shared decision making.
- Entrepreneurial leaders.
- Leveraging resources.
- Network coordinators.
- Ability to adapt and reconfigure the network.

The presence or absence of these attributes appeared to contribute to healthy (or unhealthy) network processes. The analysis also revealed four additional attributes that may contribute to healthy and productive network governance arrangements:

- Science is used to justify policy.
- Communication and information sharing is the norm.
- Participatory processes are designed to build support.
- Local government is involved.

Chapter 3 discusses each of these attributes and provides examples to illustrate how their presence (or absence) contributes to healthy and productive network governance processes.

In the chapters that follow, there is no attempt to incorporate every example identified in the detailed timelines or the 11 governance stories. That would make the resulting discussion difficult to follow. Instead, the team identified issues, programs and governance networks that best exemplified the concepts associated with the changing patterns of intergovernmental relations and the attributes of healthy network governance processes. For consistency purposes, the examples in Chapter 3 are limited to those that were discussed in Chapter 2.

Chapter 2: Watershed governance in the Narragansett Bay watershed: A short history

The governance system for Narragansett Bay is the product of a long history of incremental and, at times, seemingly disconnected attempts to address problems and manage the use of the bay's resources dating back to the 1800s. This chapter summarizes the significant changes that occurred in the governance of Narragansett Bay since the 1800s and identifies the macro-level changes that reflect changing patterns of intergovernmental relations occurring in the United States during each time period. Understanding this rich history is important in order to understand the current governance arrangement because different federal, state and local programs reflect these competing patterns of relations. The following sections of this chapter demonstrate that changes in network governance occur over long periods of time. New policies and programs tend to build on or reconfigure existing programs, so institutional change tends to be incremental and path-dependent in nature. Moreover, when viewed over a long period of time, it is clear that the governance system for Narragansett Bay is marked by increasing complexity, interdependence, and increased capacity for problem solving at the state and local levels. Accordingly, it is not surprising to find that current attempts to address bay problems often demand networked or collaborative approaches to problem solving.

The following sections also reveal the generational shifts that continue to occur in both the thinking and the approaches to solving the water quality problems affecting Narragansett Bay. While the changes that are described are quite evident when one looks at the history from a decadal perspective, it is much harder to observe these trends when one looks only at events that play out on a year-to-year basis. The shifts in how problems and solutions are framed also tend to be generational. Similarly, the discussion notes how other perturbations such as the Great Depression, WWII, President Johnson's Great Society, the 1970s recession and energy crisis, and President Reagan's new federalism influenced the development of the intergovernmental relations embodied by the governance network for Narragansett Bay.

This discussion builds upon the framework for the development of intergovernmental relations in the United States as first proposed by Deil Wright (1978, 1988) in Table 1. The framework describes the general patterns and shifts in intergovernmental relations that occurred since the 1800s. It also recognizes the changing nature of the American polycentric federal system of government (Elazar 1965, 1987; V. Ostrom 1989, 1994; Gerlak 2005; Scheberle 2005). It summarizes major developments in the intergovernmental governance network for the Narragansett Bay watershed. These include interorganizational planning efforts, the adoption of new statutes, the creation of new governance mechanisms (e.g., regional boards, commissions, etc.), major events and studies that drew public and political attention to bay issues, and the often subtle, but important, paradigmatic shifts in how problems and solutions were framed over time in Narragansett Bay. Key events during the development of governance networks are summarized in Table 2.

Table 1: Deil Wright's (1988) Phases of Intergovernmental Relations (IGR)

Phase Descriptor	Main Problems	Participants Perceptions	IGR Mechanisms	Federalism Metaphor	Approx. Climax Period
Conflict	Defining boundaries, Proper spheres	Antagonistic, Adversary, Exclusiveness	Statutes, Courts, Regulations	Layer-cake federalism	19th century-1930s
Cooperative	Economic distress, International threat	Collaboration, Complementary, Mutuality, Supportive	National planning, Formula grants, Tax credits	Marble-cake federalism	1930s-1950s
Concentrated	Service needs, Physical development	Professionalism, Objectivity, Neutrality Functionalism	Categorical grants, Service standards	Water taps (focused or channeled)	1940s-1960s
Creative	Urban-metropolitan, Disadvantaged clients	National goals, Great Society, Grantsmanship	Program planning, Project grants, Participation	Flowering (proliferated and fused)	1950s-1960s
Competitive	Coordination, Program effectiveness, Delivery systems, Citizen access	Disagreement, Tension, Rivalry	Grant consolidation, Revenue-sharing, Reorganization	Picket-fence (fragmented) federalism	1960s-1970s
Calculative	Accountability, Bankruptcy, Constraints, Dependency, Federal role, Public confidence	Gamesmanship, Fungibility, Overload	General aid-entitlements, Bypassing, Loans, Crosscutting regulations	Facade federalism, (confrontational)	1970s-1980s
Contractive	Borrowing and budget balancing, Federal aid cuts and changes, Juridical decision making, Managing mandates	Aggressiveness, Contentiousness, Defensiveness, Litigiousness	Congressional statutes, Court decisions, Information sources, Negotiated dispute settlement	De facto federalism, Telescope(d) federalism, Whiplash federalism	1980s-1990s

A detailed recounting of every change in network governance at all levels of government is well beyond the scope of this report. Rather, the focus is on the events, programs and governance networks that best illustrate the concepts associated with Wright's framework to draw attention to the major shifts and developments in intergovernmental relations that occurred within the governance network for Narragansett Bay. The team also combined several of Wright's stages during the later period of his framework to provide a more generalizable framework that identifies the changing patterns of intergovernmental relations associated with the governance of the bay. The modified framework — with examples of programs that best illustrate each pattern — are summarized in Table 3. This analysis provides additional empirical support for the time periods and shifts in intergovernmental relations first proposed by Deil Wright (1978, 1988). Next, the team extended Wright's (1978, 1988) framework to cover the current period of intergovernmental relations. This extension is summarized in Table 4. The patterns of intergovernmental relations that dominate during one period do re-emerge from time-to-time in others. Similarly, while new patterns may emerge as a result of new problems, policies and programs that does not mean that the patterns of intergovernmental relations associated with ongoing programs disappear. Rather, they tend to coexist such that federal, state and local officials may have to practice quite different patterns of intergovernmental relations when working within different programs or policy areas.

Table 2: Evolution of Governance Networks in the Narragansett Bay Watershed

Year	Key Events Referenced in the Report
1849	Massachusetts Legislature appoints a Sanitary Commission to conduct a sanitation survey of the state.
1850	Massachusetts Sanitary Commission releases the Shattuck Report, which is a seminal document in public health.
1854	City of Providence has its second cholera epidemic in five years.
1861	Rhode Island Commission on Shellfisheries, hereafter referred to as the Commission on Shellfisheries, conducts the first of a long series of pollution studies in the Greenwich Bay portion of the Narragansett Bay watershed.
1868	Dillon's Rule emerges.
1875	Kirkland Report to the Massachusetts State Board of Health looks at most of the state's rivers and watersheds and raises concern about the Blackstone, Ten Mile and Taunton Rivers.
1886	Massachusetts Legislature requires Worcester to remove pollution and offensive properties from its sewage.
1895	Rhode Island Board of Health documents the severity of water quality problems.
1901	Fields Point begins treating sewage.
1900	Worcester constructs the first precipitation types treatment plant in the U.S.
1903	U.S. Supreme Court upholds Dillon's Rule.
1918	Commission on Shellfisheries reports that Pawcatuck, Central Falls and East Providence are contributing sewage and manufacturing wastes to Narragansett Bay.
1920	Rhode Island Public health officials close areas of the Providence River to shellfishing to prevent contaminated clams and oysters from being shipped out of the state.
1923	U.S. Supreme Court reaffirms Dillon's Rule.

Year	Key Events Referenced in the Report
1925	Rhode Island Board of Purification of Waters declares the treatment plant at Fields Point obsolete. Plans are made the next year to convert the plant to an activated sludge process. The conversion is delayed until 1934 due to the Great Depression.
1928	Rhode Island Board of Purification of Waters takes legal action against Pawtucket blaming its sewage discharges for interfering with personal rights to use the state's waters.
1928	U.S. Public Health Service study demonstrates the relationship between pollution and oyster health. Additional shellfish closures are initiated for the Providence River.
1929	Stock market crash triggers the Great Depression.
1929	New England Regional Planning League is formed and soon is reorganized as the New England Regional Planning Commission.
1933	U.S. National Resources Planning Board is formed.
1933	Metropolitan Sewer Commission is created to study the feasibility of a single sewer district for 18 municipalities and a central treatment facility on Prudence Island. The Rhode Island Board of Purification of Waters rejects the proposal.
1935	Mount Hope Bay is closed to shellfishing for the first time.
1935	Rhode Island Gov. Theodoren F. Green abolishes all boards and commissions as part of the *Green Revolution* and the modernization of state government.
1936	Natural Resources Planning Board issues the "Natural Resources Committee Report Regional Planning: Part III – New England."
1936	New England Regional Planning Commission's Water Resources Committee issues a report recommending the development of a new interstate compact.
1936	Rhode Island Gov. Green establishes the Blackstone River Authority.
1939	Rhode Island Gov. William Henry Vanderbilt appoints another committee to study pollution problems in Narragansett Bay.
1940	Fields Point and other facilities revert to discharging raw sewage in Narragansett Bay as a result of the war effort.

Year	Key Events Referenced in the Report
1941	U.S. enters WWII.
1946	Rhode Island Gov. John O. Pastore charges Walter Shea to report on the conditions of Rhode Island's waters and to recommend a plan of action.
1946	The 14-page Shea Report recommends classifying waters based on their existing and planned conditions in a manner similar to that proposed by the Natural Resources Planning Board in 1941.
1947	Rhode Island Gov. Pastore introduces legislation to put Shea's plan into effect.
1947	Rhode Island approves the Blackstone Valley District Commission, the first regional sewer authority in the state.
1947	The federal government approves the New England Interstate Water Pollution Control Compact. The following year, it is ratified by Rhode Island and Massachusetts.
1950	The New England-New York Inter-Agency Committee is created by the federal government to carry out a $6 million study that came to be known as the Gold Book.
1955	The New England Interstate Water Pollution Control Compact issues the Gold Book report.
1965	The U.S. Water Resources Planning Act is established.
1967	The New England River Basins Commission is established by executive order and begins planning process.
1971	The Rhode Island General Assembly establishes the Coastal Resources Management Council (the Council).
1972	Federal Water Pollution Control Act Amendments (or Clean Water Act) is passed, creating the National Pollutant Discharge Elimination System of permitting, the construction grant program, planning requirements, and a citizen suit provision.
1972	The U.S. Coastal Zone Management Act is passed.
1974	The New England River Basins Commission learns that a large part of its needed funding has not been obligated.
1975	The Southeastern New England Type II Level B Plan Final Report is released.

Year	Key Events Referenced in the Report
1977	The Rhode Island Water Quality Management Plan is published.
1978	The New England River Basins Commission Chairman Gregg leaves to head the U.S. Bureau of Land Management. That same year, the Commission scales back the number of working committees from 12 to four.
1978	The draft Areawide Water Quality Management Plan Section 208 Comprehensive Plan is released.
1978	Rhode Island creates a Department of Environmental Management by combining the Department of Natural Resources and the functions of the Division of Water Pollution Control from the Department of Health.
1978	The National Oceanic and Atmospheric Administration (NOAA) approves the Rhode Island Coastal Resources Management Program.
1979	EPA orders the City of Providence to address the chronic problems at Fields Point.
1980	The Rhode Island General Assembly creates the Narragansett Bay Commission.
1980	Rhode Island voters pass an $87.7 million bond issue to finance the reconstruction and upgrades to the Fields Point sewage treatment system.
1980	Rhode Island's Section 208 Plan is approved by Gov. J. Joseph Garrahy and EPA, and Section 208 funding is discontinued the following year.
1980	President Reagan is elected.
1981	Funding for the Water Resources Council is eliminated and the New England River Basins Commission is eliminated by executive order.
1983	The Council substantially modifies the Rhode Island Coastal Resources Management Plan. The new program is referred to as the *Red Book.*
1984	Rhode Island becomes a delegated state with the authority to implement provisions of the Clean Water Act. Massachusetts does not pursue becoming a delegated state.
1984	The Council adopts the Salt Ponds Special Area Management Plan and the municipalities of Narragansett, South Kingstown, Charlestown and Westerly amend their zoning ordinances to be consistent with its policies.

Year	Key Events Referenced in the Report
1984	Fields Point receives an award from the Water Pollution Control Association for the most improved sewage treatment plant.
1985	The Narragansett Bay Project is one of those focused on four estuaries to receive funding under what came to be known as the National Estuary Program.
1987	The Clean Water Act is amended. The construction grant program is replaced with a state revolving loan program. The National Estuary Program and Section 319 Nonpoint Source Management Program are established.
1987	The Rhode Island General Assembly creates the Land Use Commission.
1988	The Rhode Island General Assembly adopts legislation proposed by the Land Use Commission that makes changes to the mandatory comprehensive planning process for municipal governments.
1988	The Rhode Island Department of Environmental Management adopts the Rhode Island Governance of Nonpoint Source Inputs to Narragansett Bay: A Plan for Coordinated Action and begins administering the Section 319 grant-in-aid program.
1988	The Council adopts a program to encourage municipal governments to develop and implement Harbor Management Plans consistent with its guidelines.
1989	Rhode Island establishes the Rhode Island Clean Water Financing Agency to administer the state revolving loan program.
1990	The Rhode Island General Assembly adopts the Erosion and Sediment Control Act allowing municipalities to implement erosion and sediment control ordinances.
1990	The Rhode Island General Assembly establishes the Rhode Island Rivers Council.
1990	The Coastal Zone Act Reauthorization Amendments establish the Section 6217 Coastal Nonpoint Pollution Control Program and mandates that EPA and NOAA work together to jointly administer the program.
1990	The Council adopts the Narrow River Special Area Management Plan.
1991	The Narragansett Bay Commission assumes responsibility for the Blackstone Valley District Commission's facilities at Bucklin Point in East Providence, the second largest waste treatment facility in the state.

Year	Key Events Referenced in the Report
1992	Rhode Island and EPA approve the Narragansett Bay Project's Comprehensive Conservation and Management Plan.
1992	Warwick adopts the Greenwich Bay Reclamation Plan.
1992	The Rhode Island General Assembly implements the Land Use Commission's recommendations to substantially change the land development and subdivision requirements for municipal governments.
1992	The $100 million upgrade and expansion of Fields Point is completed.
1993	The Narragansett Bay Project becomes a line item program within the Rhode Island Department of Environmental Management.
1993	Rhode Island initiates substantive revisions to the Section 319 plan in conjunction with the development of the Section 6217 Coastal Nonpoint Pollution Control Program. This leads to the adoption of the Rhode Island Nonpoint Source Pollution Management Plan: State Guide Plan Element 731.
1993	The Rhode Island Department of Environmental Management and the Council develop uniform stormwater management regulations and jointly publish the Rhode Island Stormwater Design and Installation Standards Manual.
1993	The best management practices document, *Environmental Guide for Marinas*, is developed by the state with support from the Marine Trades Association.
1993	The Narragansett Bay Commission approves a 15-year, $476.6 million plan to address combined sewer overflows in the upper Narragansett Bay.
1994	The city of Warwick adopts the Greenwich Bay Nonpoint Source Pollution Mitigation Program.
1994	Warwick voters approve a $130 million bond referendum focused on wastewater improvements.
1995	The Narragansett Bay Project rebrands itself as the Narragansett Bay Estuary Program.
1995	EPA recognizes Fields Point as the best large secondary treatment facility in the U.S.
1996	EPA praises the Greenwich Bay initiative.

Year	Key Events Referenced in the Report
1997	Rhode Island is one of the first three states to receive conditional approval of its Section 6217 Coastal Nonpoint Pollution Control Program.
1997	EPA issues new policies for developing total daily maximum loads that directed its regions to work in partnership with states to achieve nonpoint source load allocations 303(d) in listed waters impaired solely or primarily by nonpoint source pollution.
1997	The Narragansett Bay Commission stakeholder group approves the first phase of the project at a projected cost of $168 million.
1998	The Rhode Island Rivers Council publishes the Rhode Island Rivers Policy and Classification Plan.
1998	All of the marine waters in the State of Rhode Island are designated as *No Discharge Zones*.
2000	Rhode Island is the first state to receive approval of its Section 6217 Coastal Nonpoint Pollution Control Program.
2000	EPA adopts a new total daily maximum load rule at the end of the Clinton administration that requires total maximum daily loads for all listed waterbodies within eight to 13 years and includes a new requirement for implementation plans. EPA suspends implementation of the rule until October 2001.
2001	EPA suspends the rule until May 2003; it then formally withdraws the rule.
2001	The Rhode Island Department of Environmental Management approves the Narragansett Bay Commission's Combined Sewer Overflow Abatement Plan with a three-phase, 20-year project.
2002	Rhode Island issues a general permit for its Phase 2 stormwater regulations that govern municipal separate storm sewer systems and that provide guidance that outlines the requirements effective the following year.
2005	The Council adopts the Greenwich Bay Special Area Management Plan.
2005	The Narragansett Bay Commission appeals the order by the Rhode Island Department of Environmental Management to dramatically reduce nitrogen loadings from its facilities. The Commission loses its appeal. The facilities to reduce nitrogen loading go online in 2013.

Year	Key Events Referenced in the Report
2006	The director of the Narragansett Bay Commission resigns after 25 years of service.
2008	Phase 1 of the Narragansett Bay Commission's combined sewer overflow abatement project begins operation and the project is completed on time and on budget.
2009	The city of Taunton is given the designation of a "Wild and Scenic River" by the National Park Service.
2009	The Council adopts the Aquidneck Island Special Area Management Plan.
2009	The Council adopts the Metro Bay Special Area Management Plan.
2009	The Narragansett Bay Commission receives EPA's Pretreatment Excellence Award for Region 1(New England).
2010	The Council and the Rhode Island Department of Environmental Management update the Rhode Island Stormwater Design and Installation Standards Manual.
2010	The Council adopts the Rhode Island Ocean Special Area Management Plan to site and manage proposals for offshore wind development.
2011	The Narragansett Bay Commission begins Phase 2 of the combined sewage overflow abatement plan.
2012	After more than a decade, the Narragansett Bay Estuary Program finally approves a revised Comprehensive Conservation and Management Plan.
2012	The Narragansett Bay Commission receives a Silver Award from the National Association of Clean Water Agencies for treatment excellence for its Fields Point and Bucklin Point Facilities.
2013	The Narragansett Bay Estuary Program's Management Committee submits a Corrective Action Plan to EPA Region 1 (New England) that outlines changes designed to strengthen the program. New staff is hired and the program is relocated to the New England Interstate Water Pollution Control Commission.
2013	The Council begins development of a Shoreline Change/Beach Special Area Management Plan.
2013	The Narragansett Bay Commission upgrades to reduce nitrogen loadings go online.

Conflict and Early Network Development: 19th Century to 1930s

Scholars often refer to the period of intergovernmental relations before the 1930s as one marked by conflict (Wright 1978 p. 40). Many of the intergovernmental conflicts during this period were the result of an imprecise specification of the limits of federal, state and local authority. For example, the emergence of Dillon's Rule in 1868 assured state supremacy over local governments and involved a legal fight to determine the exact limits of local government power. Rhode Island is a Dillon's Rule state, while the Commonwealth of Massachusetts operates as a home rule state. The operating assumption during this period was largely that the authorities of federal, state and local officials were mutually exclusive, hence the use of the layer cake federalism metaphor to describe this period. When viewed from an intergovernmental relations perspective, the period is marked by a search to sort out roles and specify boundaries of authority among actors at different levels of government. There was also a general societal orientation and belief in the superiority of competition, corporate organizational forms, and efficiency that led to a search for the one political jurisdiction that could best perform specific governmental functions (Wright 1978, p. 42). This search process is still common today at the local and regional levels with reorganization efforts focused on identifying those functions best performed by regional or local entities and then reallocating those functions and services accordingly.

The early history of Narragansett Bay governance reflects this general pattern of isolated conflicts, while the search began for a way to organize the governance system to address what was a growing public health problem due to improper sewage and waste disposal (e.g., dead animals, animal waste, etc.) into rivers feeding Narragansett Bay. By 1849, the Massachusetts Legislature had appointed a Sanitary Commission to conduct a statewide survey. What came to be known as the Shattuck Report (Shattuck 1850) clearly documented the consequences of poor sewage and drainage with nearly 16,000 annual deaths due to typhus fever. By 1854, the City of Providence had its second cholera epidemic in five years. Edwin Snow, the Superintendent of Health for the city at the time, described the river as "filthy as any common sewer, and the stench arising from it at times pervades the whole neighborhood … At any time, dogs, cats, and hogs may be seen in the water in every stage of decomposition" (Narragansett Bay Commission http://www.narrabay.com/). In 1861, the Rhode Island Shellfish Commission conducted the first of what became a long series of studies of pollution in the Greenwich Bay portion of the watershed.

While the public health issues were of concern to state officials, the problems and solutions were largely considered to be local responsibilities. In order to address miasmas and prevent disease outbreaks, the solution in the middle part of the 19th century was simply to remove fecal matter and liquid waste quickly from in and around dwellings. However, other urban centers throughout Narragansett Bay's watershed were all taking the same approach to prevent disease outbreaks, and the rivers feeding Narragansett Bay were frequently used to dispose of fecal matter and other liquid wastes. Local officials soon realized that this threatened local drinking water supplies because they were many of the same rivers and tributaries. Thus, local governments began a related series of efforts to secure safer sources of drinking water. For example, in 1871, the City of Providence began pumping untreated water from the Pawtucket River. While this lasted for

over 30 years, it was soon clear that this would not prevent disease. By 1906, a slow sand filtration system was put in place to treat the drinking water from the river. Then, between 1915 and 1926, Providence bought and condemned 23 square miles on the north branch of the Pawtuxet River to build the Scituate Reservoir to ensure that the city had access to a safe water supply.

By the 1870s, it was increasingly clear that more was needed to prevent disease than simply collecting and disposing of sewage and liquid waste in the nearest waterbody. In 1874, the Providence city engineer went to Europe to study waste treatment methods. Upon return, he recommended sewage interceptors and processing at Fields Point. By this time, Providence had already constructed 43 miles of sewers to move fecal waste and dispose it further from where people lived (Lord 2009). By 1898, Providence was already designing a precipitation system for waste treatment (Clapp 1898) — a concept introduced as early as 1884 in Samuel Gray's review of sewage treatment options (Gray 1884). Fields Point began treating sewage in 1901. While this engineering achievement addressed the public health challenge, it also triggered a dramatic increase in nitrogen levels to Narragansett Bay. While Providence was an early adopter in providing this infrastructure, over the next 30 years, many urban centers around the bay had similar experiences in finding ways to treat their sewage and provide safe drinking water to their residents.

While cities like Providence were proactive in finding ways to respond to emerging threats to public health associated with concentrated levels of sewage disposal, other urban areas upstream were less concerned. Most notable of these was Worcester, Massachusetts. Important in counteracting this low level of awareness and urgency was the widely lauded 1875 Kirkwood Report to the Massachusetts State Board of Health. This report looked at most of the state's rivers and watersheds and raised concerns about the Blackstone, Ten Mile and Taunton Rivers. In 1886, the Massachusetts Legislature passed MA Chapter 331, which required the city of Worcester to remove the polluting and offensive properties from its sewage, so that its discharge into the river would not create a nuisance or endanger the public health. Worcester constructed one of the first precipitation type treatment plants in the United States. It was in operation by 1890 (http://www.sewerhistory.org/chronos/disposal.htm). In many ways, this marked the beginning of an important shift from viewing sewage disposal as a purely local issue to one with regional consequences. However, the legislative act did not solve the problem. Massachusetts passed legislation again in 1919 and 1924 in an attempt to compel Worcester to treat its sewage. Worcester was by no means the only recalcitrant local government. For example, in 1928, the Rhode Island Board of Purification of Waters took legal action against the city of Pawtucket, blaming its sewage discharges for interfering with the personal rights to use the state's waters. Pawtucket was found guilty of pollution and ordered to properly operate a system to prevent this pollution by 1931. Nevertheless, it failed to act upon the order for the next 15 years. What is clear is that the modern wastewater system has its origins during this period with a great deal of public investment in areas such as North Attleboro (sewer system in place by 1905), Attleboro (sewer system in place by1912), Warwick (water supply in place by 1929), East Greenwich (initial wastewater treatment in place by 1921 with expansion and interceptor in 1929), and East Providence (with Turner Reservoir in place by 1930).

Table 3: Patterns of Intergovernmental Relations Exemplified in the Governance Networks in the Narragansett Bay Watershed

Phases	Wright's Phases	Time Period	Programmatic Examples
Conflict and Early Network Development	Conflict	1800s to 1930s	Shattuck Report (1850) is issued by the Massachusetts Sanitary Commission. The Massachusetts Legislature requires Worcester to remove pollution from its sewage in 1886. The Rhode Island Board of Health documents water quality problems in 1895. The Rhode Island Board of Purification of Waters declares the treatment plant at Fields Point obsolete in 1925. The Rhode Island Board of Purification of Waters takes legal action against Pawtucket in 1928. A U.S. Public Health Service study demonstrates the relationship between pollution and oyster health in 1928.
Cooperation, Concentration, and Continued Infrastructure Expansion	Cooperative Concentrated	1930s to 1950s	The U.S. National Resources Planning Board is formed in 1933. The Metropolitan Sewer Commission proposes a single sewer district for 18 municipalities and a central treatment facility on Prudence Island, but it is rejected in 1933 by the Rhode Island Board of Purification of Waters. Rhode Island Gov. Green abolishes all boards and commissions in 1935.

Phases	Wright's Phases	Time Period	Programmatic Examples
			The National Resources Planning Board issues the Natural Resource Committee Report Regional Planning: Part III – New England (1936). Rhode Island Gov. Green establishes the Blackstone River Authority (1936). The 14-page Shea Report (1945) recommends classifying waters based on existing and planned conditions. Rhode Island approves the Blackstone Valley District Commission, the first regional sewer authority in the state in 1947. The New England Interstate Water Pollution Control Compact goes into effect in 1948. The New England-New York Inter-Agency Committee is created. The New England-New York Inter-Agency Committee issues the Gold Book (1955).
Creative Expansion of Federal Planning	Creative	1950s to 1970s	The 1965 Water Resources Planning Act is created. The New England River Basins Commission is established by executive order and begins Type II Level B planning process in 1967. The 1972 Clean Water Act with its National Pollutant Discharge Elimination System, construction grant program and planning requirements is established.

Phases	Wright's Phases	Time Period	Programmatic Examples
			The New England River Basins Commission's Southeastern New England Study Type II Level B Plan Final Report (1975) is released. The Rhode Island Water Quality Management Plan (1977) is produced. The 1978 Rhode Island Department of Environmental Management is created. The Areawide Water Quality Management Plan Section 208 Comprehensive Plan (1980) is approved by Rhode Island and EPA. Rhode Island becomes a delegated state under the Clean Water Act in 1984.
Competition and Devolution	Competitive Calculative	1970s to 1980s	The Rhode Island General Assembly establishes the Coastal Council in 1971. The 1972 Coastal Zone Management Act becomes law. NOAA approves the Rhode Island Coastal Resources Management Program in 1978. The Council revises the Rhode Island Coastal Resources Management Program to become known as the Red Book in 1983.

Phases	Wright's Phases	Time Period	Programmatic Examples
Contraction: Aid Cuts, Juridical Decision making and Mandates	Contractive	1980s to 1990s	The Narragansett Bay Commission is established in 1980. The Narragansett Bay Project is one of four estuaries to receive funds in 1985. 1987 amendments to the Clean Water Act create the state revolving loan program, the National Estuary Program, and the Section 319 Nonpoint Source Management Program. The Council approves the Salt Ponds Special Area Management Plan (1984). Rhode Island Governance of Nonpoint Source Inputs to Narragansett Bay: A Plan for Coordinated Action (1988) is published, and the Rhode Island Department of Environmental Management begins administering the Section 319 grant program. The Rhode Island General Assembly creates the Land Use Commission, which makes major changes to local comprehensive planning requirements in 1988 and revises the subdivision requirements for local governments in 1992. The Council begins encouraging local governments to develop Harbor Management Plans in 1988. Rhode Island adopts the Erosion and Sediment Control Act in 1990 and allows municipalities to implement erosion and sediment control ordinances.

Phases	Wright's Phases	Time Period	Programmatic Examples
			The Council adopts the Narrow River Special Area Management Plan (1990). Rhode Island and EPA approve the Narragansett Bay Program's Comprehensive Conservation and Management Plan (1992). The Rhode Island Nonpoint Source Pollution Management Plan: State Guide Plan Element 731 (1993) is published.
Creative Era Programs During Period of Contraction	Creative	1980s to 2000s	The Section 6217 Coastal Nonpoint Pollution Control Program is established in 1990. The Rhode Island Coastal Nonpoint Pollution Control Program is one of the first three states to secure conditional approval by EPA and NOAA in 1997. The Rhode Island Coastal Nonpoint Pollution Control Program is first to be fully approved in 2000. President Clinton proposes new total maximum daily load rule at the end of his term in 1999. EPA suspends the rule in 2001 until May 2003 and then formally withdraws the rule.
Pragmatism and Collaborative Management	None	1990s to Present	The Rhode Island Department of Environmental Management and the Council develop joint stormwater standards and publish the Rhode Island Stormwater

Phases	Wright's Phases	Time Period	Programmatic Examples
			Design and Installation Standards Manual (1993, 2010). The Narragansett Bay Commission approves a 15-year, $476.6 million plan in 1993 to address combined sewer overflows in upper Narragansett Bay. Warwick adopts the Greenwich Bay Nonpoint Source Pollution Mitigation Program in 1994 and town voters pass $130 million bond referendum. The Narragansett Bay Project rebrands itself as the Narragansett Bay Estuary Program in 1995. All of the marine waters in the State of Rhode Island are designated as *No Discharge Zones* in 1998. The Rhode Island Department of Environmental Management approves the Narragansett Bay Commission's Combined Sewer Overflow Abatement Plan with a three-phase, 20-year project in 2001. The Council adopts the Greenwich Bay Special Area Management Plan (2005). Phase 1 of the Narragansett Bay Commission's combined sewer overflow abatement project begins operation and the project is completed on time and on budget in 2008.

Phases	Wright's Phases	Time Period	Programmatic Examples
			The Council adopts the Aquidneck Island Special Area Management Plan (2009). The Council adopts the Metro Bay Special Area Management Plan (2009). The Council adopts the Rhode Island Ocean Special Area Management Plan (2010). The Narragansett Bay Commission begins Phase 2 of the combined sewer overflow abatement plan in 2010. The Narragansett Bay Estuary Program finally approves a revised Comprehensive Conservation and Management Plan (2012) after a decade. The Narragansett Bay Estuary Program management committee submits a Corrective Action Plan to EPA New England in 2013, and the program is moved to the New England Interstate Water Pollution Control Commission and new staff are hired. The Narragansett Bay Commission upgrades its facility to reduce nitrogen loadings in 2013.

By the 1890s, the framing of problems and solutions began to shift, albeit slightly. The City of Providence and other local officials now recognized that the introduction of disease germs to rivers necessitated shifting to protected reservoirs rather than continuing to draw water from the Pawcatuck and other local rivers. For example, in 1890, the Warwick and Coventry Water Company was formed to supply the Apponaug Village (within the city of Warwick). The downstream impact of channeling and discharging the treated and untreated sewage of a growing population was starting to have an impact as well. By 1895, the Rhode Island Board of Health had documented the severity of water quality problems. In 1898, there occurred a red tide algal bloom and large fish kill.

The downstream impacts of sewage were also increasingly evident. In 1918, the Commission on Shellfisheries reported that Pawcatuck, Central Falls and East Providence were contributing pollution through sewage and manufacturing wastes to Narragansett Bay. By 1920, public health officials in Rhode Island were closing areas of the Providence River to shellfishing to prevent the shipment of contaminated clams and oysters out of the state. A 1928 study by the U.S. Public Health Service clearly showed the relationship between pollution and oyster health and additional shellfish closures were initiated for the Providence River (Fisher & Acker 1935). By 1935, Mount Hope Bay was officially closed to shellfishing for the first time in history. As a result, local officials slowly recognized that new technological approaches were needed to treat sewage. For example, in 1925, the Board of Purification of Waters had declared the treatment plant at Fields Point obsolete (Desbonnet & Lee 1991), and the City Council toured eight cities to learn about better treatment methods. The following year, plans were made to convert Fields Point to an activated sludge process. However, this conversion was delayed until 1934 —due, in part, to the financial challenges associated with the Great Depression.

While some intergovernmental collaboration surely existed in the watershed before the 1930s, it was not a major feature of the governance system, nor was it a central aspect of attempts to address the bay's problems. Instead, most of the efforts before the 1930s involved local efforts to remove and treat sewage and to supply safe drinking water to prevent disease, miasmas and other unpleasant consequences. Some local governments, for example, that of Providence, were early adopters of new technologies due to their locations, wealth and prevalence of problems. Meanwhile, it took time and prolonged efforts on the part of state government to compel other cities, such as Worcester and Pawtucket, to take action. State efforts before 1930s also focused largely on studying and identifying public health problems, providing support to build treatment facilities, and working to compel local governments to live up to their responsibilities.

Cooperation, Concentration and Continued Infrastructure Expansion: 1930s to 1950s

The 1930s marked an important shift in the pattern of intergovernmental relations toward more cooperative approaches to problem solving. This was triggered by the widely recognized need to respond to the economic distress brought on by the Great Depression and the need to respond to challenges that resulted from WWII (and to a lesser extent the Korean War). For example, the

creation of the National Resources Planning Board in 1933 stimulated a great deal of policy-oriented planning at state and local levels. More than a dozen grants-in-aid programs were enacted. In terms of the war effort, a wide range of civilian defense, rationing, and other wartime programs stimulated cooperative efforts between federal, state and local governments (Wright 1978 p. 46). This growing interaction is what led to the development of the marble cake metaphor for federalism at the time and a growing recognition that there were central shared and often overlapping functions of all three levels of government (Wright 1978 p. 48).

From the 1930s to the 1950s, a number of developments in Narragansett Bay's governance occurred that illustrate the increasing recognition of overlapping functions, authorities and responsibilities associated with addressing the bay's problems. By 1930, the importance of regional solutions to addressing water quality problems had taken hold. In 1929, the New England Regional Planning League was organized and then soon reorganized as the New England Regional Planning Commission (with an advisory committee consisting of 535 New England citizens interested in planning (National Resources Committee 1935). A Metropolitan Sewer Commission was created in 1933 to study the feasibility of creating a single sewer district for 18 municipalities and a central treatment plant on Prudence Island. However, the Rhode Island Board of Purification rejected the proposal. In 1935, Gov. Theodore F. Green reorganized state government and abolished existing boards and commissions as part of the *Green Revolution* in an attempt to improve efforts to address water quality issues (Moakley & Cornwell 2001).

A number of other regional planning efforts occurred during this period. The U.S. National Regional Planning Board's Natural Resources Committee Report Regional Planning: Part III – New England was released in 1936. The Water Resources Committee of the New England Regional Planning Commission also issued a report in 1936. It noted considerable damage was caused to the region's water resources and recommended the development of an interstate compact rather than new federal authorities. A draft New England Interstate Pollution Control Compact was authorized by Congress that same year. In 1936, Gov. Green also established the Blackstone River Authority to address the river's problems. The following year, the Rhode Island General Assembly created a sewer authority to clean up the Blackstone and Seekonk Rivers. As the same time, Massachusetts created the Blackstone River Valley District as a multipurpose agency to address the Blackstone River's problems. However, a proposed Blackstone River Compact failed to gain legislative consideration. In 1939, Rhode Island Gov. William Henry Vanderbilt appointed another committee to study pollution problems in Narragansett Bay.

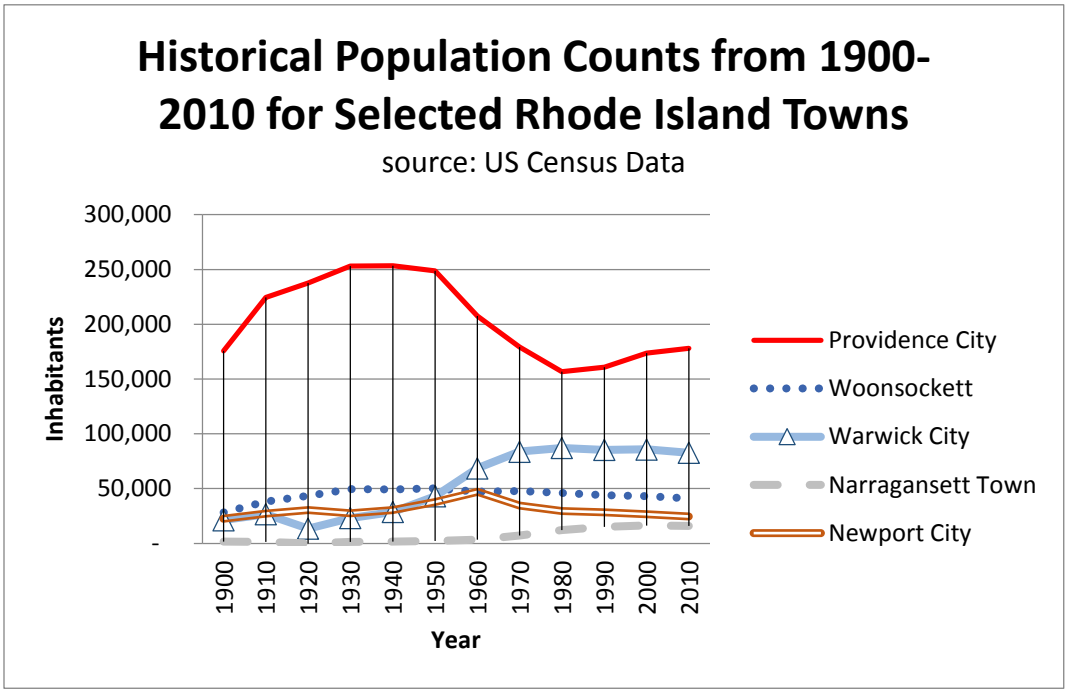
During the 1940s and 1950s, intergovernmental relations became increasingly specific, functional and highly focused (Wright 1978 p. 48). From 1946 -1961, the number of federal grant-in-aid programs nearly doubled. As a consequence, administrative rules and regulations rather than statutes began dominating award criteria, reporting and other programmatic activities (Wright 1978 p. 48). This led to a professionalization of public service with specialized professionals rather than administrative generalists overseeing the construction and delivery of important postwar activities like water supplies, waste treatment, urban planning, urban renewal, and the construction of an interstate highway system (Wright 1978 p. 48). Federal and state grants for highways, hospitals, sewage treatment plants and airports underwrote much of these

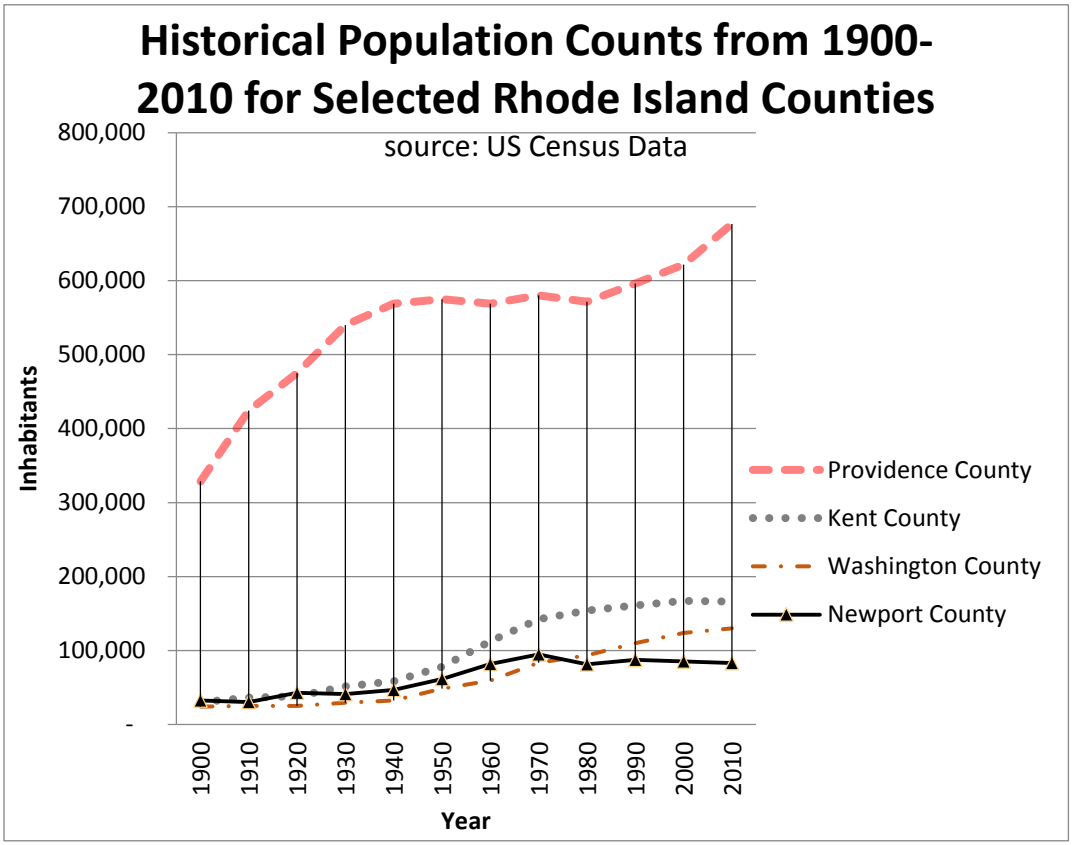
state-local efforts. During this period, construction of new and upgraded waste treatment plants expanded considerably. Notable examples include: Rhode Island's issuance of a $5 million bond in 1947 to begin construction of the Bucklin Point wastewater treatment facility on the Seekonk River (1953); the initial construction of the Fall River facility (1948); upgrades to the Fields Point facility (1949), the East Providence facility (1954), and the East Greenwich facility (1956); and further facility upgrades at Fields Point (1958). Federal investments were designed to meet deferred needs as a result of wartime efforts (Wright 1978). For example, in 1940, the facility at Fields Point reverted to discharging untreated sewage when workers and materials were diverted to the war effort and nearly 30 miles of the bay's shoreline were put to use to support military uses (Desbonnet & Lee 1991). By 1941, nearly all of Narragansett Bay's tributaries were referred to as offensive in terms of sight and smell, with slicks and solids once again commonplace on the surface. Moreover, by 1946, the entire upper bay was closed to shellfishing, and the problems were of important concern to Rhode Island residents (Desbonnet & Lee 1991).

During the postwar period, suburbanization became a new challenge in terms of Narragansett Bay's water quality. As a result of the industrial revolution at the turn of the century, people had migrated to cities and urban centers throughout New England, looking for work in manufacturing facilities. The advent of the Great Depression served to maintain the concentration of population in urban centers as people sought food, housing, and other forms of governmental assistance. Accordingly, by 1940, Providence's population had peaked at just over 250,000. However, as illustrated in Figure 2, the postwar period became one marked by increasing suburbanization as Providence became the first city in the U.S. to lose population to its suburbs (a 40 percent decline by 1980). As suburbia grew, it also needed new services. How better to provide these services than securing external financial assistance through federal and state grant programs while retaining local decision-making authority. Funds were best secured by those program professionals knowledgeable about how to turn on state and federal funding spigots (Wright 1978). Similarly, there was an ongoing need for regional, state and local governments to document the severity of water quality problems and capital needs in order to compete for and secure federal and state grant-in-aid funds and to build public and political support for continued infrastructure investments.

Professionalism, neutral competence, and the emergence of a professional state-dominated public service was pervasive by the 1950s (Kaufman 1956; Mosher 1968; Wright 1978 p. 48). Walter Shea was one of these professionals who exerted leadership during the 1940s. When WWII came to a close and attention refocused on addressing Narragansett Bay's water quality problems, Rhode Island Gov. John O. Pastore appointed Walter Shea, the acting Chief of the State Division of Sanitary Engineering, to report on the conditions of the state's waters and to recommend a plan of action in 1946. The 14-page Shea Report (1946 issued on Dec. 23, 1946 recommended classifying state waters according to their existing and planned conditions based on an A, B, C, D and E classification system similar to that proposed by the National Resources Planning Board in 1941 (Scott & Weston 1942). In March 1947, Gov. Pastore introduced legislation to the General Assembly that put Shea's plan into action.

Figure 2: Population Change in Rhode Island

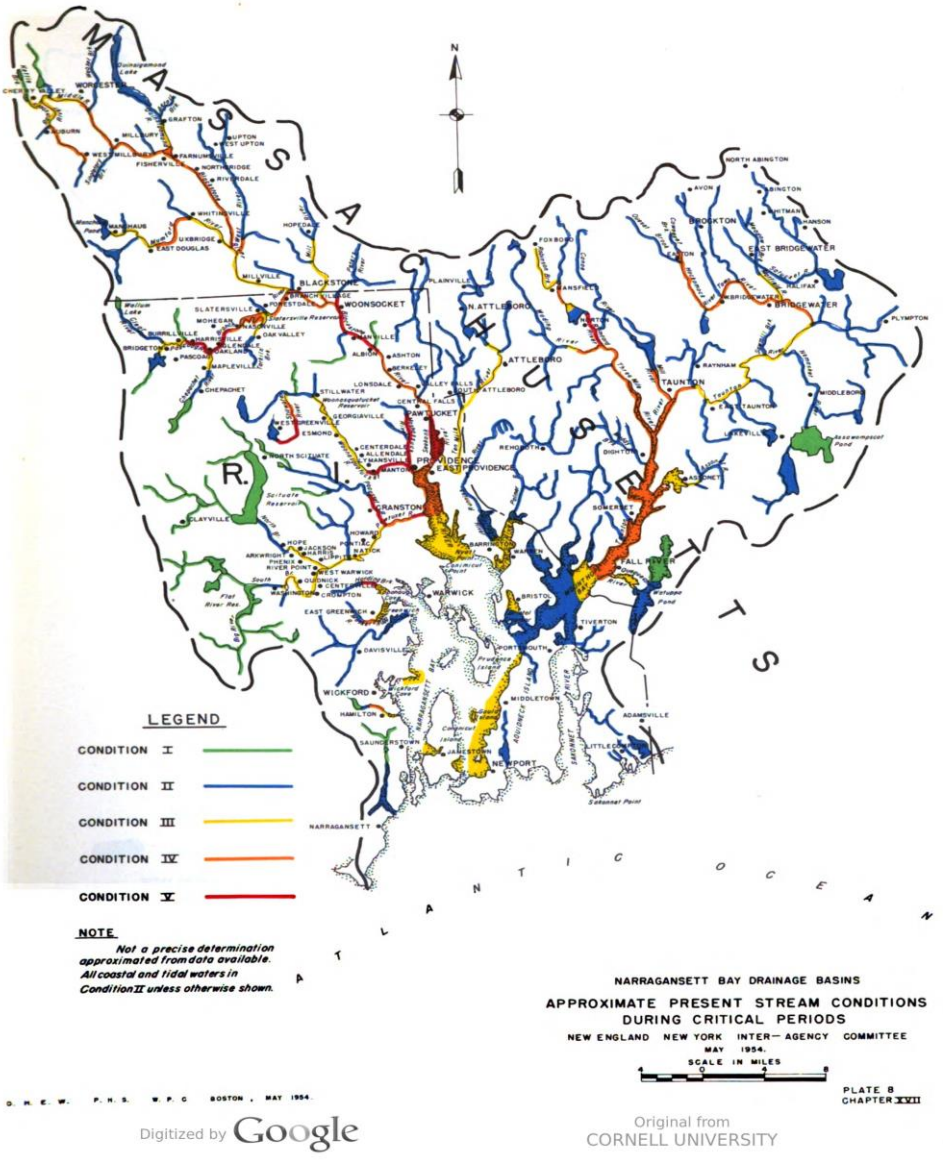




The emphasis on regional approaches driven by professionals also regained strength after WWII. In 1947, Rhode Island approved the Blackstone Valley District Commission, the first regional sewer authority in Rhode Island. At the same time, sanitary engineers remained convinced that unified interstate action was preferable to unilateral federal legislative action and began drafting an interstate compact for the purposes of coordinating water pollution control activities. This led to federal approval in 1947 of the New England Interstate Water Pollution Control Compact. In 1948, the New England Interstate Water Pollution Control Commission was ratified by Rhode Island, Massachusetts, and Connecticut and approved a water quality classification scheme for interstate waters. It worked to negotiate interstate agreements including the Taunton River, Mount Hope Bay, and the Ten Mile and Blackstone Rivers. In 1950, the New England-New York Inter-Agency Committee was also created by the federal government with six federal and six state representatives to carry out a $6 million comprehensive study, which is often referred to as the *Gold Book*. In 1952, the U.S. Public Health Service's Division of Water Pollution Control provided for the preparation of federal and state cooperative reports on the pollution in various sub-basins within the Commission's jurisdiction.

By the mid-1950s, the focus of water pollution control began to expand beyond its previous focus on treating sewage. In 1951, the New England Interstate Water Pollution Control Commission raised oil pollution as an issue. The Commission's final basin report for Narragansett Bay in 1954 highlighted the importance of addressing industrial waste problems. In 1955, the Commission identified vessel pollution control as a regional issue as well. But, water pollution from sewage treatment remained the dominant challenge at the time. When the Gold Book was released in 1955, it recommended wide-ranging water quality improvements for the entire basin and emphasized the volume of work needed to restore areas in order to safely permit recreational bathing and harvesting of shellfish. For example, it found that "the degree of pollution in the main stem of the Taunton River, while serious, is not as bad as in the main stems of the Blackstone and Pawtuxet Rivers. Moreover, there are no dams on the main stem of the Taunton River. Each spring, alewife runs penetrate far into the headwaters of the Taunton system. Dams on the tributaries are provided with fishways to permit passage of these fish" (New England Interstate Water Pollution Control Commission, 1955, p IX-16). The study indicated that pollution control could restore recreational and other uses to the Taunton River and Mount Hope Bay.

Figure 3: Pollution Effects on Quality of Narragansett Bay Basin Water Resources, 1952



Approximate* effects of pollution on quality of water resources, 1952, Narragansett Bay Drainage Basins

Key to Symbols:

I Suitable for any water use. Character uniformly excellent.

II Suitable for bathing and recreation, irrigation and agricultural uses: good fish habitat; good aesthetic value. Acceptable for public water supply with filtration and disinfection.

III Suitable for recreational boating, irrigation of crops not used for consumption without cooking; habitat for wildlife and common food and game fishes indigenous to the region. Acceptable for public water supply if shown suitable by technical studies.

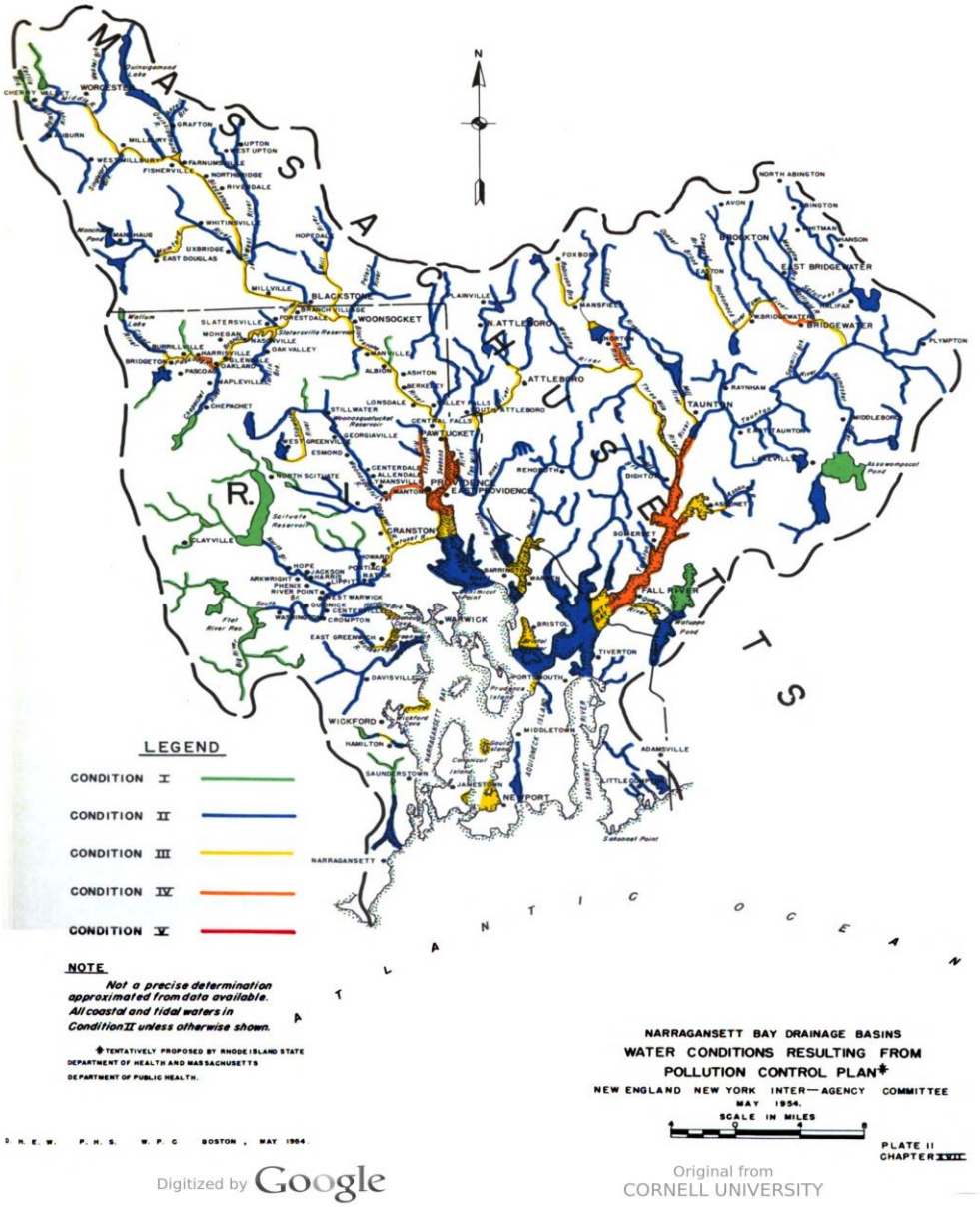
IV Suitable for transportation of sewage and industrial wastes without nuisance and for power, navigation and other industrial uses for which it is acceptable.

V Unsatisfactory. Waters falling below the above descriptions.

*Not a precise evaluation - tentative pending classification studies.

Source: NENYIAC 1955 Volume XVII page V-13

Figure 4: Narragansett Bay Basin: Water Conditions Resulting from Pollution Control Plan



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V Unsatisfactory. Waters falling below the above descriptions.

*Not a precise evaluation - tentative pending classification studies.
Source: NENYIAC 1955 Volume XVII page V-13

Thus, cooperative efforts were typically concentrated and selectively channeled. This led to the emergence of what Wright (1978 p. 50) refers to as the *water tap* phase of federalism. By the late 1950s, many of these programmatic and functional connections were vertically solidified and supported by program professionals at federal, state and local levels. In fact, President Eisenhower and the two-year effort of the Joint Federal-State Action Committee proposed creating a new tax on telephones to finance a return of two federal programs to the states (vocational education and construction of waste treatment facilities). However, these proposals were rejected. Though the Committee's proposal would have resulted in an increase in funding for vocational and waste treatment activities at the state level, the proposals were defeated by program-authorizing committees in Congress, federal agency personnel, and state and local professionals who preferred the existing system of federal grant-in-aid programs, which were largely focused on addressing regional, state and local priorities (Wright 1978 p. 51-52).

Creative Expansion of Federal Planning: 1950s to 1970s

The foundation for the creative phase of intergovernmental relations was established during this cooperation and concentration phase. The label *creative* owes to President Johnson's use of the phrase *creative federalism* and the many novel and ambitious initiatives embodied by the Great Society. Program planning, project grants and public participation were the hallmarks of these new federal initiatives, most of which included legislative and administrative requirements for comprehensive local, areawide or statewide plans to be submitted and approved before the receipt of federal grant funds. Project grant programs expanded considerably across a wide range of policy areas. Grant programs soon required individual project proposals to be submitted, which increased the discretion of grant administrators. Increasing use of matching ratios to share costs and incentive ratios were also common as were requirements to achieve "maximum feasible participation" in program operations (Wright 1978 p. 54). Administrative and fiscal requirements also became increasingly rigid and inflexible. While many of the Great Society programs were focused on disadvantaged populations (anti-poverty programs) and aid-to-education programs, there was also an increasing concentration of grants focused on urban problems. As Wright (1978 p. 56) observes, playing the federal grant game soon became a time-consuming activity for governors, mayors, city and county administrators, and program professionals during this period. As a result, these new federal programs required federal, state and local officials to engage in a very different pattern of intergovernmental relations.

While the term *creative* is used to describe this period, the programs were anything but that when viewed from the perspective of state and local officials. Instead of diversity and innovation among state and local programs, these new federal initiatives were largely driven by a unified set of national policies, priorities and programs. This was another new development in intergovernmental relations. During earlier periods, priorities at regional, state and local levels often determined what was financed by federal grants. Similarly, while regional water pollution control planning efforts (at various scales) was a regular occurrence from the 1930s to early 1960s, the new federal planning efforts were driven primarily by national priorities rather than by the local, state or regional interests that drove previous efforts. The first new federal initiative was the 1965 Water Resources Planning Act, which resulted in the creation of the federal river

basins planning program. This Act reflected the tendency for new federal programs to favor broad statutory authority to establish regional action over narrower, targeted, interstate compacts (Gere 1971 p. 60). The program was overseen at the federal level by the Water Resources Council. The statute also provided for the establishment of river basin commissions at the request of states or based on the recommendation of the Water Resources Council. Affected states and federal agencies had representatives on the river basin commissions and their focus was to be the central agency for coordinating federal, state, interstate, local and nongovernmental plans and grant-in-aid programs related to the development of water and related land resources (Imperial et al. 1992 p. 317).

The New England River Basins Commission was established by Executive Order 11371 (Sept. 6, 1967) and was charged with coordinating with the New England Interstate Water Pollution Control Commission, which had been in existence since 1947. The membership of the New England River Basins Commission consisted of:

- A chairman to be appointed by the President;
- One member each from the: Department of Agriculture; Department of the Army; Department of Commerce; Department of Health, Education and Welfare; Department of Housing and Urban Development; Department of the Interior; Department of Transportation; and the Federal Power Commission. Members were appointed by the head of each department or agency that he/she represented;
- One member from Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, and New York; and
- One member from each interstate agency created by an interstate compact to which the consent of Congress has been given and whose jurisdiction extends to the waters of the area specified.

An important feature of the Water Resources Planning Act was the four-tiered planning system administered by the Water Resources Commission. Of particular interest to Narragansett Bay was the initiation of the Southeastern New England Study — Type II Level B study. This was the first Level B study under the Water Resources Planning Act and received its first $200,000 appropriation in 1970. In 1971, the Southeastern New England Study created a Basin Advisory Committee for each of the study's 10 planning areas to solicit participation. The studies were afforded significant flexibility and the Water Resources Planning Act required decisions to be made by consensus (Foster 1984 p. 76; Imperial et al. 1992 p. 317). "The Southeastern New England Study Level B Plan Final Report" was released in 1975. Recommendations were issued by sub-basin, for similar categories of issues. The Taunton River Basin is typical. Many of the recommendations simply reflected ongoing or impending policy development under the Clean Water Act such as Section 208 planning. Other recommendations such as pursuing designation of the Taunton as a scenic river anticipated non-existent state and federal programs that eventually came into being in the 1990s and 2000s. Some recommendations were very controversial or unworkable. Examples included the recommendations to use the Southeastern

New England Study maps to designate critical areas on a regional level, to spread treated wastewater on land, and to conduct research on tapping coal deposits as an energy resource.

POLICY AREA	SUB-BASIN RECOMMENDATION
Guiding Growth	Protect priority Critical Environmental Areas, restrict development on others, manage growth on Developable Areas, and accommodate growth where services already exist.
Water Supply	Maintain existing supplies, develop local ground water, and expand Taunton water system to serve eight additional municipalities.
Water Quality	Expand the existing Brockton secondary facility, form the Old Colony Water Pollution Abatement District, upgrade Taunton's existing primary treatment facility, expand and upgrade Fall River's existing primary facility to secondary, attenuate runoff from new urban developments, and pursue detailed site investigations for local land application projects in six communities.
Outdoor recreation	Designate the Taunton as a scenic river, acquire new state natural areas, expand and develop camping and picnicking in state forests, use the Southeastern New England Study Development Capabilities Map in planning open space development, enforce wetlands legislation, acquire important wetland wildlife habitats, and construct fishways on 11 rivers.
Marine Management	Coordinate local waterfront planning and development, provide guidance and set criteria at the state level for priority waterfront uses, review and coordinate waterfront use, and provide federal funding for state and local waterfront development plans.
Flooding and Erosion	Develop a Taunton Basin floodplain management program, adopt local floodplain zoning preventing adverse floodplain development, establish local sediment and erosion control ordinances, establish forest buffer zones, acquire key wetlands and floodplains, and locate operations and uses in existing safe buildings in the floodplain.
Locating Key Facilities	Fund coal deposit research.

Nationally, the response to Type II Level B studies and the work of the river basin commissions was increasingly viewed in negative terms as the 1970s progressed. The planning process tended to be dominated by federal agencies and their priorities, rather than those of state and local officials. While the public had many opportunities for participation, state agency personnel and local officials were less involved in the processes, although they would largely be the ones affected by the decisions of the River Basins Commission. Many viewed the inventory phase of the studies as being too long, while not enough time was spent on developing plans and policy proposals (Nelson 1975 p. 611). The studies and work of the commissions also contained radical proposals that threatened vested interests or would have significant local impacts (e.g., location of energy facilities). For example, in 1977, the New England River Basins Commission started to pursue a regional approach to dredged spoils disposals, high-risk dams, Outer Continental Shelf pipelines and operations — issues that were very controversial and threatened state or local interests. The lack of implementation authority and support also reduced the impact the program had nationwide (Government Accounting Office 1981).

By 1974, the New England River Basins Commission learned that a large portion of the necessary funding was yet to be obligated since the President's FY 1975 budget had no funding for new Type II Level B studies. By the late 1970s, it was clear that support for the work of river basin commissions was declining. In New England, states showed much less interest in funding Type II Level B studies and largely favored pursuing specific projects of mutual interest, which was the approach used by the previous regional programs like the New England Interstate Water Pollution Control Commission. In 1978, Chairman Gregg, whose leadership had been instrumental in making the New England River Basins Commission one of the best of the federal river basin commissions, left to head the Bureau of Land Management. That same year, the New England River Basins Commission decided to reduce its 12 working committees to four.

Until the 1960s, water quality issues had largely been the domain of state and local authorities, and regional efforts were largely to coordinate state efforts. Not surprisingly, the growing federal presence was of increasing concern to state and local officials. Comments during the 1965 Blackstone River First Federal Water Pollution Control Act Enforcement Conference reflect the tension that existed during the 1960s and 1970s in terms of Narragansett Bay governance. As Murray Stein, Chief Enforcement Officer of the Division of Water Supply and Pollution Control of the Public Health Service and the chair of the conference, observed at the time:

> We are dealing, again in my opinion, with one of the touchiest and most difficult problems and areas in the latter part of the 20th century in America. That is the federal, state and local relationships, and the interstate relationships, particularly when dealing with a Federal regulatory power, and when the State also has regulatory power, and when both the state and the federal government and perhaps the interstate agencies are asking other government constituencies to do something possibly just before they are ready to do it, and nudging them along. This, as you know, is one of the most difficult problems in our time (US HEW 1965 p. 267).

During the conference, Massachusetts officials further expressed their frustration in working with local officials, noting that municipalities cannot be forced to treat wastes unless financing is available. By 1971, states were complaining that they did not receive federal funds to offset the costs of participating in newly initiated federal Southeastern New England studies. To push back against the growing federal role in Narragansett Bay governance, state and local officials tried using regional entities to advance their policy interests. For example, in 1971, the New England Interstate Water Pollution Control Commission came out against the Clean Water Act's proposed creation of national effluent standards, noting that it would cause major changes to the water quality standards in place, which did not specifically require secondary treatment.

This opposition did little to slow the momentum for the adoption of the 1972 Federal Water Pollution Control Act Amendments or the Clean Water Act, as it came to be known. This new federal program, along with the creation of the U.S. Environmental Protection Agency in 1970, served to significantly expand the federal government's role in water quality issues. It also marked an important shift in intergovernmental relations. For the first time, the Clean Water Act used partial preemption as a tool of intergovernmental relations in this policy area. States (and local governments and Indian tribes) had the option of developing water quality programs that met or exceeded the policies and requirements of the newly created EPA. If successful, a state would be delegated the authority to implement these policies and programs on behalf of EPA. Alternatively, EPA would implement these requirements and issue the newly created National Pollutant Discharge Elimination System permits. Interestingly, Massachusetts and Rhode Island chose to pursue different paths. Rhode Island decided, early on, to become a delegated state with respect to the Clean Water Act — a status it achieved in 1984 (EPA 1984). Conversely, Massachusetts decided to allow EPA to issue its National Pollutant Discharge Elimination System permits, and Massachusetts remains an undelegated state to this day. Only as recently as 2012, did the Massachusetts Legislature authorize the Massachusetts Department of Environmental Protection to examine the "feasibility, cost, advantages and disadvantages" of obtaining delegated authority (Massachusetts Department of Environmental Protection 2013 p. 3).

The 1972 Clean Water Act's statutory construction was emblematic of the Great Society programs. The use of partial preemption ensured national policies controlled the implementation of state regulatory programs. States were granted little flexibility in terms of how the programs were structured or implemented. The statute's goals for fishable-swimmable waters were so ambitious that there were almost no means of achieving these goals by the statutory deadlines. A water quality classification scheme coupled with a common set of water quality standards and technology-based controls were used to create a baseline policy that would apply to all states and water bodies. The statute contained a set of tiered planning requirements to focus on priority problems and make capital investments. The most notable among these planning processes was the Section 208 Areawide Waste Treatment Planning Program. Finally, a new construction grant program with matching requirements was created to share the cost of new and expanded wastewater treatment facilities. Each of these requirements influenced the governance system for Narragansett Bay.

The Section 208 program was a promising development because it coupled water quality planning with the implementation of pollution control permits and municipal construction grants (Laenesch and Emison 1976 p. 283; Imperial et al 1992 p. 319). The plans were also required to identify all of the treatment works necessary to meet anticipated municipal and industrial needs over a 20-year period, establish construction priorities, and address both point sources and nonpoint sources of pollution. Finally, they needed to include a description of the programs used to implement the plans. States were then given some latitude in terms of the geographic scope of the 208 plan and the organizations charged with developing the plans (Jungman 1976; Laenesch & Emison 1976; Imperial et al. 1992 p. 319). The resulting Section 208 plan had to be submitted to the governor and EPA for certification and approval (RI SPP 1979a, 1979b). The state also had to designate one or more water quality management agencies to implement the plan. EPA also provided incentives and sanctions to enforce the provisions of these plans (e.g., awarding or withholding construction grant funds) and the National Pollutant Discharge Elimination System permits were to be issued in conformance with the provisions of the Section 208 plans.

While the structure of the Section 208 program offered much promise in terms of advancing water pollution control in Narragansett Bay and elsewhere around the country, the results fell well short of the promise (Jungman 1976 p. 1048; Imperial et al. 1992 p. 320). The program was not well received by state and local officials around the country. Federal policies dominated the process, and state and local officials increasingly found challenges in working with EPA. The linkage between land use and water quality, which was an integral part of these plans, raised other regional conflicts between state and local officials. EPA also did not fully embrace or support the Section 208 process — choosing instead to focus more on the development of the Clean Water Act's regulatory requirements. In part, this was due to the fact that EPA lacked the funding and regulatory authority needed to fully support the 208 planning and implementation. State and local governments were also resistant to this federal intrusion in land use planning. As a result, the development of Section 208 plans was much slower than expected l level (Jungman 1976 p. 1048; Wilkins 1980, Imperial et al. 1992; Adler, et al. 1993, p. 184). Initially, EPA also resisted including nonpoint source issues in the Section 208 plans, and states were not required to include this in their plans until 1976 — as a result of litigation and legal challenges to EPA rules (Imperial et al. 1992). Today, Section 208 is a little-used tool of the Clean Water Act, and it is often hard to find copies of the plans that were produced. A rare exception is in the Cape Cod region, which has recently released a complete update (Cape Cod Commission 2014). Similarly, the California portion of the Lake Tahoe watershed continues to use its Section 208 plan as a regulatory backstop (Imperial & Kauneckis 2003).

Many of these general criticisms about Section 208 are evident in the Narragansett Bay governance history. The development of the Section 208 plans was a time-consuming process. Rhode Island decided to prepare a statewide plan. By 1977, the Rhode Island Water Quality Management Plan for Narragansett Bay was published by Rhode Island Statewide Planning and the Department of Health. It divided the Narragansett Basin into 77 segments and set load allocations. A draft of the Rhode Island Areawide Water Quality Management Plan Section 208 Comprehensive Plan was developed by 1978. It contained a number of innovative recommendations such as minimum lot sizes for individual sewage disposal systems, restrictions on land use in sensitive areas, and proposals such as having Warwick work with East Greenwich

on a Section 201 facilities plan. In the midst of this process, in 1978, Rhode Island restructured its approach to pollution control, creating the Department of Environmental Management. This combined the precursor Department of Natural Resources with the functions of the Division of Water Pollution Control from the Department of Health (RI General Laws Chapter 42-17.1). Rhode Island's Section 208 plan (RI SPP 1979a, 1979b) was approved by Gov. J. Joseph Garrahy and EPA in 1980, and in 1981, grant funding for 208 was discontinued. While the 208 plan had a number of innovative proposals and the planning process provided a starting point for subsequent planning efforts in the 1980s, the plan does not appear to have had much lasting impact. It was never formally adopted in *Rhode Island's State Guide Plan*, weakening its influence on subsequent water and land use decisions. Conversely, other features of Rhode Island's governance system developed during the same period — e.g., water quality regulations, the Rhode Island Pollutant Discharge Elimination Permit System, Section 303 (e) plans, and the Section 303 (d) list of impaired waters — are still updated and modified in direct response to changes in EPA rules or the development of new criteria.

Competition and Devolution: 1970s to 1980s

The ambitions of the creative phase gave rise to a new tension in intergovernmental relations as the proliferation of grants, mandates and regulatory requirements spurred conflict between federal, state and local officials. Moreover, conflicts between government professionals and their clients were also increasingly common due to new public participation processes and the gap between promise and performance that was evident in the Great Society programs. Negative aspects of bureaucratic behavior, administrative competence (or the lack thereof), and the implementation challenges associated with these new federal policies, plans and programs were common (Wright 1978). Candidates for office ranging from the president to city council members increasingly focused on the performance gap. It also became clear that despite top-down orientation of many of these new programs, program implementation often demanded a strong bottom-up component (Bardach 1977; Berman 1978, 1980; Mazmanian and Sabatier 1983; Pressman & Wildavsky 1984; Elmore 1985; Goggin et al. 1990). These tensions combined with the seemingly intractable nature of domestic urban problems gave rise to a general sense of malaise by the end of the 1970s (Wright 1978 p. 58).

Pressure soon emerged to alter, and perhaps reverse, grant trends during the President Nixon administration with growing support for the use of block grants. General revenue-sharing was even enacted in 1973. Competition over the pace and direction of change was evident as were conflicts between federal programs initiated during the creative phase as they continued their implementation efforts. Financial challenges also slowed the growth of federal grants during the 1970s — just when many of the new requirements of these federal programs took hold. This caused additional disenchantment among state and local officials when promised implementation funds failed to materialize. Financial challenges were further exacerbated by recessions, oil embargos, and the prolonged period of high interest rates and high inflation during the 1970s and early 1980s. It became increasingly difficult to finance local capital projects (e.g., sewage treatment, water supply, etc.) without federal and state grant support. State and local governments had become so dependent on federal grant programs that many modified their tax

systems to expand state services, increase state aid to local governments, and match vastly expanded federal grant dollars. On a more positive note, state and local governments were also forced to expand their administrative and professional capacities to implement new federal programs. This soon provided the foundation that allowed state and local government to exert more influence and control in terms of addressing Narragansett Bay's environmental problems. This period also saw local councils of government spring to life in large numbers across the United States to foster metropolitan and regional coordination in an attempt to meet new federal mandates and to more cost-effectively provide public services.

The federal environmental program that best exemplified the shift in this new period of intergovernmental relations was the 1972 Coastal Zone Management Act. The overall structure of this new federal program was much different from the Clean Water Act, which was passed the same year. The Coastal Zone Management Act was administered by NOAA in the Department of Commerce rather than EPA or the Department of the Interior. Participation by states was voluntary with no penalties for non-participation. Instead, to encourage participation, states were promised program planning and development funding and approved programs were promised substantial funding to implement federally approved programs. Rather than being designed to achieve some minimum set of federal policies, states were given the flexibility to build their new coastal resources management programs around local, state or regional priorities. The Coastal Zone Management Act also contained another important element — the federal consistency provisions. Once their new coastal resources management plan was approved by NOAA, a state could use the federal consistency provisions to ensure that federal agency activities, federal funding, and federal licenses and permits were consistent with the policies in the new state program (Imperial et al. 1992).

The Rhode Island General Assembly created the 16-member Coastal Council in 1971. Comprised of elected and appointed officials and its primary policy was/is to:

> preserve, protect, develop, and, where possible, restore the coastal resources of the state for this and succeeding generations through comprehensive and coordinated long-range planning and management designed to produce the maximum benefit for society from these coastal resources; and that preservation and restoration of ecological systems shall be the primary guiding principle upon which environmental alteration of coastal resources will be measured, judged and regulated (RIGL 46-230)

The driving force behind the creation of the Coastal Council were proposals for new energy facilities (e.g., nuclear plants, offshore Outer Continental Shelf development, etc.) that were being advanced by federal programs and industry. State and local officials soon recognized that there was no state agency approval or means of regulating or planning the location or development of energy and other large industrial facilities to manage their impacts on the coastal zone. Accordingly, the development of the federal Coastal Zone Management Act was actually influenced by experiences in states like Rhode Island where the Coastal Council's enabling legislation helped influence the development of this new federal statute. In fact, Deil Wright (1988) lists the Coastal Zone Management Act law as one of the few intergovernmental relations

innovations of the 1970s as it marked a major shift in the intergovernmental relations that were occurring during the creative period.

From Rhode Island's standpoint, the timing of the Coastal Zone Management Act could not have been better. NOAA planning grants funded the development of the Rhode Island Coastal Resources Management Program, which would have occurred anyway. Rhode Island was among the first states to submit its management program to NOAA for approval and received that approval in 1978. However, the Coastal Council actually started regulating coastal development with its inception in 1971. The Council regulates all shoreline development within 200 feet of the most inland coastal shoreline feature. It also regulates other activities statewide (e.g., energy facilities). While the 1978 Rhode Island Coastal Resources Management Plan developed for NOAA helped improve decision making, the document was hard to use in a regulatory context. In 1983, the Coastal Council substantively modified its plan, which soon became known as the *Red Book* due to its cover. One of the more interesting features of the Rhode Island Coastal Resources Management Plan are the maps that classified all of the state's waters into six use water types and then linked the policies for shoreline types with the policies for its water types to effectively zone the shoreline and uses of tidal waters. In the early 1980s, the Coastal Council also worked in a collaborative partnership with the towns of Westerly, Charlestown, South Kingstown and Narragansett to manage future impacts from development on the shallow poorly flushed estuary known as the Salt Ponds. The result of this partnership was the Salt Ponds Special Area Management Plan. The core feature of the plan was a set of shared zoning requirements that regulated the density of development within the watershed to ensure that the density of individual sewer disposal systems and the amount of impervious surfaces would not adversely affect groundwater or the water quality in the estuary. The four towns changed their zoning requirement (i.e., down-zoned) and the Coastal Council began permitting larger developments in the watershed to ensure compliance (Imperial 1999a).

Contraction: Aid Cuts, Juridical Decision Making and Mandates: 1980s and 1990s

Perhaps the most important event during this period of intergovernmental relations was the election of President Reagan in 1980. His election symbolized the growing sense that the federal programs initiated during the 1960s and 1970s as part of the creative phase had become too intrusive on state and local governments. During President Reagan's 1980 inaugural address, he so famously captured the public's sentiment by arguing that "government is not the solution to our problem; government is the problem." He went on later in the speech to say:

> It is my intention to curb the size and influence of the Federal establishment and to demand recognition of the distinction between the powers granted to the federal government and those reserved to the States or to the people. All of us need to be reminded that the federal government did not create the States; the States created the federal government.

Through President Reagan's rhetoric and policy initiatives, his administration consciously focused on slowing the growth of federal programs and devolving decision making and fiscal responsibility for many programs back to state and local governments. This trend largely remained in place until the election of President Obama. When President Clinton tried to push back against this tide after his election in 1992, it helped spur the election of Republican congressional majorities in 1994 as part of their Contract with America. By his 1996 State of the Union Address, even President Clinton was arguing that "the era of big government is over" and was soon working with Republicans to achieve a balanced budget and signed welfare reform that shifted policy control over this creative era program back to state officials.

While the scope, size and ambitions of the federal government continued to expand by almost any measure during this intergovernmental relations period, the rate of growth slowed dramatically when compared with the creative period. Moreover, Reagan's philosophy combined with the public's growing distrust of federal solutions to what used to be viewed as state or local problems opened the door to policy changes and new initiatives. By the end of the 1980s, regional, state and local governments began exerting greater influence and leadership in addressing problems in Narragansett Bay. However, this devolution of authority came with additional responsibility, presented new fiscal challenges, and spawned further development of state and local capacity to take on these growing responsibilities. As a result, state and local officials began using new forms of intergovernmental relations such as contracting and privatization to deliver public services during the 1990s and 2000s as a way to respond to the challenges associated with delivering important public services, including public drinking water and wastewater treatment. For example, United Water began operating the Bucklin Point treatment plant on behalf of the Narragansett Bay Commission in 2005. In 2010, it entered into a 10-year agreement with the city of East Providence to administer its sewer system and treatment plant. In 2012, CH2M HILL assumed operational management of the wastewater treatment facilities of Woonsocket, which had previously used other private firms to manage portions of its system.

These new trends in intergovernmental relations had a big impact on the development of the governance network for Narragansett Bay. President Reagan's opposition to regional planning led to the elimination of all funds to the Water Resources Council in 1981. He then abolished the river basin commissions, including the New England River Basins Commission, with Executive Order 12319 on Sept. 30, 1981. Interestingly, James Watt, President Reagan's controversial Secretary of the Interior and a well-known opponent of river basin commissions, reportedly thought that the New England River Basins Commission was the best of them at the time. Later that year, the New England Governors' Conference established a nonprofit entity to receive the remaining assets of the New England River Basins Commissions and the U.S. Army Corps of Engineers received its library. Today, however, the New England Interstate Water Pollution Control Commission created by federal-state compact in 1947 continues to play a productive role in enhancing the governance of Narragansett Bay. For example, regional cooperation facilitated by this interstate commission was essential to solving the mercury pollution problem in terms of reducing current and future sources within New England. The Clean Water Act forced industries to stop the emission of mercury in industrial production. The most notorious case was the Imperial Chemical Industries plant in Dighton, Massachusetts. Between 1953-1970, the plant had

used and discharged mercury into Muddy Brook, the Taunton River and Mount Hope Bay — thereby contaminating them. The Taunton River was closed to fishing in 1970 because of high levels of mercury in finfish. This interstate commission also coordinated the formulation of an effective regional total maximum daily load for mercury in the 2000s.

The amendments to the Clean Water Act in 1987 contained a number of changes that reflect the new spirit of devolution and the reemergence of state and local leadership. The 1987 Act contained several new water quality programs that relied on a very different pattern of intergovernmental relations when contrasted with the earlier programs established by the 1972 Act. While cost-share requirements for construction grants gradually increased during the 1970s and 1980s, the 1987 Act abolished the construction grant program. It was replaced with a state revolving loan program through which states received grants from EPA to capitalize the loan program and then issued low interest rate loans to local governments to finance construction at wastewater facilities. This led to the creation of the Rhode Island Clean Water Financing Agency in 1989.

The 1987 amendments also established a new voluntary program in the EPA to promote basin planning for estuaries of national significance. While Section 320 of the Clean Water Act formally established the National Estuary Program, it actually codified a new program initiated by Congress in 1985 when it appropriated funds to prepare studies for four estuaries, including what came to be known as the Narragansett Bay Project. Two additional estuaries joined the program in 1986. The creation of the National Estuary Program expanded the program to cover 12 estuaries. With subsequent expansions in 1990, 1992 and 1995, the program covered 28 estuaries of national significance. The National Estuary Program is a voluntary program focused on developing and implementing a Comprehensive Conservation and Management Plan guided by a participatory collaborative process referred to as *management conference* based on consensus decision making. Once approved, EPA provided funding to support implementation of these plans. However, this support was not designed to cover the full cost of implementing the plans. Rather, the hope was to use the funds to support a core staff who could then leverage other federal, state and local support to implement the comprehensive plan.

While each estuary program had to follow the same general planning process based on EPA guidance, in practice there was substantial variation among the National Estuary Programs (Imperial et al. 1992; Imperial et al. 1993; Imperial & Hennessey 1996, 2000a). Some programs, like the Narragansett Bay Project, focused on developing large comprehensive plans with a long series of policies and recommendations. Others, like the Buzzards Bay Project, were much more strategic in nature. Still others, like Tampa Bay, may have had long lists of recommendations, but collaborative efforts and implementation agreements were built largely around a narrow set of policy objectives (e.g., nutrient reductions and habitat restoration). Some estuary programs appear to have been very effective initially in serving as a catalyst for a wide range of collaborative implementation efforts. Others, such as the Narragansett Bay Project, were never quite able to make the transition from a collaborative planning effort to one that fostered the requisite partnerships needed to achieve a sustained and focused implementation effort (Imperial & Hennessey 2000a; Imperial, et al. 2000).

The history of the Narragansett Bay Project is a complicated one (Imperial et al. 2000). The program was housed in the Rhode Island Department of Environmental Management, but funding for its planning was routed through the New England Interstate Water Pollution Control Commission in order to avoid state personnel and purchasing requirements. This gave the Narragansett Bay Project a great deal of independence since there was little to no oversight of their activities by the interstate commission, EPA and even the Rhode Island Department of Environmental Management. While almost all of the key stakeholders were represented on a very large Management Committee, the Project's executive committee excluded the Coastal Council and the Division of State Planning until 1990. Unfortunately, by the time the draft Comprehensive Conservation and Management Plan was released in January 1992, consensus had broken down. The Coastal Council and the Department of Environmental Management were in disagreement and both had issues with Project staff that they were working to address in the final Comprehensive Conservation Management Plan. The scope and volume of the comments on the draft plan by the Management Committee members created numerous issues that needed to be addressed. Actors like EPA, the Coastal Council and the state's Division of Purchases also began using other intergovernmental relations tools available to them to force the changes they wanted in the comprehensive plan (Imperial et al. 2000). Similarly, stakeholders resorted to using political strategies and working behind the scenes to ensure their interests were protected in the final version of the plan. The development of the final comprehensive plan was very much a "*free-for-all,*" and, for some time, the fate of the program was truly in doubt. As one EPA official recalled: "There were so many problems at one point we thought the whole thing was going to go down in flames" (Imperial et al 2000 p. 27).

However, actors worked behind the scenes to find a way to resolve the conflicts. By July 1992, the Management Committee had resolved its issues. Any remaining issues were resolved at a pivotal Executive Committee meeting where EPA required the changes it wanted in the Comprehensive Conservation and Management Plan. It then directed the Narragansett Bay Project staff to find wording changes that could be agreed to. The Coastal Council also agreed to rewrite two chapters to resolve its differences. By the end of the year, the comprehensive plan was approved and became an element of the State Guide Plan in December 1992 (Imperial et al. 2000).

Over $10 million was spent between 1985 and 1992 by EPA and the State of Rhode Island to support the activities and research that led to the creation of the Comprehensive Conservation and Management Plan for Narragansett Bay. However, nearly 75 percent of this funding was focused on science and characterizing the bay's problems. Accordingly, if there was one positive benefit of the Narragansett Bay Project it was that much was learned as a result of these research projects. The plan was also very ambitious. It included 41 high-priority recommendations and proposals for over $30 million in new regulatory and planning initiatives alone over the subsequent five years, although Rhode Island was mired in a terrible recession (NBP 1992). While the legacy of conflict associated with the planning process and an overly ambitious plan clearly posed an obstacle to moving forward, the Narragansett Bay Project did receive a dedicated amount of EPA funding to maintain the capacity to implement the comprehensive plan and foster collaborative approaches to address problems in Narragansett Bay.

Making the transition from preparing a comprehensive plan to fostering the collaboration needed to implement the plan created challenges for many National Estuary Programs (Imperial & Hennessey 1996; Imperial & Hennessey 2000a). Some chose to develop nonprofit organizations (e.g., Delaware Inland Bays), while others used some form of intergovernmental agreement available under state statutes (e.g., Tampa Bay). In such cases, the National Estuary Program staff members then served at the direction of the new boards consisting of representatives of the partner agencies or stakeholder groups. This did not occur in Narragansett Bay. Instead, the Narragansett Bay Project became a line item program within the Rhode Island Department of Environmental Management in 1993. In 1995, in a wise attempt to rebrand itself, it changed its name to the Narragansett Bay Estuary Program. However, it's newly created Management and Advisory Committees were largely inactive. Over the last two decades, the program has made periodic attempts to restart a planning effort to update the comprehensive plan. For example, the Narragansett Bay Estuary Program committed to revising the comprehensive plan in 2001. It did so again in 2006 and 2010. The Narragansett Bay Estuary Program did eventually update its comprehensive plan in December 2012. The updated plan is much different. It lacks much in the way of technical information and includes little discussion of changes in bay problems. More importantly, its recommendations lack specificity.

The Narragansett Bay Estuary Program completed its first biennial review in 1997, followed by reviews in 1999, 2001, 2006 and 2009. Each time, it received a passing grade. This allowed for continued program funding. In 2002, the New England Interstate Water Pollution Control Commission renewed the partnership it had established with the Narragansett Bay Estuary Program during the planning years. However, it ended that partnership again in 2008. By the next EPA review in 2012, a consulting report highlighted a number of important organizational issues in terms of the Narragansett Bay Estuary Program's staff, leadership, and delays in work products. On March 31, 2013, the Narragansett Bay Estuary Program's Management Committee submitted an aggressive Corrective Action Plan to EPA Region 1 (New England) that outlined changes designed to strengthen the program. One of the recommendations was that the New England Interstate Water Pollution Control Commission serve as the new host for the Narragansett Bay Estuary Program. The program also hired a new executive director and new staff to begin the next chapter of its life. The Management Committee was instrumental in this decision to change the status quo and provided important leadership in this phase of the Narragansett Bay Estuary Program's lifecycle.

The 1987 Clean Water Act amendments also contained another new mandatory statewide planning requirement focused on nonpoint source pollution. The Section 319 Nonpoint Source Management Program requires states to assess the sources and impacts of nonpoint source pollution and to then develop a management plan to address identified problems. Similar to the National Estuary Program, states retained much more flexibility when compared with the Clean Water Act planning efforts initiated by the 1972 statute. Once the management plans were approved, EPA allocated grant funds to the states on a cost-share basis to support demonstration projects that were designed to address the policies and priorities contained in each state's 319 nonpoint source management plan as well as those priorities specified by EPA.

Rhode Island's Nonpoint Source Program was formed in 1989 in the Department of Environmental Management with the adoption of its first Nonpoint Source Management Plan. This plan built largely on earlier work funded by the Narragansett Bay Project that resulted in a 1988 report titled RI Governance of Nonpoint Source Inputs to Narragansett Bay: A Plan for Coordinated Action. Interestingly, this report included a critique and recommendations for updating the Section 208 plan. In 1990, the Rhode Island Nonpoint Source Assessment Report was folded into the State of the State's Waters Report for EPA. In 1993, the Department of Environmental Management initiated substantive revisions to the Section 319 Nonpoint Source Management Plan, which garnered significantly more input from stakeholders and other agency officials. These efforts were also integrated with the development of the state's Section 6217 Coastal Nonpoint Source Control Program. These efforts led to the adoption of the Rhode Island Nonpoint Source Pollution Management Plan: State Guide Plan Element 731. Its inclusion as a component of the State Guide Plan was designed to ensure that state policies and mandatory local comprehensive land use plans are consistent with the plan's policies and priorities. Over the last three decades, the Rhode Island Department of Environmental Management awarded a large number of grants to implement demonstration projects designed to address nonpoint source pollution problems throughout the state. In practice, many successful projects involved collaborations and partnerships between state, local and nonprofit organizations.

The 1987 Clean Water Act amendments also triggered other administrative actions that required local government action to address stormwater and erosion and sediment control as part of additions to the National Pollutant Discharge Elimination System. Since 1990, EPA and delegated states have been slowly phasing in requirements to regulate discharges from municipal separate storm sewer systems, construction activities, industrial activities, and other activities designated by EPA using Phase 2 National Pollutant Discharge Elimination System permits. In stark contrast to the permit system initiated in the aftermath of the 1972 Clean Water Act, states and local governments were granted more discretion in the design and administration of these new permits. However, EPA and state implementation of these new requirements was much slower than expected. For example, the Rhode Island Department of Environmental Management did not issue a general permit for its Phase 2 stormwater regulations until March 19, 2002 and did not issue further guidance outlining the requirements of the Phase 2 regulations until December 2003.

While these efforts were in direct response to new federal requirements, state and local governments also exerted their own leadership by utilizing their increased capacity for addressing Narragansett Bay's problems by initiating a new set of programs. There are many notable examples in the Narragansett Bay watershed. In 1987, the Rhode Island Individual Sewer Disposal Systems Task Force released its final report and the legislation was passed, allowing local governments to establish individual sewer disposal system maintenance districts. In 1990, the Rhode Island General Assembly adopted the Erosion and Sediment Control Act (RIGL 45-46), which enabled municipalities to adopt erosion and sediment control ordinances. In 1993, the Coastal Council developed comprehensive stormwater rules. After working together, the Coastal Council and the Rhode Island Department of Environmental Management agreed to jointly publish the Rhode Island Stormwater Design and Installation Standards Manual. The two agencies worked jointly to revise the manual again in 2010.

The Rhode Island Rivers Council was created in response to recommendations by the Lieutenant Governor's Task Force on Rivers in February 1990 (RIGL 46-28). The Rivers Council published the RI Rivers Policy and Classification Plan in January 1998. This plan was incorporated as Element 162 of the Rhode Island State Guide Plan. That same year, the Rivers Council began designating local watershed councils and, more recently, provided state grants to some of these local councils. In the mid-2000s, the Rivers Council membership was reconfigured as a result of the Separation of Powers amendments to the Rhode Island General Laws, which removed legislative members from commissions and councils. The Rhode Island Rivers Council is one of the members of the Rivers, Bays and Watersheds Coordination Team.

At the local level, Warwick, Rhode Island drafted a Greenwich Bay Reclamation Plan in 1992. The following year, Mayor Lincoln Chafee spearheaded the Greenwich Bay Initiative. In 1994, the City of Warwick developed the Greenwich Bay Nonpoint Source Pollution Mitigation Program in cooperation with the state, which provided a strategic plan for the reclamation of Greenwich Bay. That same year, Warwick voters approved a $130 million bond referendum focused on wastewater improvements. By 1996, EPA was praising the Greenwich Bay Initiative.

Rhode Island also took steps to improve how land use decisions were made by local governments. In 1987, the Rhode Island General Assembly created the Land Use Commission. The Commission substantially revised the state's land use regulations by recommending changes that resulted in requirements for local government to develop comprehensive land use plans. The Commission found that few local plans had been prepared, that they covered only a fraction of the topics required by law, and that knowledge or even awareness of the existence of the plans in most municipalities was low. In addition, the plans were only loosely connected to zoning and subdivision ordinances and no joint planning activities among adjoining municipalities was taking place. The Commission recommended a number of changes to the mandatory comprehensive planning process. These were enacted by the RI General Assembly in 1988 (RIGL 45-22.2). State agencies now have much more involvement in reviewing local comprehensive plans and ensuring they are consistent with agency policies and the elements in the State Guide Plan. The Commission then recommended substantial revisions to the state's Subdivision Review Act to ensure that state agency expertise could be used to better inform these important local land use decisions. The Commission's recommendations were adopted by the Rhode Island General Assembly in the Rhode Island Land Development and Subdivision Review Enabling Act of 1992 (RIGL 45-23). These changes were possible because Rhode Island is a Dillon's Rule state.

Rhode Island also has a more structured local harbor management planning process due to being a Dillon's Rule state. The Coastal Council created a new program in 1988 to encourage local governments to develop municipal harbor management plans. These guidelines were revised again in 1998 and in 2009. In many respects, local harbor management plans were designed to be an extension of a town's comprehensive land use plan, although they were never formally adopted as such. Municipalities are also allowed to implement harbor ordinances under RIGL 42-4 and the Coastal Council's Guidelines for the Development of Municipal Harbor Management Plans, giving towns and cities the ability to manage mooring fields, among other things. One of the important consequences of the planning processes for the harbor plans was

that it encouraged local governments to manage their mooring fields and marina owners were required to begin addressing nonpoint source issues associated with recreational boating activities, particularly the placement of pump-out facilities. In 1993, the best management practice document Environmental Guide for Marinas was developed by the state and supported by the Rhode Island Marine Trades Association. These efforts were so successful that Rhode Island became the first state to implement a statewide Clean Marina Program and to have all of its waters designated as a *no discharge zone*.

In some ways, the shifts in intergovernmental relations during this period of competition and devolution hearken back to earlier phases of intergovernmental relations. Conflicts over policy direction and control during the 1970s and early 1980s share similarities with those that occurred prior to the 1930s. The exception was that it became widely accepted that actors at different levels of government should legitimately be involved in addressing Narragansett Bay problems. Similarly, regional planning efforts enacted during this period share similarities to those enacted during the period of cooperation in that they were largely driven by regional, state or local priorities. The difference is that they often had a much stronger focus on the involvement of implementers and the general public in policy development and execution. However, it is important to recognize that these new efforts operated alongside programs established during the creative era that demanded a quite different set of intergovernmental relations among many of the very same state and local officials.

This might explain the lack of major shifts in attitudes among state officials in terms of their relationship with their EPA counterparts. For example, Tobin (1992) compared attitudes of state and EPA officials during the 1980s and found that state directors remained largely dissatisfied with their relations with EPA officials and that they did not change much as a result of the changing patterns of intergovernmental relations during the period of contraction. However, the relationships Tobin (1992) examined were primarily those that were the product of creative era programs established during the early 1970s (e.g., the National Pollutant Discharge Elimination System permitting program). Since these programs did not experience any significant changes during this period, the pattern of intergovernmental relations that is embodied in the programs as a result of legislation, budgetary processes, and other structural features associated with these programs remained largely unchanged.

Creative Era Programs During the Period of Contraction

It is also important to note that just as the Coastal Zone Management Act served as an exception to the creative era programs, there are also examples of creative era programs that served as exceptions during the period of contraction. Two programs in particular — the 1990 Coastal Zone Act Reauthorization Amendments and EPA's proposed total daily maximum load regulations in 1999 — were much more closely aligned with the philosophical approach and pattern of intergovernmental relations exemplified during the creative era. The Coastal Zone Act Reauthorization Amendments contain perhaps the most aggressive federal approach to date targeted at nonpoint source pollution control. Section 6217 of the Coastal Zone Act Reauthorization Amendments created a new Coastal Nonpoint Pollution Control Program to be

administered jointly by EPA and NOAA. Unlike the Coastal Zone Management Act, which was purely voluntary, Section 6217 required states with federally approved coastal resources management programs to develop a Coastal Nonpoint Pollution Control Program by the prescribed deadlines or face significant fiscal penalties from the reduction of its current Coastal Resources Management Program implementation grants. When the final guidance was issued in 1992, each state was required to submit a management program with enforceable policies that would implement 56 management measures contained in the Section (g) Management Measures Guidance unless the state received an exemption from EPA and NOAA.

The program is interesting from an intergovernmental relations perspective because it relied on an unusual combination of tools that were almost certain to cause conflict at the federal, state and local level. First, the boundaries of the program were enlarged to cover hydrologic unit areas. State Coastal Zone Management programs in combination with their state water quality counterparts could not simply implement new policies within the geographic scope of their current Coastal Zone Management program. Developing the initial boundaries for Coastal Zone Management programs was often controversial, so this requirement raised the possibility of creating a variety of state-local conflicts. In Rhode Island, the decision was made to implement the policies statewide, since it became hard to justify having state regulations for development that were stricter in some portions of the state than in others. Second, while the Coastal Zone Management Act is a voluntary program, Section 6217 is mandatory for any state participating in the voluntary program. Moreover, rather than providing any significant *carrot,* as is commonplace (there were some nominal planning funds), Section 6217 imposed a serious *stick* in terms of the removal of a portion of the state's base program funding as a penalty for not developing a Coastal Nonpoint Pollution Control Program. Since federal funding to support base Coastal Zone Management program implementation historically was well below what was needed to fully cover the costs of program implementation, many states felt that their participation in 6217 was essentially mandatory because they needed to retain what little federal funding they had. Third, while Section 6217 promised some implementation funding for the new policies, the history of Coastal Zone Management funding combined with the likely high cost of management measure implementation by state and local governments meant that state officials immediately recognized that whatever federal implementation funding was provided would fall well short of what would be needed to comply with the new requirements. Thus, in the eyes of many state Coastal Zone Management officials, Section 6217 amounted to yet another unfunded federal mandate.

Fourth, the management measure approach was one that tried to mirror the use of technology-based controls and apply it to nonpoint sources. However, while many states had regulatory apparatus in place to classify waters and regulate sewage discharges prior to the adoption of the 1972 Clean Water Act, states varied widely in terms of their ability to implement the management measures with enforceable policies — with many having no state programs to implement many of these new requirements. Point source discharges are also conceptually very different than nonpoint sources. The latter is closely connected to land use and is diffuse, whereas point sources are concentrated and can be regulated separately from the land use with which they are associated.

Finally, Section 6217 mandates collaboration between two federal agencies and their corresponding state programs and, inevitably, with other state and local agencies and authorities that would be needed to enforce the implementation of the management measures. As already noted, Section 319 is essentially a planning and grant-in-aid program while the Coastal Zone Management Act allowed states the flexibility to build their Coastal Resources Management Programs around state and local priorities. Moreover, while the Coastal Council has a permitting element within the Rhode Island Coastal Resources Management Program, many state Coastal Zone Management programs lacked a permitting element. Thus, Section 6217 required two different federal-state programs, based on a pattern of intergovernmental relations developed during the devolution era, to collaborate to implement a program based on a pattern of intergovernmental relations found in many creative era programs. This was a recipe for intergovernmental conflict. Moreover, even though EPA had a great deal of experience developing creative era regulatory programs, responsibility and decision making was vested in the Section 319 program, which had little-to-no experience with this pattern of intergovernmental relations and had only been established three years earlier.

These problems manifested themselves early on and continue to hinder the Section 6217 program's success. However, the combination of a strong, regulatory-based Rhode Island Coastal Resources Management Program and an aggressive effort to address nonpoint source issues at the state and local levels, as noted above, put Rhode Island in a unique position to implement almost all of the applicable management measures. The Coastal Council and the Rhode Island Department of Environmental Management quickly found a way to work together and created parallel advisory committee processes. The first worked in cooperation to develop the Section 6217 Coastal Nonpoint Pollution Control Program. The second resulted in a substantially revised and improved Rhode Island Nonpoint Source Pollution Management Plan: State Guide Plan Element 731. Rhode Island was then one of the first states to submit its threshold review, essentially a description and justification of the proposed Coastal Nonpoint Pollution Control Program. It was also one of the first three states to receive conditional approval from EPA and NOAA for its Coastal Nonpoint Pollution Control Program in 1997 and full approval in 2000. Nationally, implementation of the program was much slower than either agency anticipated. In the end, EPA and NOAA were forced to modify some of the requirements, lower expectations, and grant numerous waivers from some important management measure requirements to allow for program approvals.

The use of the Clean Water Act's total daily maximum load requirements is another fascinating story of shifting intergovernmental relations during the last 25 years. These load requirements are only used when waters are not meeting current water quality standards and are listed on a state's Section 303(d) list. A total daily maximum load consists of 1) a total loadings cap for a single pollutant that is consistent with the water quality standards for that waterbody and the pollutant in question; and, 2) an allocation of the loadings cap among the key sources of the pollutant. Ultimately, both are set and approved by the state and approved by EPA. The determination of the loadings cap and specific criteria used when a narrative water quality standard (e.g., nutrients) has been violated is "primarily science-based." Computer spreadsheets and models are then employed to estimate the loadings cap and to determine the required wasteload reductions. The wasteload allocation provides some opportunity for stakeholder

involvement and the consideration of other social and political data by the state. The allocation for point sources is then translated into regulatory requirements contained in National Pollutant Discharge Eliminations System permits. Addressing the nonpoint source component of the allocation can be more challenging.

Developing a high quality total daily maximum load is data-intensive, requires specialized staff, and requires a great deal of time and other organizational resources. Establishing these loads can also generate conflict and provide avenues for the beneficiaries of the total daily maximum loads (i.e., regulated parties, environmental groups and other nongovernmental organizations) to challenge the findings if they are to be used to force upgrades to treatment facilities. Accordingly, conflict surrounding efforts to develop total daily maximum loads (or the failure to develop them) in the 1980s and 1990s was not uncommon. EPA resisted the widespread use of total daily maximum loads as a regulatory tool during this period, until a series of litigation by national environmental groups forced EPA to act and adhere to a number of consent decrees to develop total maximum daily loads, much as litigation forced it to include nonpoint source pollution into the Section 208 process (Copeland 2012, p. 2; National Research Council 2001, p. 15; Adler et al. 1993, p. 160). By the end of the 1990s, however, EPA began to view total daily maximum loads as an important tool for not only addressing point sources but compelling state and local governments to take additional action to also address nonpoint source pollution problems.

In 1997, EPA issued new policies for developing total maximum daily loads that directed its regions to work in partnership with states to achieve nonpoint source load allocations for 303(d) listed waters impaired solely or primarily by nonpoint sources. States were also required to establish total maximum daily loads to meet water quality standards within eight to 13 years of listing a water as impaired. By the end of President Clinton's term, EPA had proposed new rules that would require total daily maximum loads for all high priority waterbodies to be developed within five years and for all 20,000 listed waterbodies within eight to 15 years (this might have required more than 40,000 total daily maximum loads to address all of the impairments). More importantly, state officials would have to include implementation plans with timelines or other interim deadlines for attaining state water quality standards. The development of these implementation plans would have been a complex and difficult intergovernmental relations process, involving bargaining and negotiation over deadlines and timeframes if they were going to be used as part of the National Pollutant Discharge Elimination System permit process. EPA adopted the rule shortly before President Clinton left office in July 2000 but suspended its implementation until October 2001 when Congress added a rider to an appropriations bill suspending the use of funds to implement the rule (Copeland 2012).

In July 2001, EPA announced it was suspending the rule until May 2003. However, in March of that year, it formally withdrew the rule. These actions led to criticism of President Bush by the environmental community. Early in 2009, there was some talk in EPA of reviving a rulemaking process, but President Obama has shown little interest in pursuing this. Lost in the criticism of the Bush-era EPA was the fact that the proposed rule was probably impractical in the late 1990s. For example, if the rule had moved forward using the 15-year timeframe, it would have been necessary to develop more than 1,300 total daily maximum loads (i.e., gather data, set loading

caps and wasteload allocations, and most importantly have implementation plans) every year (Imperial & Hennessey 2000 p. 150). While developing the wasteloads and technical aspects of the total daily maximum loads was perhaps feasible with the science, data and technology of the day, developing 1,300 implementation plans each year with specific timelines and deadlines for achieving water quality standards posed a considerable intergovernmental relations challenge. It would have had a big impact on state, local and intergovernmental relations and may have generated a great deal of conflict that would have otherwise slowed efforts to address water quality problems.

Ironically, suspension of the rule also provided EPA and the states with much more flexibility in terms of producing the total daily maximum loads and over the subsequent decade routinized the production of these technical analyses. For example, the Congressional Research Service (Copeland 2012 p. 8) reported that EPA approved 2,566 total maximum daily loads in 2010 and 2,820 in 2011. However, good data on implementation efforts remains elusive at best, although there is some evidence to suggest that significant implementation efforts are occurring (EPA 2011). However, it is clear that EPA lacks good data to monitor or assess its performance, and nearly 41,000 waterbodies still remain on Section 303(d) lists (Copeland 2012).

Pragmatism and Collaborative Management: 1990s – present

By now, it should be clear that while the patterns of intergovernmental relations first proposed by Wright (1978, 1988) are distinctive during different periods, they never disappear or get fully replaced by the succeeding phases. The question that naturally arises is whether a new pattern of intergovernmental relations has emerged. President Obama's election in 2008 with democratic majorities in Congress combined with the worst recession since the late 1970s opened a window to return to a reinvigorated federal role associated with the creative period. The 2010 Patient Protection and Affordable Care Act, more commonly referred to as Obamacare, clearly reflected President Obama's desire to exert strong federal leadership and control over healthcare policy. However, public support for Obamacare was never high, and initially many states resisted the federal government's intrusion by failing to establish state healthcare exchanges. While President Obama continues to make proposals for large-scale federal interventions common to the creative era, the growing Republican majorities in Congress suggest that there appears to be little public appetite for a major shift in intergovernmental relations. For example, EPA's proposed rule to redefine its wetlands jurisdiction in order to overturn a series of Supreme Court decisions was initially stopped by a Republican Congress, which responded quickly to the perceived threats by land owners from expanded EPA jurisdiction. In 2015, EPA once again decided to go forward with the proposed rule. It is likely to be met immediately with opposition by the Republican Congress and litigated by major interest groups and the states.

It is also clear that states are becoming much more assertive in terms of their leadership and that aspects of the competitive period of intergovernmental relations are alive and well as a result of the increased capacity for state and local service delivery. For example, when Arizona passed legislation to allow it to enforce federal immigration law, the federal government challenged the law under the federal supremacy clause and won. Ironically, in this instance, the federal

government prevented Arizona from enforcing federal law because the federal policy was to not enforce provisions of federal law. Recent executive actions by President Obama related to immigration have generated additional controversy in Border States. This is not due to federal action but to the decision to suspend the enforcement of provisions of federal immigration law. These actions were recently blocked by the U.S. Federal Appeals Court after Texas challenged President Obama's executive action. Twenty-five states have joined in the suit. Conversely, Colorado's legalization of marijuana use has led to a decision by the federal government to defer enforcement of federal laws criminalizing its use. Similar examples exist in terms of state leadership in environmental policy. Massachusetts citizens and political leaders pursued the idea of a restored Taunton River as a scenic river by simultaneously forming a state-level team and initiative for the Mount Hope Bay watershed. This led to an adopted plan in 2008. After a decade of citizen and congressional effort, the Taunton River was given its designation as a "Wild and Scenic River" by the National Park Service in 2009. Thus, the current period appears to be based more on politics than on any ideological or philosophical view of the relationship between federal and state governments — a hallmark of the earlier periods of intergovernmental relations.

Thus, two competing trends in intergovernmental relations established during the previous eras of creative intervention and devolution remain largely entrenched, particularly in the environmental policy sector. The federal government remains committed to exerting its influence through policies, programs and grant funds that were largely shaped during the creative era. At the same time, state and local governments continue exerting considerable leadership as evidenced by the wide range of innovative approaches to addressing Narragansett Bay's water quality problems that emerged over the last 150 years. Consequently, it should not be surprising that federal, state and local actors experience conflict from time-to-time. However, it is also important to remember that these conflicts are not only inevitable but are arguably a healthy part of the U.S. federal system of government because they reflect a competition of ideas, policies and priorities that is fundamental in a democratic society (Imperial 1999b).

That said, how should the current period of intergovernmental relations be characterized? Given the complex, overlapping, and sometimes redundant, fragmented or contradictory nature of the current governance network, the current pattern of intergovernmental relations is one that may be best described as being focused on pragmatism and problem solving. This is particularly true if taken from the perspective of a state or local official (Table 4). The term intergovernmental management is used to draw attention to the important role professionals play in working both inside and outside of their traditional organizational domain to solve problems and get their job done (Agranoff 1986, 2007; Agranoff & McGuire 1999, 2003). This involves collaborating and working with other professionals from federal, state and local governments as well as with nonprofits and the private sector to leverage resources, build support, and find ways to work together to solve problems, make government programs more efficient, and find ways to complete projects that improve or restore the environment. This may explain why the emphasis on large, sweeping, transformative, participatory, regional planning efforts focused on basins and large watersheds that was very prevalent prior to the middle 1990s has largely given way to much more pragmatic, targeted and focused geographic efforts (e.g., smaller watersheds, tributaries, river segments, total daily maximum loads, etc.) Accordingly, collaboration is an increasingly important strategy for enhancing network governance in Narragansett Bay and other

Table 4: Extending Wright's (1988) Framework to the Current Period

Phase Descriptor	Main Problems	Participants Perceptions	IGR Mechanisms	Federalism Metaphor	Approximate Climax Period
Pragmatism and Collaborative Management	Finding ways to improve how existing programs can work together more effectively to pursue joint objectives	Entrepreneurial, Pragmatic, Strategic, Practical	Collaboration	Networked	1990s to Present

watersheds around the U.S. during the current era of intergovernmental relations (Imperial 2005a).

So what does the future hold? Probably there will continue to be more of what has occurred over the past two decades, at least until another dominant pattern of intergovernmental relations takes hold that has a broad sweeping influence in a wide range of policy areas. Network governance efforts that are useful will be driven by experienced professionals who are well versed in how to navigate all the elements associated with different patterns of intergovernmental relations that are necessary in order to solve the problems confronting multiple agencies and constituencies. These professionals know how to work within and across what is now a complex governance system to forge partnerships and find ways to work together to solve problems. In that way, what is needed may be more of a return to the spirit of professionalism that dominated public service prior to the 1960s.

There are many examples of this pragmatism and targeted collaborative approaches to enhancing network governance over the last two decades in the Narragansett Bay watershed. The Coastal Council built on its early successes in building partnerships with local governments to implement the special area management plans for the Salt Ponds (1984) and Narrow River (1990) and expanded these efforts to address new problems in the Narragansett Bay watershed. The Salt Ponds and Narrow River plans were updated in 1999 to ensure that their policies would continue

to protect local water quality. In 2005, the Council finally adopted a special area management plan for Greenwich Bay. It built on the ongoing local efforts associated with the Greenwich Bay Initiative and included a number of features to improve water quality including requiring sewer tie-ins; banning cesspools; prohibiting individual sewer disposal systems in areas served by sewers; prohibiting boat discharges; and requiring buffer zones, conservation easements, and protection for critical areas. In 2009, a special area management plan was also developed for Aquidneck Island. That same year, a Metro Bay Special Area Management Plan was developed, which updated much of the Providence Harbor Special Area Management Plan developed two decades earlier. In 2010, the Council developed the Rhode Island Ocean Special Area Management Plan to help site and manage proposals for offshore wind development. In 2013, the Council started efforts to develop a Shoreline Change (Beach) Special Area Management Plan.

Each of these plans was developed by garnering financial, technical and staff resources from multiple partners. Their planning processes were participatory in terms of the public, interest groups, and affected state and local decision makers. Similarly, plan implementation extends well beyond the permitting efforts of just the Council to influence and steer permitting and decision making — including funding decisions — of different state and local actors. Conversely, as noted earlier, other efforts like the Narragansett Bay Estuary Program never had the staff, leadership, resources, and perhaps even the agency support needed to forge the requisite partnerships or attract the resources needed to make sustained progress in affecting one or more bay problems. Perhaps moving the Narragansett Bay Estuary Program under the New England Interstate Water Pollution Control Commission will finally provide an opportunity to find the leadership needed to reinvigorate its efforts.

Interestingly, the pragmatism extends to some of the creative era programs as well. When President Bush withdrew the newly adopted total daily maximum load regulations in 2001 and then permanently withdrew them in 2003, this did not signal an abandonment of the program. EPA was still subject to the consent decrees requiring it to ramp up total daily load development. Arguably, the older rules allowed EPA and its state counterparts to take a more pragmatic approach to total daily maximum load development because they afforded much more flexibility in terms of their contents. More importantly, the proposed rule's emphasis on implementation plans with deadlines but no new resources would have created a huge administrative burden on EPA and the states. Some even feared this would have made total daily maximum load development the top agency priority and slowed progress addressing other more pressing environmental problems. Since 2001, EPA worked to ease some of the administrative burdens of reporting on its overlapping water quality monitoring programs and improved guidance to states on the preparation of total daily maximum loads in order to help streamline the process (Copeland 2012 p. 8). States also moved away from single pollutants from a limited number of sources to bundling total maximum daily load efforts to address larger geographic areas and multiple pollutants to reduce their workload. Many state officials also took a more pragmatic approach that worked to integrate total daily maximum load development into existing water quality programs. They also have been incorporated as part of ongoing collaborative efforts to address water quality problems.

Accordingly, while criticism of President Bush's suspension of the total daily maximum load rules may be justified, it is also questionable whether these innovations would have occurred if the rules proposed by President Clinton had been adopted. Similarly, while the lack of implementation plans may result in slower-than-desired progress in terms of water quality improvements, the proposed regulations also would have generated considerable conflict in intergovernmental relations amongst state and local officials — conflicts that would have hindered progress in achieving water quality improvements. These are the underlying tensions and the tradeoffs that exist between these two contrasting patterns of intergovernmental relations.

The emphasis on pragmatism and collaborative efforts to improve network governance is exemplified at the local level as well. Perhaps the best example is the emergence of the Narragansett Bay Commission, which demonstrates the important role that leadership and professionalism play in terms of navigating the landscape of intergovernmental relations to enhance the governance of Narragansett Bay. The development of the Bay Commission also demonstrates the subtle shift that occurred in intergovernmental relations as local officials struggled to implement the new water pollution control regulations developed during the creative era and then struggled with the financial implications associated with the devolution era. The evolution of the Bay Commission is also interesting. While the organization has been controversial and heavily criticized, particularly during its formative years, today it is widely recognized for its leadership and innovative approaches to water pollution control.

A central focus of the Narragansett Bay Commission has been managing the waste treatment facility at Fields Point, which began operation in 1901. This chemical precipitation plant was the third of its kind in the United States and, at the time, was the largest of its type ever built. Its construction marked the beginning of a long and storied history of successes and failures at Fields Point. Like many facilities of its day, it had trouble keeping up with demands as the population grew during the early part of the 20th century (See Figure 2). Similarly, while it was often a pioneer and adopted the newest technologies, several decades later it was often one of the first to need upgrades as a result of aging and poorly performing infrastructure. The story of the Fields Point facility is also one that reflects the challenges associated with financing and managing waste water facilities over the long term. Financing construction is one challenge. However, ensuring the rates are high enough to finance proper maintenance and future upgrades is another challenge. This is particularly problematic with facilities run by a municipality because, as a general rule, politicians would rather avoid raising taxes and fees on their voters (i.e., rate payers).

By the end of the 1970s, the lack of maintenance and upgrades to the City of Providence's facilities had taken a toll on the upper Narragansett Bay. Nearly 65 million gallons of partially treated or untreated sewage and combined sewer overflows were running into the bay each day. At the same time, Providence, like other cities around the United States, was struggling financially as a result of the increasing suburbanization, a major recession, high inflation, and staggeringly high interest rates. These factors made it difficult to finance improved wastewater operations. It also occurred at a time when the 1972 Clean Water Act had just passed, new water quality standards were being developed, and public expectations for addressing water quality

problems were on the rise. In 1979, EPA ordered the City of Providence to address the chronic problems at the Fields Point facility.

To respond to this challenge, Rhode Island Gov. Garrahy created the Governor's Sewerage Facilities Task Force to address EPA's new mandate. It recommended the creation of a quasi-public commission to take over and rehabilitate the Fields Point facility. The Rhode Island General Assembly then created the Narragansett Bay Water Quality Management District Commission, which thereafter is referred to as the Narragansett Bay Commission (RIGA 45-25). The creation of the Narragansett Bay Commission also coincided with the public passage of an $87.7 million bond issue to help finance upgrades to the Fields Point facility. The district included Providence and portions of Cranston, Johnston, North Providence and Lincoln that were served by the City of Providence sewage treatment system as well as East Providence, Pawtucket, Central Falls, Lincoln, Cumberland, and portions of Smithfield. The legislation also included provisions to allow for its expansion and provided a broad range of powers to build, operate and maintain its facilities. The Commission consists of 19 appointed members: 10 appointed by the governor; two by the mayor of Providence; one each by the mayors of North Providence, Johnston, Pawtucket, Cumberland, Central Falls and East Providence; and one by the town administrator from Lincoln. The Commission was also empowered to charge user fees, subject to approval by the state utility commission; issue fines; and issue revenue bonds to help finance its operations.

The 1980s marks a period of significant improvement in the operation of the Fields Point facility. Meanwhile, the Commission was also developing its capacity to improve the governance of the wide range of activities associated with waste water treatment in the region. For example, in 1984, the Fields Point facility received an award from Water Pollution Control Association as a most improved plant. In 1988, Save The Bay awarded Fields Point its highest designation for treatment efficiency, and in 1989, the Fields Point facility had zero permit violations. These efforts were not without conflict. In 1984, the Commission, the state, and the city of Providence were embroiled in a financial conflict regarding Fields Point. At one point, the Commission threatened to put a moratorium on new connections by Providence and halt the huge reconstruction of the Fields Point facility until the matter was resolved. In 1985, the rate increases proposed by the Commission were also challenged by the Rhode Island Public Utilities Commission. In 1989, rising sewer fees had customers jamming phone lines to complain. In 1990, conflicts erupted once again in response to a 19.1 percent increase in sewer fees. However, by 1992, the $100 million upgrade and expansion of the Fields Point facility was complete. By 1993, the Commission had seen an 84 percent reduction in pollution loadings since 1982. In 1995, EPA recognized Fields Point as the best large secondary treatment facility in the country.

The Commission then moved on to tackle new challenges. In 1991, it assumed responsibility for the Blackstone Valley District Commission's facilities at Bucklin Point in East Providence, the second largest waste treatment facility in the state. While this meant the death of the Blackstone Valley District Commission, it marked a new chapter in the expansion of the Narragansett Bay Commission. In 1993, the Narragansett Bay Commission also approved a 15 year, $476.6 million plan to address the combined sewer overflows in the upper bay. The plan included building 12 miles of tunnels and seven tanks to hold 226 million gallons of sewage-tainted

stormwater until it could be pumped back into the Fields Point and Bucklin Point facilities and treated properly. The planned project was one of the largest public works projects of any kind in the state's history.

The financial burden associated with the planned combined sewer overflows project was daunting and the environmental benefits were somewhat limited. However, the project was also mandated by the Clean Water Act. In 1995, the Narragansett Bay Commission asked local officials; civic, environmental and business leaders; customers; and fishermen to review its proposed project. The following year, it established a committee of representatives from commercial and industrial sewer-use customers to advise it on economic and regulatory matters. In 1997, the stakeholders group endorsed the first phase of the project, costing $168 million, and agreed to evaluate the environmental improvements to determine if the rest of the project would be needed. At the same time, East Providence, Lincoln, Cumberland and Smithfield were arguing that their sewer users should not have to help finance the project costs since they did not contribute to these combined sewer overflows. By 1999, the Rhode Island Department of Environmental Management had given its approval to the Narragansett Bay Commission's $389 million plan. However, the question of how the plan would be paid for, beyond rate increases to sewer customers, remained to be answered. In 2000 alone, the Narragansett Bay Commission's proposed rate increase before the Rhode Island Public Utilities Commission would have meant a 38 percent increase from $132 to $182 per year for the average customer.

In 2001, the Rhode Island Department of Environmental Management approved the Narragansett Bay Commission's Combined Sewer Overflow Abatement Plan with a three-phase, 20-year project. The Narragansett Bay Commission finally broke ground and began Phase 1. In 2002, it began digging the main spine tunnel — three miles long and 250 feet underground. In 2003, a 210-ton boring machine was lowered into a hole near the Fields Point facility and started drilling north for the next two years. The efforts of the Narragansett Bay Commission and its executive director continued to garner national attention.

While Phase 1 of the combined sewer overflows project continued, a new conflict emerged over the Department of Environmental Management proposal for nitrogen reductions. In 2005, the Narragansett Bay Commission decided to appeal an order by the Department of Environmental Management to dramatically reduce nitrogen at its facilities. Paul Pinault, the Executive Director of the Narragansett Bay Commission, was the only one to challenge the science behind the proposed reduction. He also claimed that the cost of complying with the reductions would range from $13 to $88 million. Today, as a result of the consent agreements with the Department of Environmental Management, the Narragansett Bay Commission has significant initiatives related to nitrogen removal at both the Fields Point and Bucklin Point Wastewater Treatment facilities to meet a seasonal (May to October) nitrogen limit of 5 milligrams per liter. These new facilities went online in December 2013.

By the time Paul Pinault resigned in 2006, after 25 years of service to the Commission, he had left his mark. Two years earlier, he was recognized with the National Environmental Achievement Award from the Association of Metropolitan Sewerage Agencies. Despite the

challenges associated with running the two largest waste treatment facilities and undertaking one of the more ambitious combined sewer overflows projects in the United States, the Narragansett Bay Commission had a Standard & Poor's A+ rating for a stable, long-term outlook. Phase 1 of the combined sewer overflows project became operational in 2008 and was completed on time and, more importantly, on budget. In 2009, the Commission received EPA's Pretreatment Excellence Award for the New England Region. In 2011, the Commission began Phase 2 of the combined sewer overflows abatement plan. Meanwhile, in 2012, the Fields Point and Bucklin Point facilities received Silver Awards from the National Association of Clean Water Agencies for treatment excellence. In 2012, the Commission also constructed three 1.5 megawatt wind turbines at the Fields Point facility to begin using sustainable energy to treat wastewater. That same year, it completed construction on a silver LEED-Certified (Leadership in Energy and Environmental Design) administration building at Fields Point, featuring green roofs, a grey-water system, a rain garden, and numerous energy-efficient technologies.

The environmental improvements in the upper bay are notable as well. In 2011, the Rhode Island Department of Environmental Management revised its shellfish closure guidelines due to the success of the combined sewer overflows project. The Narragansett Bay Commission reported a 45 percent drop in fecal coliform in the upper Providence River since Phase 1 of tunnel operation. By 2013, it appeared that all of the wastewater treatment facilities for the upper bay had reduced total nitrogen levels since 2003.

However, these improvements were not without significant cost to local rate payers, who have financed almost all of the investments beyond the initial $87.7 million state bond issue. For example, in 2013, the Commission was projecting substantial rate increases through 2017. These would amount to an increase in fees to average users of nearly 332 percent since 2002.

Not surprisingly, the Narragansett Bay Commission has been the object of considerable criticism over its fees. Even Gov. Donald Carcieri noted he was appalled when 83-year-old Madeline Walker was evicted from her home of 50 years for failure to pay a $500 sewer bill.

> Walker's case was more complicated than an unpaid sewer bill — although the sewer charges have attracted most of the media attention. Land records showed several other liens on the property for unpaid taxes and for equity used to post bail in criminal cases. After Cobble Hill was granted ownership of the house, the property was sold three times last year. All the buyers and sellers have agreed to undo their transactions, so the house can revert to Walker's ownership, said Joseph Rodio, a Providence lawyer working for free on her behalf. He has argued that the transactions should be voided because Walker lacked the mental capacity to understand the legal documentation related to the loss of her home, and, therefore, did not receive proper notification. The agreement to unravel the transactions is expected to be finalized in court next week (Arsenault 2006).

While clearly there was more to Walker's story, the incident symbolized the growing frustration and concern over the disparity of sewer rates by Narragansett Bay Commission rate payers and citizens elsewhere and the financial impact these had on the citizens and the communities served by the Narragansett Bay Commission.

Thus, the case of the Narragansett Bay Commission draws attention to important questions related to fiscal federalism and who should carry the burden of financing facility upgrades and who benefits from these expenditures. The initial argument from the 1800s until the 1930s was largely that wastewater treatment was a local responsibility because the efforts focused primarily on protecting local public health. However, the growing recognition of the regional water quality impacts and the societal importance of providing this basic public service led to a growing recognition that federal and state governments shared some responsibility for financing this infrastructure. This led to a significant federal and state investment from the 1930s to 1980s to build waste water treatment facilities to serve both urban and suburbanizing populations. This investment was rivaled only by the nation's investment in the interstate highway system. The Clean Water Act's approach to water quality standards also presumes the existence of federal financial support in the form of construction grants (and other federal grant programs for wastewater treatment facilities). This changed dramatically when the 1987 Clean Water Act amendments abolished the construction grant program and replaced it with the state revolving loan program. Since loans have to be repaid, local governments once again had the burden of providing sewage treatment, while the level of treatment is dictated by EPA or state officials. All facilities are required to provide some minimal level of treatment. However, due to their geographic location, some facilities (e.g., the Narragansett Bay Commission) are required to provide higher levels of treatment or must address issues like combined sewer overflows, which require greater levels of financial investment to improve water quality. What the Walker case symbolized is the growing inequity in terms of those who are picking up the costs of these environmental improvements (Narragansett Bay Commission rate payers) and those who are receiving most of the benefits (other residents of the state). Even within the Narragansett Bay Commission, there are rate payers shouldering the cost of the combined sewer overflows projects, even though their communities do not have combined sewers. These equity issues are a big challenge to the Commission as it moves into the future. Similar equity issues are associated with the development of stormwater utility districts to address nonpoint source runoff issues.

Summary

There is clearly a rich history of efforts to address the water quality and health of the Narragansett Bay watershed that dates back to the 1800s. Perhaps what is most striking about this history is that the shifting patterns of intergovernmental relations for Narragansett Bay are remarkably similar to those observed elsewhere in a variety of policy areas (Wright 1978, 1988) (Table 2 and 3). It is also very clear that for much of the historical period, leadership in addressing water quality problems in Narragansett Bay has largely occurred at the state and local levels. That said, the programs initiated during the creative period in the 1960s and 1970s have clearly shaped the governance system in profound ways and encouraged the development of capacity at the state and local levels that allowed those actors to exert renewed leadership over the past two decades.

The team also focused on shifting patterns of intergovernmental relations to avoid making normative value judgments associated with the structures or features of programs and whether those features place primary emphasis on federal, state and local control. Instead, the analysis

Table 5: Top-Down vs. Bottom-Up Approaches to Policy Implementation

Top Down		Bottom Up
	Characteristics/Assumptions	
Programmed	Approach	Adaptive
Federal/State Officials	Key Actor	State/Local Officials
High	Federal Government Control	Low
Compliance	Measure of Success	Consensus
Low	Discretion of Implementer	High
Well Defined	Implementation Procedures	Less Defined
Centralized	Implementation Network/Structure	Decentralized or Polycentric
Standards/Regulations	Administrative Tool	Bargaining/Negotiation
	Most Appropriate When	
Narrow	Scope of Policy Change	Broad
Well Defined	Policy Clarity	Less Defined
Minor	Degree of Organizational Change	Major
Low	Conflict over Policy Goals & Objectives	High
Stable	Political Environment	Unstable
Tightly Coupled	Institutional Setting	Loosely Coupled

Source: Imperial & Hennessey 2000 p. 146

illustrates how certain design features influence the patterns of intergovernmental relations and identifies some of the general tradeoffs that occur as a result. In many ways, the patterns identified by Wright (1978, 1988) also help explain the debate in the implementation literature focused on top-down versus bottom-up approaches to policy implementation that pervaded the literature during the 1980s and 1990s (Bardach 1977, Berman 1978, 1980; Mazmanian and Sabatier 1983; Pressman and Wildavsky 1984; Elmore 1985; Goggin et al. 1990). Creative era programs often have a distinct top-down orientation, while many of the cooperative, competitive and devolution era programs have a greater allowance for bottom-up approaches to policy implementation. However, as noted in Table 5, some situations are more amenable to top-down solutions, while others are more conducive to bottom-up approaches. Thus, it is more of a question of fitting the right approach to intergovernmental relations to the right situation than it is of assuming that one approach works better than another.

However, as the history of Narragansett Bay governance also demonstrates, the larger governance system is one that has evolved towards increased complexity and interdependency.

Policies and programs are linked in complex ways with actors at each level of government having important roles and the opportunity to exert leadership in different situations. This likely explains why scholarship on policy implementation has largely been supplanted by scholarship on intergovernmental management, networks, governance and collaboration. As the governance history demonstrates, getting things done today to address problems impacting Narragansett Bay demands pragmatism. It demands professionals who can creatively navigate their own bureaucracies and work collaboratively with other professionals from federal, state and local governments as well as nonprofits and the private sector to leverage resources, build support, and find ways to work together to improve or restore the environment. While efforts to improve network governance are nothing new, they are increasingly common today as a result of the pragmatic realities of the complex governance arrangement that exists for Narragansett Bay.

Chapter 3: Attributes of healthy and sustainable network governance

Introduction

This chapter turns the focus towards identifying the attributes that foster healthy and productive network governance processes. It is clear that network governance processes can produce very different patterns of intergovernmental relations. It also appears that some patterns of intergovernmental relations were more productive than others in terms of enhancing the governance of the Narragansett Bay watershed. The team deliberately chose to avoid using terms like *success* or *failure*. Instead, the focus is on identifying attributes of network governance arrangements that help sustain their healthy and useful life.

While in some instances federal, state and local officials have the freedom to craft and design their own governance structures, in other instances some other actor (e.g., a federal or state agency, Congress, etc.) may define important features of the network arrangement. As a result, state and local officials are left to work within, or are constrained by, important features of the governance system that have been thrust upon them. Thus, whether or not the program or planning process is a good idea or is well designed, federal, state and local actors may still be compelled to interact in ways that may or may not be productive or produce lasting changes that enhance the overall health of Narragansett Bay. Thus, an effort could be viewed as *failing* from the standpoint that no one implemented a plan, but the effort may also develop important new institutions or intergovernmental relations that serve to enhance or make future governance efforts possible. Conversely, a governance effort could produce a very unhealthy pattern of intergovernmental relations that spawns conflict and leads to the dismantling of existing institutions but also produces important environmental improvements.

Different patterns of intergovernmental relations exemplified in the long history of Narragansett Bay's governance reflect competing views of federalism and the proper relationship between local, state and state federal governments. In essence, there is no answer to the question of whether federal, state and local priorities should guide decision making. Thus, perspectives about success and failure are often shaped by one's views about priorities and value judgments on which level of government should drive decision making on a particular issue. The reality of the U.S. federal system is that governance is a messy process shaped by competing values, priorities, and perspectives that are reflected in overlapping agencies at different levels of government — each of which has equally valid interests. Thus, healthy network governance processes provide a forum for resolving legitimate differences in ways that allow actors to pursue shared policies and priorities rather than having one perspective always viewed as superior to another.

Traditional notions of success or effectiveness also imply that the goal of creating the network is for it to endure for long periods of time and that disbanding a network or ending an effort to enhance governance in Narragansett Bay should be viewed as a failure. Nothing could be further

from the truth. Networks, like other organizational forms, have a useful life. When the useful life has passed, it is time to allow network resources (staff time, funding, etc.) to be redeployed in new ways. Network members often fail to think in those terms. They escalate their commitment to prolong unhealthy network processes whose useful lives are in decline. This freezes and traps network resources that could possibly be allocated in more productive ways. Others are reluctant to disband or change the network because they fear losing valued personal relationships or benefits associated with participation. However, holding onto networks in decline can strain these very same relationships and make participants less willing to participate in subsequent network governance processes (Imperial et al. 2016a).

The concept of a *healthy and useful life* also draws attention to the fact that network processes require constant nurturing. Without it, hard-fought gains are easily lost. Many times the nurturing is gentle and continual, while other times fundamental transformations are needed. The focus on healthy network processes also draws attention to those unhealthy situations that researchers have identified as limiting a network's useful life. Some of the general symptoms of poor health in network processes identified in the literature are summarized in Table 6 (Imperial et al. 2016a).

This chapter of the report builds on the analysis of the different attempts to improve and enhance the governance of Narragansett Bay by identifying those attributes of governance networks that appeared to foster and sustain healthy network processes and include:

- Strategic long-term focus.
- Importance of a shared problem/solution.
- Shared decision making.
- Entrepreneurial leaders.
- Leveraging resources.
- Network coordinators.
- Ability to adapt and reconfigure the network.

While each of these attributes is well supported in the literature on network governance, the team also identified four additional attributes that receive much less attention in the literature but appeared to also foster the development of healthy network governance processes:

- Science is used to justify policy.
- Communication and information sharing is the norm.

Table 6: Healthy versus Unhealthy Network Processes

Signs of Healthy Network Processes	Signs of Unhealthy Network Processes
If asked who is in charge of the network, many members feel empowered to represent the network because it functions as a cohesive whole.	If asked who is in charge, network members identify a small core group of individuals.
Network members experience a strong sense of shared identity and are committed to the network.	Network members view the network in instrumental terms and view membership as an opportunity to advance their individual (or organizational) interests.
Network members and the expectations associated with membership are identifiable.	It is hard to identify network members and the expectations of membership are unclear.
Network membership and participation is motivated by a desire to collectively address a well framed focal problem(s) and solution(s).	Network members have trouble identifying the problem(s) or solution(s) that motivates their participation.
Network activities are built around shared goals and priorities.	Network activities are structured around the priorities of funders or the main resource providers.
Members look forward to and value their opportunities to participate in network processes.	Network members view the network as unnecessary bureaucracy and question the time required to participate in its processes.
Resources to support network processes are distributed among many members or come from a variety of external sources.	Network processes are heavily dependent on contributions from a small group of members or a single external funding source.
Network processes and structures are self-organized.	Critical aspects of the network's processes and structure are specified by external actors.
Networks spend the time required during the first two developmental stages to develop authentic processes and structures.	External forces such as set deadlines or external agencies force networks to move faster than is desirable.

Modified from: Imperial et al. 2016a

- Participatory processes are designed to build support.
- Local government is involved.

The following sections briefly describe each attribute and provide examples and short vignettes to illustrate how the presence (or absence) of the attribute contributes to sustaining the healthy and useful life of network governance processes. For consistency purposes, the examples used are confined to those programs, organizations and governance efforts described in Chapter 2.

Strategic Long-term Focus

One source of tension in many of the network governance efforts is the desire to approach basin problems in a synoptic, integrated fashion. However, there are practical limits in terms of how much any collection of policies and programs (or governance network) can be integrated at the horizontal or vertical level (Imperial 2006). In essence, while network participants should be encouraged to think holistically about watershed problems, network governance is an inherently strategic endeavor (Imperial & Hennessey 2000a; Imperial 2005a). Network governance tends to work best when strategic issues can be identified that present win-win or at least win-no-lose situations for network participants (Imperial & Hennessy 2000; Wondolleck & Yaffee 2000; Imperial & Kauneckis 2003; Kauneckis & Imperial 2007). Consequently, it is unlikely to be an appropriate strategy for addressing controversial problems involving win-lose situations (i.e., zero-sum games). Moreover, while participants work together on some issues, they have to be willing to agree to disagree on others and respect these differences, if they are to maintain cooperative working relationships.

It is also important for the network to maintain a focused effort over a sustained period of time. This requires developing shared priorities for funding and coordinated action. Otherwise, network governance has trouble moving beyond *random acts of environmental kindness*. In other words, network participants may implement a number of beneficial projects, but they are too limited in scope, scale, magnitude or duration to fundamentally improve environmental conditions in the basin. Thus, it is important for network members to develop performance measures and other reporting systems to enhance accountability and motivate sustained progress toward the shared goals and priorities over a period of time long enough to achieve desired outcomes.

There are several cases that illustrate the need to think holistically but to structure network governance so it can act strategically while maintaining a sustained focus on problem solving. The New England Interstate Water Pollution Control Commission selected a set of overarching themes, beginning with its ongoing effort to create water quality classification agreements for interstate water bodies, federal grants, wastewater treatment technology and construction projects, and developments in federal and state legislation. By the late 1960s, as federal laws became stronger, it reassessed its role, (NEIWPCC 1967) and identified emerging issues such as pollution from boating, oil pollution, the need for training and certification of wastewater

treatment facility personnel, and issues of water supply and toxic waste. In the early 1970s, it featured scientific monitoring of Narragansett Bay and other receiving waterbodies. In the 1980s, with dramatic cuts in federal expenditures, it again focused on emerging issues including ground water protection and underground storage tanks, acid rain, land use controls and wetlands protection. The development of the Narragansett Bay Commission is another positive example of the value in maintaining a lasting strategic focus on a limited set of issues.

Conversely, several cases reveal the danger with a synoptic approach that attempts to address all bay problems simultaneously. Perhaps the best example in this respect was the Narragansett Bay Project, which interestingly was formed during the same time period as the Narragansett Bay Commission. The Narragansett Bay Project was one of the initial members of the EPA's National Estuary Program. The staff's vision was to develop a Comprehensive Conservation and Management Plan as a master plan for improving bay governance. In trying to achieve everything, it had no central focus that motivated network members to stay involved in network governance activities. As a result, the Narragansett Bay Project had difficulty in accomplishing much more than the projects funded with EPA implementation funds. Accordingly, once the Comprehensive Conservation and Management Plan was completed, network members went back to implementing their existing agency missions, and the plan's recommendations had little impact on guiding subsequent agency decision making. The Section 319 nonpoint source management plans suffer from a similar problem. Since EPA requires the plans to address a comprehensive set of diverse nonpoint source problems and implementation funding priorities change frequently, it is hard to prioritize implementation efforts in a targeted way for a sustained period. As a result, the implementation efforts under the Narragansett Bay Project and the Section 319 program often look like *random acts of environmental kindness*. As noted in the previous section, projects may be innovative and bring about environmental improvements but — depending on their scope, scale, duration and magnitude — also may be insufficient to address the larger problem.

Importance of Shared Problem/Solution

For a network governance process to sustain a healthy and useful life, it must be focused on a shared purpose or mission (Imperial & Hennessey 2000a). Accordingly, healthy network governance utilizes framing processes that produce cognitive shifts among network members to change deeply held mindsets and to create space for network members to find productive ways to work together. The way a network's goals, problems and solutions are named, explained or interpreted will have an impact on who will want to join, contribute and support network governance (Crosby & Bryson 2005 p. 191). It also influences whether constituencies both inside and outside the network view its work as legitimate and worth supporting (Huxham & Vangen 2000 p. 1169; Imperial & Kauneckis 2003; Ospina & Foldy 2010; Saz-Carranza & Ospina 2010 p. 331). Two types of interrelated framing processes occur. Problem-framing produces changes in the shared definition of problems or their causes (e.g., a shift from a symptom to a root cause) (Imperial & Kauneckis 2003; Imperial 2005a; Kauneckis & Imperial 2007). As a result, it can change the sense of the importance or scope of the problem and change the range of interests affected by a problem (Imperial & Hennessy 2000a; Imperial & Kauneckis 2003; Kauneckis &

Imperial 2007; Foldy et al. 2008). Just as network members change their thinking about problems, similar shifts may emerge in how members frame solutions to shared problems (Foldy et al. 2008). This can include a change of approach or the introduction of new policy instruments (and enlarged network membership). Or, it can result in greater clarity and specificity in terms of a necessary solution. Reframing problems and solutions creates strategic opportunities to expand the network and attract new resources. It can also serve as a strong motivator for a sustained effort to address shared problems (Imperial et al. 2016b).

Chapter 2 demonstrates that when network governance for Narragansett Bay is viewed through a historical lens, it becomes much easier to see how the framing of problems and solutions changes over the decades. Perhaps the earliest effort to frame the water quality problems affecting the watershed was when the Massachusetts Legislature appointed a Sanitary Commission in 1849 to conduct a sanitary survey of the state. The resulting report in 1850, generally known as the Shattuck Report, has long been regarded as the seminal document in public health (Shattuck 1850). Its sweeping findings and recommendations were so influential that the report was reprinted in 1948 by the Harvard University Press. What is interesting is that despite the scope and quality of its work and its wide-spread availability to Massachusetts and Rhode Island officials, environmental sanitation was slow to be incorporated into urban development. An interview with Dr. Southwood Smith, a physician in England, revealed the awareness of sanitation and health links:

> I have been accustomed to express the fact in this way: If you trace down the fever districts on a map, and then compare that map with the map of the commissioners of sewers, you will find that where the commissioners of sewers have not been, there fever is prevalent; and, on the contrary, wherever they have been, there fever is comparatively absent. Some idea may be formed of the evils which our negligence in the matter of sewage and drainage inflicts, when I tell you that the annual deaths from typhus fever amount to 16,000, and the attacks of this loathsome disease to between 150,000 and 200,000. (Shattuck 1850 p. 24)

Shattuck and his fellow commissioners devote a considerable amount of their report on the seemingly overwhelming challenge of public education and outreach.

> The dark stream of disease and death, is every day and every hour crowded with victims, carried down upon its ever flowing current beyond the limits of time, and all are unmoved and without emotion or excitement. The people "haven’t time to consider it;" and make no attempt to arrest or lessen the amount of disease and death that constantly float, in their onward course, on these dark waters (Shattuck 1850 p. 198).

Accordingly, while the connection between urban development, sanitation and disease was known by the 1850s, it took much longer for the problem and corresponding solutions to get framed in ways that allowed local officials to begin addressing the public health problem.

Accordingly, the problem is initially framed as "The quick removal of fecal matter and liquid refuse from dwellings" and the need to eliminate 'miasmas' because "Fevers and many other diseases, especially among children, are certain to break out, and become malignant, if the emanations from such filth exist in the air around dwellings (Shedd 1874 p. 7)." By 1893, the problem is reframed ever so slightly as reflected by the concern shown by the City of Providence that "The greatest source of danger is from the introduction of disease germs by the admission of sewage into the stream by the natural or artificial drainage along its banks." City officials also begin reframing solutions by identifying the need to shift freshwater sources to protected reservoirs rather than drawing from the Pawtuxet and other rivers: "Bacteria and other microorganisms, the results or accompaniments of the decomposition of vegetable or animal matter and particularly of sewage emptied into the stream, in large proportion of a harmless nature, but also liable to include the dreaded bacilli of typhoid, diphtheria, cholera and other germ-produced diseases (City of Providence 1893 p. 4)."

Gradually the water quality problem is reframed as one with regional, downstream impacts in marine waters. For example, in 1918, the Commission of Shellfisheries reported that "Pawtucket, Central Falls, and East Providence all contribute to this pollution through the discharge of sewage and manufacturing wastes into the Blackstone, Seekonk and Moshassuck Rivers" (Commission of Shellfisheries 1919 p. 22). A 1928 study by the U.S. Public Health Service also clearly showed the relationship between oyster health and pollution and the solution is then reframed as a result of shellfishing closures being instituted in the Providence River (Fisher and Acker 1935). Thus, water pollution became redefined as a statewide issue, which then had legal and institutional implications. Eventually, the problem is reframed to include not just impacts on public health but also the impacts on other recreational uses of the bay. For example, when Rhode Island eliminated its Board of Purification of Waters in 1935 and then created a new pollution control division in the Department of Health, it was because: "The menace of pollution to the rich shellfish grounds and excellent recreational facilities of Narragansett Bay was chiefly responsible for the public demand for antipollution legislation (Shea & Wright 1937 p. 493)."

Indeed, what is clear from many of the case examples provided in Chapter 2 is that healthy and useful network governance processes often provide an important mechanism for helping society to frame and reframe problems and solutions. This can lead to new institutions being created and can build public and political support for new actions to address bay problems.

Shared Decision Making

The team's analysis also reveals the important role that intergovernmental relations and federalism play in shaping both healthy and unhealthy network governance processes. The evolution of the governance network for Narragansett Bay clearly reveals that the ability for one actor in the network to compel another to act in a particular way is often quite limited. Thus, healthy and useful governance processes need to find ways to motivate federal, state and local actors to get involved for a sustained period of time if they are to make progress in addressing shared problems. Typically, this requires enacting relational processes that view members on

more equal terms even though significant power differentials may exist outside network processes. Thus, network processes and structures are as central to network governance as participants and their behaviors (Huxham & Vangen 2000 p. 1166; Morse 2010). The challenge is to forge unity out of the diverse resources, organizational characteristics, values, goals, geography, demographics and cultures that members bring to the network (Mandell & Keast 2007; Ospina & Foldy 2010; Saz-Carranza & Ospina 2010).

The literature describes a wide range of strategies for promoting participatory network processes that promote shared decision making. These include: *facilitating and nurturing member interactions* to provide a unifying vision to the work of diverse organizations (Ospina & Saz-Carranza 2010 p. 417; Saz-Carranza & Ospina 2010 p. 331); *promoting openness and participation* of members in decision making, showing them respect, giving them a sense of value to the network, and ensuring a balanced distribution of power inside the network (Ospina & Saz-Carranza 2010 p. 419; Saz-Carranza & Ospina 2010); *mediating member interactions* to overcome differences among members by creating spaces for dialog and interaction, recognizing member involvement, and disseminating information within the network (Saz-Carranza & Ospina 2010 p. 350); *cultivating and valuing the personal relationships* formed between network members (Ospina & Foldy 2010 p. 300; Ospina & Saz-Carranza 2010 p. 418); and *utilizing equitable governance processes* such that equal participation is a natural or routine form of engagement (Ospina & Foldy 2010 p. 300).

While the archival data impose limits on understanding how early network governance processes operated in practice, it is possible to determine their general orientation in terms of whether network decisions were shared among network participants or were imposed upon network participants by one or more network members. It is also possible to make some general observations about both the opportunities and level of involvement that network actors had in shared decision making.

Several cases illustrate how there can be quite different approaches to shared decision making and the merits and limitations with each approach. At the broad regional level, the New England Interstate Water Pollution Control Commission continues to provide a useful forum for identifying both regional issues and making shared decisions about regional priorities for implementation actions. For example, it provided an important mechanism for fostering the regional cooperation needed to solve the mercury pollution problem in terms of reducing current and future sources within New England to near-background levels. Conversely, the New England River Basins Commission functioned at a similar geographic scope but was dominated largely by federal officials. As a result, state and local officials had much less involvement and ability to participate in shared decision making.

The level of formality in the shared decision processes also varies significantly. For example, the development of the Salt Ponds Special Area Management Plan involved a series of informal discussions and negotiations between the Coastal Council and each town to ensure there was common agreement about the density of development in this sensitive watershed. The adoption of a common set of policies then allowed the Council and local officials to continue making a set

of shared decisions regarding future development. Conversely, the Rhode Island General Assembly established the Narragansett Bay Commission's governing structure with its enabling legislation.

The Narragansett Bay Project provides another interesting example. As one of the founding members of the EPA's National Estuary Program it utilized a formal shared decision-making process called a *management conference* that was required by the 1987 amendments to the Clean Water Act. This process included a management committee, which was quite large and involved state and local officials as well as representatives from different nongovernmental organizations. All of these players were allowed to participate in shared decision making. However, the executive committee was quite narrow and key state officials who would be affected by the Comprehensive Conservation and Management Plan recommendations were left off the committee until late in the planning process. While the latter stages of the planning process were arguably dysfunctional and generated a great deal of conflict, agreement on the final Comprehensive Conservation and Management Plan only occurred once the executive committee members all recognized that the competing concerns were legitimate and reached a shared agreement on its contents (Imperial et al. 2000, pp. 27 - 31). In other words, it took the recognition that no one actor at the federal or state level was going to compel the others to accept its version of the plan. Once this was accepted, the only viable option became modifying the Comprehensive Conservation and Management Plan in a way that accommodated the affected interests (Imperial et al. 2000).

Entrepreneurial Leaders

Another theme that emerged from this analysis of Narragansett Bay's governance is this. Strong leadership plays a significant role in developing and sustaining healthy network processes. The finding is consistent with previous research that also finds that leadership is a critical factor in the success of large landscape conservation efforts (Imperial et al. 2016b). For example, Leach and Pelkey's (2001 p. 381) review of 37 watershed studies revealed that participation by an effective leader, coordinator or facilitator was one of the two most frequently cited keys to success. Research suggests that the work of leadership in network settings is quite different from a hierarchical setting (Imperial et al. 2016b). The traditional view of a leader who works to influence or transform a group or organization (i.e., followers) is problematic in networks where organizations are relatively autonomous, and there is no consensus on who needs to be influenced (Huxham & Vangen 2000 p. 1160; Phillips et al. 2000; Saz-Carranza 2012). Instead, leadership is frequently shared by many individuals (or organizations) across the network at different points in time. Some individuals are pioneers who catalyze action and recruit members. Some are sponsors who bring credibility and legitimacy to the network by their participation. Other network members may play the role of thought leader(s) by providing their knowledge and expertise to advance governance efforts. Networkers help engage with people across jurisdictions, while stewards focus on coordinating activities and ensuring results. Facilitators or brokers can focus on bridging differences and forging agreements that advance network processes. Finally, champions are needed to promote the network governance process throughout

its development (Khator 1999; Mandell & Steelman 2003; Imperial 2005b, McKinney & Johnson 2009; Imperial et al. 2016b).

The research methodology used by the team did not produce rich, detailed data about different leadership functions. However, the analysis of the historical documents and the resulting timeline clearly identify leaders who helped foster useful network governance processes. Indeed, leadership often appeared to be a critical factor in whether network governance efforts attracted the political support and financial resources necessary to sustain governance efforts over long periods of time. One of the more interesting aspects of these historical cases is the profound influence and contributions that selected individuals made in terms of advancing the governance of Narragansett Bay. Conversely, at other critical moments in history, leadership was lacking, or network members were unwilling to follow the vision being advanced by the champion, or saboteurs hindered network governance efforts.

There are many examples of leaders that emerged at different points in the history of Narragansett Bay's governance. One of the most influential leaders was undoubtedly Walter Shea, who represented Rhode Island on the New England Interstate Water Pollution Control Commission from its inception in 1947 until 1988. Shea was also the Chief of the Division of Purification of Waters at its inception in 1935 when Gov. Theodore F. Green abolished dozens of independent boards and commissions including the Board of Purification of Waters and folded them into a more modernized system of state government. By 1937, Shea was providing concise, far-ranging, but also cautious assessments of what could be done to control pollution. Foreshadowing pragmatic views that would be expressed in the early 1970s as national water pollution control strategy dramatically shifted, he wrote:

> If administration of antipollution laws is to be carried out on a sound economic basis, the problem cannot be solved in haste. Even when formal proceedings under the law have been brought against recalcitrant offenders against the pollution statute years of delay have passed before the desired end was accomplished. It is doubtful that if mandatory authority were given a Federal agency for stream pollution control, accomplishment in this field would be speeded up (Shea & Wright 1937 p. 499).

Perhaps his most significant achievement is what came to be known as the Shea Report (1946). It contained Walter Shea's brief diagnosis and recommendations to Gov. Pastore for controlling water pollution in Rhode Island's streams, Narragansett Bay and Mount Hope Bay. The report is a mere 14 pages of text but sets the stage for perhaps the most dramatic progress in pollution control to occur before the establishment of the Narragansett Bay Commission in 1980. The plan was succinct and involved a major expansion of sewer lines and modern wastewater treatment facilities for the entire Providence metropolitan area as well as Newport and other smaller municipalities around the bay. Much of this was accomplished in little more than a decade through strong public and political support, state voter support for bond issues, a major infusion of federal funds for planning and construction, and the creation of the Blackstone Valley District Commission. The capstone was upgrading of the Bucklin Point treatment plant to secondary treatment in the early 1970s, over 40 years after the City of Pawtucket was originally targeted in

a legal action by the state. This process was destined to repeat itself, beginning in the late 1970s as the City of Providence failed to comply with federal and state requirements, and prompting a further takeover of municipal pollution control facilities by the state and even larger-scale public and ratepayer investments.

Shea's proposed water quality classification scheme in terms of planned uses and conditions also remained little changed and not fully attained over the next four decades. While federal authorities increased their efforts to enforce water pollution control laws via enforcement conferences aimed at improving the Blackstone River and Mount Hope Bay, Shea continued to argue for patience: "It is felt that pollution control in the Blackstone River has proceeded as rapidly as conditions permitted and that the time is not distant when all wastes, including industrial, will be under treatment (U.S. Department of Health, Education and Welfare 1965 p. 218)." Three years later, when the enforcement conference resumed, he objected to a compliance date of 1969 set by the Federal Water Pollution Control Administration (U.S. Department of the Interior 1968 p. 95) and argued that compliance is contingent on federal funding of municipal projects, which appeared to be diminishing. Based on the steps taken by Rhode Island to eliminate municipal and industrial pollution at the time, he stated that "all discharges of pollution into the Ten Mile River in Rhode Island have been eliminated (US Department of the Interior, 1968, p. 96)." At the Mount Hope Bay enforcement conference in 1971, where Rhode Island closed the waters for shellfishing, federal officials determined that 90 percent of the pollution was from Massachusetts sources. Shea indicated that "I don't want to accept 10 percent of the pollution problem in Mount Hope Bay when there are no Rhode Island sources of either municipal pollution or industrial pollution (US EPA 1971 p. 283)." Of course, just a few short years later, a combination of a dramatic increase in federal involvement and a groundswell of public concern upended his moderate approach. One signal of this was the 1971 publication of Our Dirty Water and reporter Robert Frederiksen's successful lawsuit to open up 3,516 completed files on state pollution investigations (*Providence Journal Co. v. Shea, 292 A.2d 856 (1972)*). Nevertheless, Walter Shea was one of the most influential leaders of bay governance for nearly 50 years, and he exerted this leadership in different ways through various efforts to improve the governance of Narragansett Bay.

It is also clear that some of the most influential leaders have actually worked in nongovernmental organizations. Save The Bay, a nonprofit advocacy organization, has had three executive directors who all played important leadership roles in their own right. This includes its founder, John Scanlon and his successors Trudy Coxe and Curt Spalding. "One of Save The Bay's most marked characteristics has been its strong and continuous leadership, with the top position held by only four people in nearly 40 years (Wyss 2009 n.p.)." The organization's first two leaders, John Scanlon and Trudy Coxe, were prominent, highly visible activists during their tenures. "Curt Spalding, who took over in 1990, was never a firebrand like Coxe. However, he had vision and foresight to transform the organization financially and take it down paths never ventured (Wyss 2009 n.p.)." Coxe and Spalding also went on to become involved in bay governance after leaving their positions with Save The Bay. Coxe left to become the director of the NOAA Office of Ocean and Coastal Management and then went on to lead the Massachusetts Executive Office of Environmental Affairs and the Massachusetts Watershed Initiative, which spawned sub-basin efforts benefiting Narragansett Bay.

> Working with the Massachusetts Watershed Coalition and the Massachusetts Watershed Watch Partnership, Coxe helped to catalyze broad collaboration among state agencies as part of the MWI (Massachusetts Watershed Initiative), joined by Region 1 (New England) of the EPA … The state's Department of Environmental Protection was reorganized to build upon the watershed approach … (Sirianni & Friedland 2001 p. 22).

Spalding, as leader of Save The Bay, "developed a model of an independent citizens' organization that can collaborate with regulatory agencies and industry without being coopted and can define its essential mission as ongoing civic education and the public work of restoration without losing the capacity to engage in conflict, if need be (Sirianni & Friedland 2001 p. 4)." In 2009, Spalding left to become the administrator of EPA Region 1 (New England), where he continues efforts on behalf of Narragansett Bay such as the Southeast New England Coastal Watershed Restoration Program announced by EPA in October 2014.

There were individuals in the scientific community that also served important leadership roles in various governance efforts. Perhaps most influential was Dr. Scott Nixon, a scientist at the University of Rhode Island's Graduate School of Oceanography. Nixon also served as the Director of Rhode Island's Sea Grant Program.

> Beginning with his seminal work in Bissel Cove, Rhode Island with Candace Oviatt, other early studies on the ecology of mussel and sea grass beds and subsequent analyses of the nutrient dynamics, primary productivity and fisheries yields of lagoons, Scott spent a significant portion of his career developing an understanding of how these shallow systems work. Inspired by his mentor H.T. Odum's pioneering use of mesocosms and following on the highly successful Marine Ecosystems Research Laboratory (MERL), a 5-m (meter) deep mesocosm facility he and his colleagues built to represent Narragansett Bay, Scott built a complementary facility of 1.1-m (meter) deep lagoon mesocosm to mimic the coastal ponds of southern Rhode Island. (Brush, 2014, p. S-1).

Dr. Nixon's modeling work, studies of the bay including explorations and synthesis of the history of pollution in the watershed, had an important impact on policy debates.

While many of the leaders were quite visible in the news media, others arguably were the true unsung heroes in the Narragansett Bay saga. Perhaps two of the more remarkable of these are Samuel Gray and Paul Pinault. Samuel Gray designed the Providence sewage system in the late 19th century (Gray 1884). At the time, the City of Providence was a national pioneer in the 1880s. However, a hundred years later, it was a national villain subject to countless water quality violations. Enter Paul Pinault. Pinault became the long-term director of the Narragansett Bay Commission, which was established to once again fix the water quality problems in the upper bay. Pinault worked to build and reshape the City of Providence sewage system to meet the changing demands and expectations of the 21st century. By the time Pinault retired after 25 years of service as the Commission's director, Providence was once again a national pioneer due to its award-winning pretreatment programs, state-of-the-art treatment facilities, alternative energy

use, and massive combined sewer overflow treatment program — with additional phases of that project still underway today. In 1995, EPA lauded the Fields Point plant as the best large treatment facility in the United States. Journalist Peter Lord gave no faint praise to Pinault for these accomplishments upon his departure in 2006:

> For 25 years Paul Pinault may have done more to clean up Narragansett Bay than any other individual. Yet he may be better known in the halls of Congress than on the streets of Providence. Blame it on his laid-back demeanor, his avoidance of controversy. Or more likely, blame his line of work. Pinault is in charge of cleaning up the you-know-what in the sewers that nobody wants to talk about (Lord 2006).

Accordingly, a theme throughout many of the cases was that leadership (or the lack thereof) contributed to the development of healthy (or conversely unhealthy) governance processes.

Leveraging Resources

The power of network governance is its potential to internally redeploy the network's resources (e.g., staff, technical expertise, funding, equipment, etc.) in a more coordinated way to pursue shared priorities, policies and problems. Leveraging the network's resources in a more strategic way for a sustained period of time helps avoid *random acts of environmental kindness*. The historical view indicates that it is common to find that network members realize they lack access internally to sufficient resources needed to address their shared problems. This likely explains why the team's review of the history of Narragansett Bay governance has far more examples of new studies and plans than it does sustained implementation efforts over time. Similarly, external actors (e.g., federal agency priorities, available grant funds, enabling legislation, lawsuits, etc.) can impose priorities or constraints that limit the network members' ability to pursue the level of action desired. This is particularly true of the federal programs initiated during the creative period. These constraints sometimes create barriers and disincentives that inhibit network governance efforts. Conversely, when actors possess secure and stable resources (such as the case of the Narragansett Bay Commission), they are often able to sustain healthy network governance processes for a long period of time to pursue a shared strategy.

Since water pollution control often requires significant financial expenditures, it should not be surprising that the ability to leverage funding and manage the conflicts surrounding funding priorities is a constant theme across most of the cases described in Chapter 2. As early as 1886, the Massachusetts Commission, considering a General System of Draining for the Valleys of the Mystic, Blackstone and Charles Rivers pointed out that:

> The necessity of strict economy should not be lost sight of for a moment. Sewage at its cheapest is very dear, and it must always be remembered that the communities which will be called upon to pay for this improved sewage are already heavily taxed and often deeply in debt, and it may well be that a project for their relief might be so admirable that

> it would be ruinous. People can hardly be blamed if they prefer enduring a good deal of discomfort and considerable jeopardy to health rather than face possible bankruptcy and certain impoverishment (Massachusetts Commission 1886, p. vii).

The cost of sewage treatment and the ability of local officials to pay for these capital investments is a strong theme that cuts across the cases and is quite noticeable when one views bay governance from a historical perspective. Progress is made in building the first generation of treatment systems in the late 1800s and early part of the 1900s. This is obviously due in part to worsening water quality problems brought on by population growth and the Industrial Revolution. However, economically speaking, times were good financially. Things changed dramatically with the advent of the Great Depression and the reallocation of resources (funding, engineers who went to war, and the rationing of chemicals) as a result of WWII. These conditions made it much more difficult to leverage resources needed to make significant water quality improvements. Conversely, the postwar years of the 1950s and 1960s led to much greater federal investments in public infrastructure such as highways and sewage treatment grants, which helped subsidize the suburbanization of watersheds and movement away from urban centers. This led to another round of investment in new sewage facilities to serve these new population centers within the watershed.

As a result, when viewed from a state or local perspective, progress in addressing water quality problems was typically dependent upon local officials securing the requisite funding from state and/or federal grant programs. For example, at the 1965 enforcement conference on the Blackstone and Ten Mile Rivers, Worthen H. Taylor, Chief Engineer at the Division of Sanitary Engineering, Massachusetts Department of Public Health, reiterated that Massachusetts communities could not be compelled to collect and treat sewage in the absence of financing. He testified that:

> If we go here and independently have those communities set a date, I think they are going to rebel. If we can sit down with them and determine when these dates will be, without them reading it in the paper ahead of time as to what we have decided, we are going to get an awful lot better cooperation, and the program will be in effect several years ahead of what it would be if we went into an uncooperative situation that may arise from reading in the paper what has been decided for them. They might be led to this thing much easier than we can expect to push them (US HEW 1965 p. 253).

Walter Shea also pushed back on setting a rigid compliance schedule, echoing the opinion of the 1886 Massachusetts Commission:

> MR. SHEA: I don’t think the setting of dates is very realistic or very important. I think you get these things done by keeping pressure on the people, a constant pressure,

> bringing them in regularly to find out what they are doing, and so forth. I even have a great distaste for setting a date five years from now, or four years from now, to build something. I think in many cases we get it done before that.
>
> MR. STEIN: I am sure you will.
>
> MR. SHEA: And I think when you set a four or five-year date in the future, it kind of removes all the urgency from that, from the proposal, and if you will tolerate four years, you are likely to get ten years.
>
> …
>
> MR. SHEA: If you look into the records of pollution control in Rhode Island, you will find where one of our cities was ordered to have plans to get things done and was ordered and re-ordered for a period of ten years, and they never did anything. (US HEW 1965, p. 262-263)

However, this century-old plea for patience appeared to end dramatically with the passage of the 1972 Clean Water Act, which embodied a very different pattern of intergovernmental relations. However, the ability to leverage the requisite resources remained a critical factor. Economic conditions during much of the 1970s and early 1980s with the recessions, energy crisis and high inflation rates created conditions that made it difficult for local governments to finance the capital investments needed to build or upgrade treatment systems. Accordingly, the inclusion of the Clean Water Act's construction grant program was critical to helping local governments make significant improvements in their treatment systems. The financial realities and politics associated with raising sewer rates in tough economic times are also why some cities like Providence resisted upgrading their treatment facilities. Conversely, the early success of the Narragansett Bay Commission is due in large part to the passage of the $87.7 million state bond issue, which meant that state taxpayers would subsidize the reconstruction of the City's upgraded treatment system. It also allowed the Narragansett Bay Commission time to gradually increase a rate structure that would generate sufficient revenues to operate its facilities while generating additional revenues for future facility improvements and expansions.

The 1987 amendments to the Clean Water Act replaced the construction grant program with the state revolving loan program. This shifted the burden of funding future upgrades to local governments. While the program provides discounted loans, the loans still require repayment. Thus, the financial burden for sewage treatment is now largely a local or regional responsibility. Meanwhile, the Clean Water Act mandates remained in place. The Narragansett Bay Commission case demonstrates the type of sustained progress that can be achieved when it is possible to leverage the requisite resources. It also reveals some of the new challenges on the horizon that are likely to occur as rates rise ever higher to pay for additional pollutant removal. This includes the challenge of developing equitable rate systems.

Network Coordinators

Governance focuses on making joint decisions; setting shared priorities; developing coordinated policies, priorities and procedures; and finding ways for network members to work together in productive ways (Wood & Gray 1991; Milward & Provan 2000; Imperial 2005a). However, since participation is often voluntary, even when actors are compelled to participate, they remain relatively autonomous (Frederickson 1996; Lynn et al. 2000; Provan & Kenis 2008 p. 231). Thus, a central challenge for members is to achieve some level of self-organization or structure that produces a level of coordination and direction for the network in the absence of a centralized authority that can compel organizations to act in a particular way (Frederickson 1996; Imperial 1999b, 2005a; Lynn et al. 2000; Milward & Provan 2000; Mandell & Keast 2007; Imperial et al. 2016a). The cases reviewed in Chapter 2 illustrate that governance networks are structured in different ways.

Some networks had the opportunity to design a governance arrangement from the ground up. An example is the Natural Resources Group (1969), "an informal gathering of citizens that included scientists and professors from the University of Rhode Island, as well as Dan Varin of the state Department of Environmental Management (MacKay & Phillips 1999)." This group started thinking about Narragansett Bay in the late 1960s. Their recommendations to Gov. Frank Licht in 1969 focused on "(1) The lack of existing state or local government management policies and goals relative to the bay; and (2) the lack of information necessary to develop goals and policies (Amato & Whitaker 1979)." Gov. Licht responded to the proposal by establishing a Committee on the Coastal Zone to identify the state's resource problems and recommend a course of action. This network had the structure imposed on them by the governor. Initially, the legislation proposed by the group focused on establishing strong state controls for uses of the shoreline. That proposed legislation, however, failed to pass the Rhode Island General Assembly, due in large part to resistance from municipalities afraid of losing their power to control land use. However, a flurry of large coastal industrial projects the following year changed the decision making climate. As well, a modified structure for the Coastal Council was proposed that allowed Rhode Island's first coastal zone management law — one of the first in the United States — to pass the Rhode Island General Assembly, a year before the Federal Coastal Zone Management Act (Imperial 1999a; Imperial & Hennessey 2000b).

Indeed, the cases present a great deal of variety in terms of how their structures were established. For example, while the members of the New England Interstate Water Pollution Control Commission were involved in creating their structure, which then became institutionalized in a federal-state compact, the New England River Basins Council had its structure imposed on it by federal statute. Meanwhile, the Narragansett Bay Commission has little flexibility in its organizing structure because that structure is imposed by a state statute. The basic coordinating structures of the Section 208 planning process, the Narragansett Bay Plan, the Section 319 plan, and the state's Section 6217 Coastal Nonpoint Pollution Control Program were similarly established by federal statutes. However, state officials had considerably more flexibility in terms of how they operationalized those requirements during the planning process. State and local officials also had considerable flexibility in terms of how they structured the coordinating

arrangements to implement these plans. Alternatively, while the Coastal Council has worked out different organizing arrangements for each of its special area management plans to coordinate with affected local governments, it has developed a set of planning guidelines that local governments conform with in order to get an approved harbor management plan. Many of the ad hoc efforts at the local level such as the Greenwich Bay Reclamation Plan and regional efforts such as those to address the problems in the Taunton and Blackstone Rivers had more of a self-organizing quality, where the development of their structures was more of an emergent process.

The cases also illustrate that there are different ways to achieve coordination among network members. They can produce a set of shared rules, priorities and policies that are then used to coordinate subsequent decision making. For example, the Coastal Council worked with the affected local governments on the Salt Ponds and Narrow River Special Area Management Plans to craft a revised set of shared zoning policies to guide state and local decision making. This allows for coordination without the need for a centralized, hierarchical coordinator. In other cases, the networks developed second-order organizations or organizations comprised of other organizations. When a group of individuals or organizations begins to embrace collaborative processes, make joint decisions, and act as a single entity, they are, in effect, acting as a new organization (Finn 1996; Jones et al. 1997). Researchers refer to this organizational form in different ways. This includes referring to them as partnerships (Teisman & Klijn 2002), coalitions, alliances/strategic alliances (Gulati 1995; Osborn & Hagedoorn 1997; Dyer & Singh 1998), consortiums, network brokers (Mandell 1984), collaborative organizations (Imperial 2005a), and network administrative organizations (Provan & Milward 2001). These second order organizations provide a mechanism for coordinating actions and, therefore, provide an important means of enhancing network governance (Jones et al. 1997). They also provide a variety of functions that advance network governance by serving as a convener, catalyst for action, conduit for information, advocacy organizer, funder, technical assistance provider, capacity builder, partner, dispute resolver or facilitator (Himmelman 1996). The Narragansett Bay Commission and the New England Interstate Water Pollution Control Commission provide examples where these organizations have contributed to healthy network governance by helping coordinate and prioritize actions among network members to address water quality problems. Conversely, the Narragansett Bay Estuary Program and the New England River Basins Commission were intended to provide this role but were largely unable to achieve much success — largely due to the fact that they exhibited many attributes of unhealthy network governance processes.

Ability to Adapt and Reconfigure Network

One advantage to utilizing a historical focus to analyze network governance over a period of time is that it draws attention to the fact that networks, like other organizational forms, have a useful life (Imperial et al. 2016a). This finding supports Genskow and Born's (2006, p. 59) contention that it is quite common to find that networks ebb and flow, become dormant or extinct, or resurface at later dates with new and old participants using different organizational forms. The research data reveal the wide range of life cycles that networks can experience. Some networks demonstrate a remarkable ability to adapt, change and reconfigure themselves in fundamental ways by changing their membership structures or focusing on new problems.

Sometimes these changes occurred over relatively short time periods. For example, during the long storied history of the New England Interstate Water Pollution Control Commission, it continued to shift its focus and work to recognize and build on changes that were occurring in the broader institutional system and to consider how society was reframing problems and solutions associated with water quality problems. Similarly, the Narragansett Bay Commission has shown a remarkable ability to continue addressing new problems such as combined sewer overflows, stormwater runoff and denitrification. Others experienced these changes over much longer time periods. For example, after about 20 years, the EPA imposed changes in the Narraganset Bay Estuary Program's management structure because it had grown increasingly complex. As part of the restructuring, program management is now part of the New England Interstate Water Pollution Control Commission (NEIWPCC); with reductions in staffing, and efforts that are in alignment with a new EPA grants initiative called Southeast New England Program focused on watershed and estuarine restoration over a broader area in Southeast New England. Accordingly, one of the strengths of taking a historical approach is that it reveals the changes that occur over both relatively short and much longer time periods.

While some efforts such as the Narragansett Bay Commission and New England Interstate Water Pollution Control Commission are quite resilient, others that are successful die untimely deaths — often due to the lack of requisite resources (e.g., funding or political support) or their inability to adapt and change in response to changes occurring around them. Dramatic examples of this occurred in Massachusetts and Rhode Island with the consolidation of boards and commissions into modern administrative departments. The Commonwealth of Massachusetts' 66th constitutional amendment in 1918 and Chapter 350 of the general laws of 1919 created the Department of Public Health as well as the Metropolitan District Commission, which dealt with the water supply and wastewater issues of the Boston region (Massachusetts Bar Association 1918, p. 366). In 1935, newly elected Rhode Island Gov. Theodore Francis Green ushered in a *bloodless revolution* through legislation that eliminated hundreds of boards and commissions and formed 11 modern departments under his control. The Rhode Island Department of Public Health was created per the 1935 Public Law Chapters 2188 and 2250 as the successor agency to the State Board of Health created in 1878. It also took on the role of the Board of Purification of Waters created in 1920. Similarly, the efforts under Section 208 ended abruptly with the adoption of the plan when federal funding ended in 1981.

Perhaps of greater concern are those network governance efforts that lack some key attributes of healthy governance networks (discussed in Chapter 4). For example, some NEP efforts around the country have had great success in convening discussions that lead to shared decision making, the leveraging of resources from multiple sources, and coordinating or prioritizing subsequent actions to improve estuarine governance. Some NEP estuaries have also successfully maintained a strategic long term focus (e.g. Tampa Bay), and avoided addressing too many priorities simultaneously; at times a characteristic at time of the Narragansett Bay Estuary Program (Imperial & Hennessey 2000a). Other National Estuary Program (NEP) estuary programs, such the Delaware Bay Estuary Program have successfully tapped into corporate resources, which have been deployed in the context of specific and focused restoration activities. At times, governance network nodes may not be adding value; and this can freeze and trap resources (staff time, funding, equipment, expertise, etc.) that network members could redeploy in more

productive ways. While the Narragansett Bay Estuary Program was created to develop and enhance interorganizational relationships, at times, its existence strained these very same relationships (Imperial, et al. 2000). This, in turn, might make participants less willing to engage in subsequent network governance processes (Imperial et al. 2016a). Governance network reconfiguration will then allow network members to redeploy staff and resources in more productive ways. Fortunately, the EPA recently imposed a restructuring that moves the program's management to the New England Interstate Water Pollution Control Commission. Hopefully, this will allow for a reinvigorated network governance initiative, including deployment of additional resources needed for watershed and estuarine restoration over a broader region in Southeastern New England.

Another clear pattern throughout the history that the team examined is that people are much better at forming networks under the guise of some sort of planning process than they are at adapting these governance networks to fit the new demands and challenges associated with implementing the policies, plans and programs developed as a result of regional planning studies. A vivid example is the New England River Basins Commission, which carried out a series of watershed planning efforts in the 1970s, some of which were sustained by subsequent programs such as the Long Island Sound Study. Others such as the Southeastern New England Study for the Narragansett Bay watershed actually served as cautionary tales about the pitfalls of regional approaches (Metcalf & Eddy 1992).

From the perspective of one of its closest observers, the New England River Basins Commission was largely a success. Its life was cut short by a shift in politics at the national level that led to President Reagan signing an executive order terminating Level B Basin Commissions. "For the next fourteen years, New England was to enjoy a premier water and related land resources agency. The New England River Basins Commission grew from a chairman and a staff of three in 1969 to an agency with nearly fifty employees a decade later. Riding the crest of national environmentalism, the Commission left its imprint on virtually every river basin in the region" (Foster 1984 p. x). The four-year Southeastern New England Study, published in 1975, is, in fact, the only full-scale collaborative Rhode Island and Massachusetts watershed planning effort with a strong public participation component (New England River Basins Commission 1975a, 1975b, 1975c, 1975d).

However, the study was largely ignored by states and communities upon its publication, despite tackling a range of relevant issues including guiding growth, water supply, water quality, outdoor recreation, marine management, flooding and erosion, locating key facilities, and protecting natural resources (New England River Basins Commission 1975a, 1975b, 1975c, 1975d). "Historically local response to SENE (Southeastern New England Study) was negligible. What SENE did, however, was to usher in a period of increased federal and state coastal study/planning (Moor and Napolitano 1987, p. 16)." Indeed, many have viewed the legacy of New England River Basins Commission and the Southeastern New England Study warily. For example, Ingram (1973 p. 11) noted that while "New England (has) a particular sense of identity and a long history of cooperation," nonetheless "water is not a subject that raises regional cohesiveness." Although established with a high degree of independence in a fertile region for

cooperation, Ingram (1971 p. 14) notes that self-defense also provides a reason for some agencies to attend Commission meetings and participate in activities as watchdogs of agency self-interest and that "Coordinated planning offers no concrete reward for agencies not engaged in building water development projects. Rather than leading to consent for the agency to pursue its mission, the result to non-construction organizations may be simply the interference of a number of outside agencies in its work" (Ingram 1971 p. 16). Others have argued that the study constitutes a catalog of attributes of ineffective governance:

- The study was intended to focus on economic opportunities, yet an oft-heard criticism was: "this is a no-growth, anti-economy study."
- The problems identified were either general or someone else's, especially Greater Boston. No one would allow their water, which might be needed in the future, to be used by other communities today.
- Communities lacked the staffing and expertise to implement the recommendations.
- There was no sense of urgency to expend time and money on these issues versus other more pressing issues and imminent expenses.
- There was not enough (or accurate) scientific and engineering documentation to justify the broad-sweeping recommendations made.
- Land use recommendations were too controversial for local officials to want to spearhead their passage.
- There was no clear articulation of who should do what next in order to implement the recommendations.
- There was no direct link between the Southeastern New England Study plan and future implementation, e.g., no public funds for a treatment plant unless it was recommended in the plan.
- Follow-up implementation funding was unavailable, especially for the growth management portions (Metcalf & Eddy 1992 p. 2-5).

Despite these prior experiences, the Narragansett Bay Program embarked on a planning process and produced a Comprehensive Conservation and Management Plan that shares almost all of the same problems. Significant restructuring of the Narragansett Bay Estuary Program finally occurred in 2013, when it became clear that the management structure was overly complex and there were too many strategic goals.

This research team's hope is that the concept of a useful life can change the dialogue by emphasizing that even when networks are disbanded, they may still have had useful lives (Imperial et al. 2016a). Individuals and organizations learn to collaborate by collaborating. This collaborative know-how can be redeployed in subsequent network processes (Imperial & Kauneckis 2003). Trust and relationships can then provide the foundation for future network interactions. It is also possible that the now-dormant network is still valuable because it

possesses latent connections that can be reactivated at some later date, perhaps even for an unrelated purpose. For example, many of the relationships and experiences as a result of the Section 208 planning process ended up serving as the foundation for the planning processes associated with the Section 319 Nonpoint Source Plan and the Narragansett Bay Program's development of the Comprehensive Plan. Similarly, the relationships that the Coastal Council developed with local officials during the development of the special area management plans and the harbor management plans have facilitated interactions on other matters related to its permit program or to how it responds in the aftermath of coastal storms. As mentioned earlier, network processes should develop at their own pace and end when their job is done. Doing otherwise simply draws down on resources that could be directed at tackling other watershed problem (Imperial et al. 2016a).

Science is Used to Justify Policy

The environmental policy literature frequently notes the unique and important contribution that science often plays to the crafting of policy (e.g., Healey & Hennessey 1994; Weinberg 1972). However, there is also considerable debate in terms of the role that science plays in the policy process (Healey & Hennessey 1994). One of the more surprising findings from the analysis of these cases is that science was seldom the driver in terms of producing fundamental shifts in policy. There were also few examples where science generated the type of focusing event that produced the catalyst for change. Instead, it appears that science primarily played other roles in the policy process.

One such role was to gradually produce policy-relevant research over long periods of time to help stimulate the type of policy-oriented learning that then changed how policies and solutions are framed (Sabatier & Jenkins-Smith 1993, 1999; Weible & Sabatier 2009). Perhaps the most obvious example of this type of policy-oriented learning is the slow recognition of the interconnected nature of urban development, sanitation and diseases. Even though these connections were well-known as early as the 1850 Shattuck Report (Sanitary Commission of Massachusetts 1850), it was not until three decades later that there was general acceptance of the need to convey wastewater and animal waste away from households and streets by sewering Worcester, Providence and other cities. While the long series of pollution studies documented in Chapter 2 appears to have had limited direct effect in terms of identifiable policy change, they served to gradually educate and enlighten state and local officials and the general public about the need to address new problems. These studies were also an integral part of the framing and reframing of problems and solutions over the last 150 years, which is an integral part of policy-oriented learning.

Finally, the leadership of scientists such as Dr. Scott Nixon, who could synthesize research about water quality problems affecting Narragansett Bay and communicate this information in ways that state and local officials could understand was also important. When viewed over longer timeframes, this ongoing dialog helps foster the policy-oriented learning that produces policy change. Yet, there were surprisingly few examples of where science was clearly connected to

policy change. It was far more common to observe that the network governance efforts had a clear idea of what policy change they wanted and then used previous scientific studies to build the requisite public and political support needed to enact the desired policies. Similarly, state or local decision makers use these studies to leverage funding to advance water pollution control efforts. The studies also help to gradually reframe problems and solutions to make progress in addressing bay problems.

Similarly, rather than producing fundamental shifts in policy, science appears to have played a much stronger role in fine-tuning policies that already existed. For example, there is a long history of pollution control and efforts to protect the uses of the Ten Mile River watershed — shared between Rhode Island and Massachusetts and the municipalities of Attleboro, North Attleboro, Plainville, Seekonk, Pawtucket and East Providence. One recent development is the establishment of a total maximum daily load and allocation of nutrient loading limits to wastewater treatment facilities impacting the Ten Mile River watershed. The nutrient loading limits enacted for these water bodies are based, in large part, on the scientific research conducted by researchers Nixon and Oviatt, among many others (a veritable Who's Who of marine scientists still engaged and contributing to Narragansett Bay pollution and ecosystem research). In 1975, Nixon and Oviatt began a program of sampling to obtain data for the first numerical ecosystem model (Kremer and Nixon 1978). By the early 1980s, a set of innovative experiments being conducted in the newly created Marine Ecosystem Research Laboratory mesocosm would later provide the scientific basis for attempting to reduce nutrients such as nitrogen levels in the bay in order to attain water quality goals (Oviatt et al. 1986; RI DEM 2004). These studies were funded with EPA Center of Excellence funding. Ultimately, this research became the scientific support for more stringent wastewater treatment facility permitting limits. As a result, when the City of Attleboro appealed its mandated nutrient limits for nitrogen and phosphorus in 2008, the dispute ended in a dramatic rebuke by EPA's Appeals Board. More recently, a dramatic dispute over the setting of nutrient loadings limitations for the upper Blackstone Water Pollution Abatement District ended when the U.S. Supreme Court denied a petition for writ of certiorari (133 S.Ct. 2382 (2013), which let stand a 1st Circuit Court of Appeals decision (*Upper Blackstone Water Pollution Abatement Dist. v. U.S. E.P.A.* 690 F.3d 9) in 2013 that upheld the EPA requirements to reduce nitrogen and phosphorous loading, based a combination of narrative water quality criteria, and best available technology. Without the mesocosm studies, it is unclear if the EPA Region 1 nitrogen load reductions that were challenged would ever have been adopted or upheld in court.

Communication and Information Sharing

One of the more interesting challenges to emerge from this analysis was the need to communicate and share information among the diverse network of individuals and organizations affected by an issue or problem. This finding is consistent with the growing literature on collaboration and networks that notes the importance of keeping communication flowing even though network members are physically, professionally, politically, socioeconomically and even culturally diverse (Vangen & Huxam 2003 p. S67). This requires being sensitive to the media used to participate and communicate as well as to the frequency and duration of processes

(Huxham & Vangen 2000). Similarly, it is hard for the network to maintain a strategic focus, frame shared problems and solutions, make shared decisions, share leadership, or coordinate networks without effective communications processes. While some of the networks that were examined were able to do this effectively, others found that communication and information-sharing was a major challenge.

Prior to the 1972 Clean Water Act, Rhode Island state law imposed a greater penalty on the disclosure of pollutant discharge information for private wastewater sources than the infractions themselves. Robert Frederiksen's (1971) masterful exposé Our Dirty Water was aimed squarely at challenging this policy. Fortunately, the Freedom of Information Act (1966), public disclosure (National Environmental Policy Act of 1969), and public participation in the landmark environmental legislation of the early 1970s led to the emergence of new practices and forms of public involvement in natural resources management as well as air and water quality management programs. However, the degree of participation and involvement that grew out of these new policies was often quite different across agencies and programs. For example, the National Research Council (2008 p. 14) noted that:

The language of public involvement varies with the history, purpose and culture of an agency. In the case of EPA, public involvement is within the framework of carrying out specific statutes regulating use and protection of the environment. In contrast, the Forest Service has a broad multiple-use mandate and must seek to satisfy a broad range of perspectives and uses of natural resources and environmental qualities.

In Rhode Island, the mid-1970s saw an explosion of professionally led citizen involvement programs and public information campaigns by the state and regional agencies tasked with preparing Section 208 areawide plans. This included the Rhode Island Statewide Planning Program, the Old Colony Planning Council, the Southeastern Regional Planning and Economic Development District, sub-basin plans and facility construction plans for municipalities. The Southeastern New England Type II Level B basin planning effort developed and implemented a detailed public information program almost in parallel with these regional efforts. These efforts took the form of citizen and technical expert panels that provided recommendations to smaller, higher-level decision-making bodies such as management committees. The Coastal Council formulated its coastal and baywide policy documents using information and public dialogue combined with a more traditional style public hearing, held itself or by a subcommittee acting as the overarching management committee. The recently formed and professionally led Save The Bay began publishing its own newsletter in the 1970s. In subsequent decades, it also produced a large number of independently generated studies spotlighting issues and areas of concern and report cards on progress in pollution control (the Good, the Bad and the Ugly series) that prompted citizen lawsuits against both regulators and pollution sources.

There was literally an explosion of opportunities for the public and local officials to participate in the development of these plans policies and programs. However, most of the panels and processes convened to solicit public input into pollution control policies, watershed or bay-oriented plans generally had a short life and expired at the end of the funded planning process.

Two examples are the Citizens Policy Committee formed to guide the preparation of Rhode Island's 208 Plan and the Old Colony Planning Council's Citizens Committee on Clean Water (OCPC 1976, 1978). The Rhode Island 208 planning effort distributed 5,000 copies of its bimonthly publication, Waterways, producing 15 issues between April 1976 and June 1979; it held a series of six public meetings on key topics early in the planning process; and, it conducted four large meetings on the preliminary recommendations in late 1978 (RI SPP 1979a). However, this activity ceased once the plan was adopted. Similarly, the Narragansett Bay Project provided different forums for local decision makers, nongovernmental organizations and the public to participate in its planning processes through the Management Committee and other public events. It also maintained a 5,000 person mailing list, a newsletter, fact sheets, and, at one point, distributed 65,000 copies of a wallet-sized Clean Water Shopping Guide (NBP 1992, 1.8). However, similar opportunities have not been available during the implementation process. The same can be said of the Coastal Council. While opportunities for involvement in Rhode Island coastal resources management planning and special area management plan development were common, opportunities for involvement in program implementation have been much more limited beyond having the opportunity to comment at bi-monthly Coastal Council meetings or to read its newsletter or visit its website. By way of contrast, the Narragansett Bay Commission incorporated members of the Citizens Advisory Committee — which had been formed before the establishment of the Commission — into the Commission's permanent Advisory Group. More than three decades later, this Advisory Group, which guides pollution control plans for the City of Providence, continues to function alongside the Commission itself.

While communication and information sharing is important to the functioning of governance networks, the historical focus demonstrates that these networks ebb and flow over time as networks are created, destroyed or reconfigured. Using a historical focus also reveals interesting examples of policy-oriented learning — examples that were noted in the previous chapter. However, for policy-oriented learning to occur, it is necessary to learn from prior attempts to address similar problems. As George Santayana (1905 p. 284) famously observed, "those who cannot remember the past are condemned to repeat it." The historical approach gave the team an appreciation of this very challenge — a challenge that participants in these planning processes also sometimes recognized. For example, the committee members overseeing the development of the Section 208 plan expressed strong regret that both the technical staff and its committee were to be disbanded, noting: "Just who will be around to provide that vigorous, honest and thorough explanation of the plan?" (RI Statewide Planning Program, 1979a p. 11). The Narragansett Bay Project, while leaving a bookshelf of technical reports and a massive final planning document, also dispersed shortly after publishing the Comprehensive Conservation and Management Plan. Often, the only record of these efforts are the various reports and documents that these planning efforts produced and left behind.

A strong motivating factor for compiling the digital bibliography as part of this project (comprising approximately 1,438 documents from the period 1823 to the present) was the fact that this corpus of documents is highly dispersed, many are rare or one-of-a-kind, and many have never before been digitized. Even though the Internet and digital forms of archiving and disseminating documents have been widely available for over a decade, the availability of materials is often spotty. For example, the New England Interstate Water Pollution Control

Commission has posted its entire series of annual reports dating to 1947. Through a recent agreement with EPA, it also now hosts the Narragansett Bay Estuary Program documents (formerly known as the Narragansett Bay Project). It has restored the complete online collection of Comprehensive Conservation and Management Plan studies (numbering nearly 100 volumes), the complete collection of the Narragansett Bay Journal and other watershed materials. Before this, these documents were largely unavailable unless an individual had one of the original paper copies. While some agencies such as the Rhode Island Department of Environmental Management have maintained a fairly systematic online collection of water quality reports and plans covering the last 10 to 15 years, others have not been as meticulous. It is ironic that almost two decades into a digital age that has radically changed the way society collects, communicates, disperses and archives information, it is still difficult to find information about and to learn from previous governance efforts.

Participatory Processes Designed to Build Support

Another theme evident from the comparison of network governance efforts in Narragansett Bay is that these efforts place different emphasis on using participatory processes to build support by the public. The role given to public participation was not surprising since most federal and state programs have been mandating public participation in agency decision making since the 1960s (Wright 1974; Federman 1976; National Research Council 2008). However, in Rhode Island, these efforts date back much earlier.

Perhaps the first notable example of citizen-led efforts to achieve water quality improvements occurred in October 1940. The Blackstone River Authority, a group established by Rhode Island Gov. Green in 1936 to address the problems of the river, and thought to be defunct even by some of its members, presented a report to Dr. Lester Round, Director of the Department of Health, calling for the enlargement of the Fields Point wastewater treatment facility and the construction of a second plant in Pawtucket to be operated by an independent state authority that would treat wastes discharged to the Blackstone and Seekonk Rivers (Providence Journal, July 26 and Oct. 8, 1940). The report was authored by Charles Maguire, former Superintendent of the Providence Public Works Department and the chairman of the ill-fated Metropolitan Sewer Commission. Rhode Island Gov. Vanderbilt promised to consider these new recommendations, which unfortunately came at the very end of his term in office.

Early the following year, in February 1941, newly elected Rhode Island democratic Gov. J. Howard McGrath received the formally approved the State Planning Board’s version of Brown University professor William Benford's advisory committee recommendations on water pollution control. McGrath promised to consider them but took no action in the 1941 session of the Rhode Island General Assembly. Republican Rep. Harold Tucker also failed to get the legislative endorsement of his own bill that urged tougher enforcement of existing pollution control laws. Dissatisfied with this seemingly interminable saga of pollution control proposals, studies and broken promises, on Oct. 28, 1941, the Bristol County Lions Club proposed forming the first statewide organization to push for pollution control.

The campaign was launched in November 1941. Representative Tucker backed the Lions Club initiative as well. In the next four weeks, the list of groups supporting the pollution drive grew rapidly, including the Narragansett Bay Power Squadron. Dr. Terrell E. Cobb, commander of the squadron, announced that the organization would give its support to "any movement whereby the elimination of pollution is concerned within the waters of Narragansett Bay," and noted that the squadron had gone on record before "concerning this unsanitary condition," getting "worse and worse every year" (Providence Journal, November 7, 1941, p. 8, col. 1). In addition, the State Grange; the Rhode Island Wildlife Federation; the Federated Sportsmen's Clubs; the towns of Warwick, Narragansett and East Providence; and the Narragansett Salt Water Fishing Club — groups representing thousands of users of Narragansett Bay — joined in the movement. The rapid growth in support was spurred, in part, by a crude oil spill at the Standard Oil Refinery in East Providence that created a large oil slick and threatened thousands of migratory ducks. Fundraising efforts for the campaign were all underway by the end of November. However, when the Japanese bombers attacked Pearl Harbor on Dec. 7, the first citizen campaign to save Narragansett Bay would be delayed until the war's end.

However, there is a big difference between having opportunities for public participation in agency decision making and using public participation as a strategy to build the political support and other resources needed for implementation efforts. While some programs focused their efforts on using participatory processes to build public support, others focused more deliberately on involving key stakeholders, interest groups and agency officials to generate the political support needed to implement proposed policies, plans or programs. Others were unable to do so or even utilized processes that actually produced widespread opposition to the shared policies and priorities produced by the networks. Indeed, the cases offer a variety of interesting examples of where public participation processes (or the lack thereof) contributed to healthy (or unhealthy) network processes.

The Southeastern New England Study conducted an elaborate public involvement process in the watershed. It devoted three chapters of its workplan to a participation and public information effort and created a 17-member committee of prominent activists and regional leaders to oversee the participation process. Its 50-plus member citizen advisory committee was also a Who's Who of prominent researchers and citizen leaders of the time period. It held 11 public meetings in a three-week period in different sub-basins of the planning areas. However, none of this was enough to assure a positive reception of its final products (NERBC 1975a, 1975b, 1975c, 1975d).

The Old Colony Planning Council, in carrying out its 208 Plan effort just a year after the Southeastern New England Study, was reflexive in its efforts to engage the public. It observed that "One problem that the 208 staff has faced in the water quality project has been the problem of relating 208 planning to other water pollution control efforts. For the average citizen, as well as many local officials, the different planning elements of the 1972 Federal Water Pollution Control Amendments (P.L. 92-500) are a confusing bureaucratic maze" (OCPC 1976 p. 4-2). In addition, it found that "the legacy of the SENE study (Southeastern New England Study) is an additional complicating factor" (OCPC 1976 p. 4-2). Given that awareness of water resources was low in the region, there are not any major rivers, there was skepticism about regional

approaches, and citizens had difficulty in seeing the relationship of the 208 effort to broader planning issues in the region, the Planning Council designed its participation program as a bridge to action. Its aim was "… to maximize the implementation ability of the 208 planning process. The on-going Citizens Committee on Clean Water is comprised of representatives of the governing authority from each community. This direct tie to local implementation authority is important." (OCPC 1976 p. 4-7).

Rhode Island's 208 Plan was guided in part by a 22-member citizens' committee working alongside the governing Areawide Policy Committee (as a result of turnover, 49 different individuals were members of the committee at some point). It worked for three and one-half years, along with its seven ad hoc committees created for different issues, and utilized a professionally led outreach and engagement effort. Among its noted accomplishments were statewide public meetings that attracted a broad-based attendance of about 130 people (Rhode Island Statewide Planning Program, 1979a). In its summary of the experience, the Citizens' Policy Committee documented how different workshops had an influence on the staff preparing the 208 plan. While concluding that the process led to important inputs and that 208 policies would by-and-large be accepted, the Policy Committee did not know if it fully represented public opinion. In its reflections, the Policy Committee dismissed the concerns of a Massachusetts Institute of Technology critic that 208 plans were diluted and rendered ineffective in the attempt to make them acceptable to reluctant local governments. Instead, the Rhode Island 208 Citizens' Policy Committee was far more concerned about the "reluctance within some departments to accept recent, well-founded evidence, styles and technology which differ from the 'old school' and formerly valid states-of-the-art" (RI Statewide Planning Program 1979a p. 13). The Policy Committee members were:

> afraid that in order to reach agreement on some 208 recommendations before they go to the governor, that personnel in those departments will be appeased to the detriment of long-range water quality. This appeasement will be done in the name of "implementability" and to avoid placing the governor in a position from which he must decide between the advice of two co-equal departments (RI Statewide Planning Program 1979a p. 13).

In other instances, network governance had great difficulty moving beyond irregularly timed pulses of public and government attention for a sub-basin or water body. Watershed residents were overwhelmed with water resource and coastal management program development in the mid-1970s — the Southeastern New England Study, sub-basin planning, 208 plans and municipal wastewater treatment construction grant plans, and the Rhode Island Coastal Resources Management Plan. All of these efforts required broad public participation in program development. However, this was followed by a drought of opportunities for participation in the 1980s, when all of these plans were being implemented and funding for new regional planning efforts dwindled.

An exception was the unfolding drama as a result of the major multifaceted performance failure at the Fields Point wastewater treatment facility owned by the City of Providence. It had stopped

functioning as a secondary wastewater treatment facility by the late 1970s and was grossly behind schedule in preparing its Section 201 construction designs. This prompted Save The Bay and the State of Rhode Island to seek a consent decree forcing the city to act. EPA required that as the engineering studies proceeded, the City of Providence undertake a full public participation effort, which involved a 29-member board with its own staff. It operated during the hiatus between the time Rhode Island voters had approved a state takeover and financing of improvements through the Narragansett Bay Commission and the moment one and a half years later when the City finally relinquished control. As described by Robadue (1982, p. 83), the Citizens Advisory Committee took on a wide-ranging role in the governance void. "The CAC (Citizens Advisory Committee) was thus placed in the position of advising a disinterested City of Providence and an interested but fledgling Bay Commission which was not yet in power." It reviewed issues related to the engineering design of the treatment facility itself, the combined sewer overflow problem, the industrial pretreatment policies, and a controversial contract for sludge disposal. "Unlike the citizens' advisory committees established in 208 Planning Programs, the Providence Citizens Advisory Committee was not subordinate to some larger policy-setting group and thus felt a personal responsibility to understand and evaluate every aspect of the design program" (Robadue 1982, p. 87). The Narragansett Bay Commission, once it finally acquired the city's facilities, invited the Citizens Advisory Committee members to form part of the core of what arguably has been the longest running and probably most effectively institutionalized agency-managed participation effort in the watershed.

What is clear from these examples is that participatory processes do not, in and of themselves, produce healthy governance processes. However, participatory processes can often help mobilize public and political support and leverage the financial resources needed to facilitate healthy governance processes.

Local Government Involvement

Another attribute that appears to contribute to the development of healthy governance processes is when the actors directly affected by the network are direct participants in network processes. Network structures are built around shared problems and solutions. In the Narragansett Bay watershed, this most frequently involved problems related to the provision of safe drinking water and human impacts leading to the degradation of water quality. Since these issues implicitly involve the local government as the service providers, the role that local government played (or failed to play) in the network arrangements appeared to influence whether these processes maintained a healthy and useful life. What is interesting about the governance networks that were examined is that the role of local government varied considerably. However, those efforts that made progress in addressing bay problems often had strong local government participation in both the development and implementation of the policies, programs and corresponding network structures used to address water supply and water quality problems.

One recent example is the interest in creating municipal and regional stormwater utilities for several municipalities as well as six cities in the Providence Metropolitan Area (City of

Providence 2014; Scott 2014). Among the motivations for regional cooperation were regulatory requirements and lawsuits, aging urban infrastructure, flooding, and the need to protect drinking water supplies from nonpoint pollution, along with the potential cost savings of regional action given the likely high cost of required municipal investment. However, regionalization proposals have more frequently been rejected either by municipalities or the state. Rhode Island's Metropolitan Sewer Commission of 1933 proposed a single sewer district for 18 municipalities with a treatment plant to be located on Prudence Island. This was rejected outright by the state's Board of Purification of Waters. Basin planning for pollution control in the mid-1970s noted that only South Kingstown and Narragansett chose to regionalize wastewater treatment (Rhode Island State Planning Program, 1979b). The Rhode Island Section 208 plan adopted in 1979, although leading with statewide issues, focused much of its attention on the needs of individual municipalities. Similarly, the Section 208 plans prepared by the Old Colony Planning Council (1978) and the Southeastern Regional Planning and Economic Development District (1977, 1979) focus most of their attention on municipal needs, with a secondary emphasis on drawing out some regional and state policy recommendations. In Rhode Island, municipalities were far more concerned about the completion of required 303e sub-basin plans and 201 construction grant plans needed to access federal and state matching funds.

This tension between local governments and attempts by federal, state and regional efforts to influence local decision making was readily apparent across the wide range of case examples. In fact, this tension is one of the factors that contributes to the changing patterns of intergovernmental relations and the changing nature of federalism that is readily observed in Chapter 2. The Southeastern New England Study report on Narragansett Bay recognized this tension when broaching the subject of regional land and water resources administration in Rhode Island, noting, however:

> To the extent that this alternative is perceived as an intrusion into local matters and prerogatives, the role of the State Planning Council and the extension of the Water Resources Board's power to wastewater management may encounter legislative opposition. Further, a state master plan for management of the entire water resource may appear too rigid and too centralized an exercise of state power (NERBC 1975d, pgs. 10-19)

The Narragansett Bay Program also ran straight into this predictable barrier when it hired Metcalf and Eddy in 1991 to study regionalization and consider a proposal to have the Narragansett Bay Commission take on the entire wastewater and storm drainage infrastructure responsibilities of 17 metropolitan communities. Among the advantages would be an alleviation of inequities in user rates across the region. The study also examined, as in 1933, the potential benefits of a consolidated discharge point, including one that would convey treated waste to an outfall off Point Judith. The analysts did not make recommendations but noted that regionalization of the Blackstone Valley District Commission, East Providence, Warwick, West Warwick and Woonsocket facilities at Fields Point, combined with advanced waste water treatment, could be worth examining further. For its part, the Narragansett Bay Project promoted statewide regionalization of both wastewater treatment and individual sewer distribution systems

management through mandatory wastewater management districts operated by wastewater treatment facilities in both Rhode Island and Massachusetts. While this regionalization recommendation was listed as a top priority in the Narragansett Bay Project's Comprehensive Conservation and Management Plan (1992, xxix.), it was never implemented.

Major cities within the watershed including Worcester, Providence, Pawtucket, Newport and Fall River have all struggled throughout the late 19th and all of the 20th century to comply with the pressure including legal actions to expand sewers, find safe drinking water supplies, and dramatically cut the impacts of their discharges on local waterbodies and embayments. Legislative and legal action was pursued throughout the late 19th and all of the 20th centuries, well before the 1972 Clean Water Act and the emergence of the National Discharge Elimination System. As noted above, Massachusetts gave the city of Worcester four years to adopt a system of its choice to remove the sewage it was discharging to the Blackstone River. The City of Pawtucket was found guilty of polluting the Blackstone and Seekonk Rivers in 1929 by the recently established Board of Purification of Waters. Unlike Providence, which had been building a sewage system and seeking innovative ways to treat its waste since the 1880s, political leaders in Pawtucket delayed any action for more than 15 years, forcing Rhode Island to take over the problem. Essentially, the same situation emerged 50 years later as the City of Providence resisted compliance and forced a state takeover. Both state actions eventually yielded important pollution control outcomes.

What is clear from the review of the development of Narragansett Bay's governance system is that local governments are an important part of the network. Efforts like the Southeastern New England Type II Level B Plan or the Narragansett Bay Project's Comprehensive Conservation and Management Plan are unlikely to compel local governments to change their behavior, particularly if they have not been involved in network processes (Foster 1984; Imperial et al. 2000; Imperial & Hennessey 2000a). Alternatively, the Coastal Resource Management Council's efforts to work in partnership with local governments demonstrate that collaborative approaches can often produce some major accomplishments (Imperial 1999a; Imperial & Hennessey 2000b). Similarly, local governments are particularly sensitive to their loss of local autonomy and crafting regional solutions can be tricky. However, as the Narragansett Bay Commission demonstrates, these regional approaches can often lead to major advances in network governance.

Similarly, it is tempting to simply blame local governments or cast them as the villain. More often than not, the focus is on the city that fails to take action or is slow to make the capital improvements necessary to improve their sewage treatment systems. To some extent, this is true. The Clean Water Act requirements are an important counterbalance that ensures there are governance mechanisms that can be used by state and federal officials to compel local action. It is also why the Clean Water Act's citizen suit provisions are an important counterbalance that allows nongovernmental organizations to sue the federal and state governments when they are not inclined to take the actions necessary to advance water quality improvements. However, Chapter 2 also highlights how the governance network has evolved considerably since the Clean Water Act was passed in 1972. Local governments are now a major player in the water pollution

control story. More importantly, since the switch to state revolving loans in 1987, local governments now pay for most of the investments needed to improve sewage treatment and stormwater infrastructure and are responsible for many of the ongoing water quality improvements.

Summary

For several reasons, the team deliberately avoided using the terms *success* and *failure* when discussing network governance processes. First, it is not uncommon to find examples of network governance processes where important structural features of planning and implementation processes and the resulting patterns of intergovernmental relations may be imposed upon them by legislators or funders. Second, it is not always clear what would constitute a success or failure. For example, the governance process might be relatively effective (e.g., efficient, low transaction costs, etc.) but is unable to achieve desired policy outcomes. Conversely, the desired policy outcomes could be achieved using a network governance process that is largely ineffective (e.g., high transaction costs). Third, as noted in Chapter 2 the different patterns of intergovernmental relations associated with different governance efforts often embody competing perspectives in terms of whose priorities or values should drive these efforts. The reality of the U.S. federal system is that governance is a messy process shaped by competing values, priorities and perspectives that are reflected in overlapping agencies at different levels of government with interests that are equally valid. Thus, healthy network governance processes provide a forum for resolving legitimate differences in ways that allow actors to pursue shared policies and priorities rather than having one perspective always viewed as superior to another. In essence, there is no answer to the question of whether federal, state and local priorities should guide decision making.

The discussion in this chapter draws attention to those attributes of network governance processes that contribute to sustaining the healthy and useful life of a network. It suggests that network governance processes require constant nurturing and care such that hard fought gains are not easily lost. Many times, the nurturing is gentle and continuous. Other times, fundamental transformations are needed. Sometimes this involved the centralization of authority at the federal level (e.g., the CWA). In other instances, it required the formation of new governance institutions that delegated authority and capacity to local levels (e.g., creation of the Narragansett Bay Commission). In some cases it even led to the disbanding of an entire network such as when the New England River Basins Commission (NERBC) was eliminated in 1981. These changes and reconfigurations should not be viewed as failures. Nothing could be further from the truth. Networks, like other organizational forms, have a useful life. Just as network processes are best left to develop at their own pace, ineffective nodes in governance networks should be restructured or terminated when their useful life has passed. This frees up scarce network resources that can be deployed to better address other watershed problems (Imperial et al. 2016a).

This happened with some frequency before the 1970s, with various regional, federal and state efforts coming in and out of existence. It has happened with much less frequency since President Reagan abolished the NERBC by executive order in 1981. These creative era programs have taken hold and largely occupy the policy space associated with regional watershed governance. Accordingly, it is hard to justify a new Narragansett Bay watershed-wide effort when one — the Narragansett Bay Estuary Program — already occupies this policy space. Newer programs, which often are based on very different views of intergovernmental relationships, have then been added alongside these creative era programs over the last several decades. As a result, the current period of intergovernmental relations is one marked by increasingly pragmatic and collaborative approaches to improving the ability of the governance system to address problems in the Narragansett Bay watershed.

This can be a potentially problematic development. As noted in Chapter 2, these cycles of planning, studies and governance efforts were an important part of the evolutionary process. The trust, relationships, science, understanding and new or modified institutions that resulted from each effort provided the social and institutional capital that subsequent efforts could build upon in the never-ending search to improve the governance of this important resource. However, as a result of revisions to the Clean Water Act and its implementation, these cycles of planning ended with Section 208. As a result, the new challenges that emerged such nonpoint solution in watersheds has not been effectively addressed in a coordinated manner. Under the Clean Water Act, addressing non-point source nutrient pollution, is largely related to land use, and requires State level actions to address them. Resources of many network members became frozen in place, due to a lack of capacity and authority to address some of the problems River Basin Commissions, and Section 208 planning were designed to address. This situation can trap network resources and prevent them from possibly being reallocated in more productive ways. Moreover, the presence of ineffective nodes in governance networks can make it difficult for a new large-scale cycle of planning or regional studies to emerge that can help reframe basin problems and necessary solutions.

Given lack of sufficient authority and capacity to solve regional scale planning and management problems, network members are largely left to focus on smaller, more pragmatic areas where they can improve part of the bay governance system. This also helps explain the current pattern of intergovernmental relations in the current period of pragmatism and collaborative management. EPA recognized this problem when it consulted with the NBEP's Executive Committee before restructuring the program management to refocus on key strategic priorities. It is now a component of the New England Interstate Water Pollution Control Commission; with initial efforts more tightly focused on nonpoint source nitrogen pollution, and needed watershed restoration across a broader region. Subsequent to this reorganization, a new EPA grants program has been deployed to help build needed understanding and capacities for a new phase of collaborative problem solving efforts in Southeastern New England.

Chapter 4: Summary and Recommendations

The team's focus on governance networks reflects the physical reality that large landscapes like the Narragansett Bay watershed rarely correspond to the political boundaries used to mitigate and manage human impacts on these ecological systems. This report highlights an amazingly rich, if not long-forgotten, history of bay governance with the earliest examples dating back to the late 1800s. The power of the historical perspective is that when viewed over a long period of time, it becomes evident that the bay's governance network is constantly evolving as new institutions, programs and planning processes are created or reconfigured, while others cease to exist.

What is striking about the governance history of Narragansett Bay is that its shifting patterns of intergovernmental relations are remarkably similar to those observed elsewhere in a variety of policy areas (Wright 1978, 1988). This report builds upon Wright's (1988) framework and identifies the following distinct patterns of intergovernmental relations:

- 1800s - 1930: Conflict and Early Network Development.
- 1930s - 1950s: Cooperation, Concentration and Continued Infrastructure Expansion.
- 1950s - 1970s: Creative Expansion of Federal Planning.
- 1970s - 1980s: Competition and Devolution.
- 1980s - 1990s: Contraction: Aid Cuts and Mandates.
- 1980s - 2000s: Creative Era Programs During Period of Contraction.
- 1990s - Present: Pragmatism and Collaborative Management.

The changing patterns of intergovernmental relations are the byproduct of the U.S. federalist system of government, which vests overlapping functions and responsibilities for problems like water pollution control in a wide range of agencies at the local, state and federal levels. As a result, the current governance network is complex and interconnected. The capacity for solving Narragansett Bay's environmental problems is widely dispersed among actors at different levels of government. For much of the historical period, leadership in addressing water quality problems in Narragansett Bay largely occurred at the state and local level. That said, the programs initiated during the creative period in the 1960s and 1970s have clearly shaped the governance system in profound ways and encouraged the development of capacity at the state and local level that allowed those actors to exert renewed leadership the past two decades. This helps explain why contemporary problem solving in the watershed often requires pragmatic, collaborative approaches. It also helps explain why professionals experienced in navigating the complicated intergovernmental network of programs is often essential to sustaining healthy and useful governance processes.

Putting the emphasis on the shifting patterns of intergovernmental relations also avoids having to make normative value judgments about the structural features of programs and whether they place primary emphasis on federal, state and local control. Instead, the team's analysis focuses on those general trade-offs that occur as a result of the changing patterns of intergovernmental relations. In many ways, the patterns identified by Wright (1978, 1988) help explain the debate in the implementation literature focused on top-down versus bottom-up approaches to policy implementation that pervaded that literature during the 1980s and 1990s (Bardach 1977; Berman 1978, 1980; Mazmanian & Sabatier 1983; Pressman & Wildavsky 1984; Elmore 1985; Goggin et al. 1990). Creative era programs have a distinct top-down orientation while many of the cooperative, competitive and devolution era programs have a greater allowance for bottom-up approaches to policy implementation. However, some situations are more amenable to top-down solutions, while others are more conducive to bottom-up approaches. It is more about fitting the right approach to intergovernmental relations to the right situation than it is about assuming one approach works better than another.

In essence, there is no clear answer to whether federal, state and local priorities should guide decision making or network governance. Perspectives about success and failure are often shaped by one's views about priorities and normative judgments about which level of government should drive decision making on a particular issue. The reality of the U.S. federal system is that network governance is a messy process shaped by competing values, priorities and perspectives that are reflected in overlapping agencies at different levels of government — all with interests that are all equally valid. Thus, healthy network governance processes provide a forum for resolving legitimate differences in ways that allow actors to pursue shared policies and priorities rather than having one perspective always viewed as superior to another.

This research avoids using traditional notions of success or effectiveness. Instead, the focus is on identifying those attributes that foster and sustain the useful life of healthy network governance processes. It identified seven attributes of network structures and processes:

- Strategic long-term focus.
- Importance of shared problems/solutions.
- Shared decision making.
- Entrepreneurial leaders.
- Leveraged resources.
- Network coordinators.
- Ability to adapt and reconfigure networks.

All seven of these attributes have broad support in the literature on network governance. However, the team also identified four additional attributes that receive less mention in the literature on network governance:

- Science is used to justify policy.
- Communication and information sharing is the norm.
- Participatory processes are designed to build support.
- Local government is involved.

These attributes make the point that network governance processes require constant nurturing and care in order that hard-fought gains are not easily lost. Many times, the nurturing is gentle and continuous. Other times, fundamental transformations are needed. Similarly, the concept of a useful life implies that disbanding a network governance process for Narragansett Bay should not be viewed as a failure. Nothing could be further from the truth. Networks, like other organizational forms, have a useful life. Just as network processes are best left to develop at their own pace, they should also be allowed to die when their useful life has passed. This frees up scarce network resources that can be deployed to better address other watershed problems (Imperial et al. 2016a).

This happened with some frequency before the 1970s, with various regional, federal and state programs coming in and out of existence. It has happened with much less frequency since the 1981. Instead, creative era programs continue to largely occupy the policy space associated with regional watershed governance. Accordingly, it was hard to justify a new Narragansett Bay watershed-wide effort when one (i.e., the Narragansett Bay Estuary Program/NBEP) already occupies this policy space. This is potentially a problem. As noted in Chapter 2 of this report, these cycles of planning, studies and governance efforts have been an important part of the evolutionary process associated with network governance when viewed over time. The trust, relationships, science, understanding and new or modified institutions that resulted from each effort provided the social and institutional capital that subsequent efforts could build upon in the never-ending search to improve the governance of this important resource. However, these planning cycles driven by major new federal initiatives have ended. As a result, the resources of many network members were largely frozen in place. In some cases, this trap network resources and prevents them from possibly being reallocated in more productive ways. It also made it difficult for a new large-scale cycle of planning or regional studies to emerge that can help reframe basin problems and necessary solutions. As a result, network members were largely left to focus on smaller, more pragmatic areas where they could improve part of the bay governance system.

As a result, problem solving requires pragmatic and collaborative approaches to better utilize these network resources. For example, recently, the management of the Narragansett Bay Estuary Program was restructured, and it became part of the New England Interstate Water Pollution Control Commission. EPA has also rolled out grants as part of the Southern New England Program in order to build capacity to better address non-point source nitrogen loading and watershed restoration over a broader area in MA and RI. Both the Narragansett Bay Estuary Program, and the Buzzard Bay Estuary Program, have helped launch this next phase of the effort need to build a common understanding needed to begin solving non-point source nitrogen pollution; and restore key watershed structures and function in Southeastern New England.

Getting things done to address problems impacting Narragansett Bay now demands a level of pragmatism. Policies and programs are linked in complex ways with actors at each level of government who have important roles and the opportunity to exert leadership in different situations. Governance requires experienced professionals who can creatively navigate their own bureaucracies, are well versed in navigating the waters associated with different patterns of intergovernmental relations, and have the requisite skills to work collaboratively with other professionals from federal, state and local governments as well as nonprofits and the private sector to leverage resources, build support and find ways to work together to improve or restore the environment. While efforts to improve network governance are certainly nothing new, they are more common today as a result of these pragmatic realities.

Next Steps

The research conducted by Lighthouse Consulting Group has broad applicability and could be of interest to both practitioners involved in network governance as well as researchers examining these efforts. Accordingly, the research team recommends the following actions to further disseminate these research findings:

- Turn this document into an EPA unpublished report, making it available for distribution to stakeholders and agencies.
- Create and make available webinars that present the material, especially the analysis, supported by a master PowerPoint presentation.
- Produce peer-reviewed articles for the research and practitioner community ― articles that will flow from the academic institutions and experts who were part of the project team but also co-authored articles with EPA staff.
- Post the applicable project documents and deliverables online at a publicly accessible website.
- Transfer the JS timeline and URL to EPA or an EPA partner that would be willing to host the site, continue renting the URL, and maintain the website.

To further expand upon the foundational work developed during this project, the team recommends additional research based on its experience with this project and its understanding of EPA's ongoing needs in this and other watersheds:

- Add additional summary bay stories that were not explored in this report but would shed further understanding about the Narragansett Bay governance system.
- Expand the 11 summary stories from vignettes on key inflection points to articles that could be published in mainstream literature such as magazines and online websites and blogs.

- Use social network mapping software to visually represent the changes in the structural patterns of intergovernmental relations over time to better understand the structural changes in network processes.
- Collect and incorporate additional information related to budgets and personnel to better understand the capacity of the networks as they change over time and to better understand the changing expenditures related to water pollution control.
- Incorporate data from larger trends in water pollution control and treatment into the broader story of changing governance arrangements to better understand the linkages between efforts to improve network governance and enhanced ecosystem conditions.

This project, from the beginning, was designed and executed with an eye toward replicability. The Methods and Lessons Learned Report delivered as part of this project concisely documents the framework, approach and process used for this work. It provides detailed instructions and explains how each step was implemented and, in many ways, can serve as the basis for future requests for proposals. The team would recommend replicating this analysis in other watersheds. This could be accomplished in different ways based on EPA needs:

- Examine rural watersheds or watersheds with very different focal problems (e.g., forestry, agriculture, water supply, etc.) to further expand the understanding of how the changing patterns of intergovernmental relations apply to a much larger set of federal, state and local programs over time.
- Extend this work to other urbanized watersheds to further understand the water pollution control governance system or to expand the analysis to problems that involve something other than that of sewage.

Given this research team's experience and the knowledge it has gained through this initial work, it would be easy to use a modified version of the methodology and analytical framework it used to study Narragansett Bay governance to create governance histories for other watersheds or for other environmental governance challenges.

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