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ADAPTIVE CAPACITY IN RESPONSE TO REVOLUTIONARY CHANGE: THE
CASE OF ONTARIO'S CONSERVATION AUTHORITIES

(Spine title: Adaptive Capacity in Response to Revolutionary Change)

(Thesis format: Monograph)

by

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Graduate Program in Geography

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of the requirements for the degree of
Doctor of Philosophy

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ABSTRACT

Adaptive Capacity in Response to Revolutionary Change: The Case of Ontario's Conservation Authorities

The purpose of this research is to develop a framework of adaptive capacity based on underlying elements, as identified in the established literature, and to apply that framework to describe and explain how organizations have experienced and survived revolutionary changes. Vision, capacity building, flexibility, and monitoring and learning as a proxy indicator of resilience are determined representative of adaptive capacity and this thesis applies the resulting framework to the experiences of the Grand River and Ganaraska Region Conservation Authorities. During the 1990s, conservation authorities in Ontario experienced revolutionary changes. While adaptive capacity has been regarded as an appropriate concept to respond to revolutionary changes – changes that occur at a fast rate and high magnitude – there is an absence of effective conceptual frameworks and empirical research. This research responds to this need.

This research applies the framework of adaptive capacity to a document review, using NVivo qualitative-analysis software. An interview-based review confirmed findings. A methodological map guided research and facilitated discussion of which elements of adaptive capacity were applied in response to revolutionary change. Principal sources for the document review included meeting minutes and financial statements from 1988 to 2004. Meeting minutes represent an amalgamation of information created by or presented to each conservation authority's board of directors. NVivo enabled the coding and chronological graphical representation of the occurrences of elements of adaptive capacity that were applied in relation to management functions and/or changing institutional arrangements. Interviews with appropriate respondents

provided context and confirmed the elements of adaptive capacity identified in the document review.

This thesis provides lessons on how to investigate and implement adaptive capacity. More specifically, a review of the GRCA and GaRCA has added to the literature of adaptive capacity and to the interrelationships of its constituent parts. Conclusions of the research not only provide lessons of how adaptive capacity can be implemented, but also provides empirical examples of how those elements have been utilized by organizations that have experienced and survived revolutionary change. It is hoped that this framework and subsequent research aid organizations in the application of adaptive capacity.

Key Words: adaptive capacity, conservation authorities, vision, capacity building, resilience, flexible management

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If this study has something to commend, the credit should largely be given to the interview respondents and staff at the Grand River and Ganaraska Region Conservation Authorities. Obtaining sufficient information to complete this research was only possible with the access, cooperation and enthusiasm I experienced at both organizations.

Finally, I would like to express my gratitude to my family. To my mother, Ruth Priddle, who has supported the completion of this thesis in a number of ways; to my father, George Priddle, whose inspiration continues to guide my passion for environmental management; to my brother, Alex Priddle, for his continued support; and finally, to my wife, Katie, without whom I could not have completed this dissertation.

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CHAPTER 1 INTRODUCTION

1.1 Introduction

In the late 1980s, the world entered a period of increasingly severe political, economic and social change – the Berlin Wall came down and the Soviet Union collapsed, ending the Cold War; and neo-liberal attitudes dominated the thinking in many developed world economies, frequently resulting in significant reductions in public spending. During the same period, the environmental movement began to embrace a new paradigm called sustainable development. Popularized by the World Commission on Environment and Development in the book *Our Common Future*, sustainable development was defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development 1987, 43). By focusing on basic needs and equity for all and ensuring that the resources used today are available for future generations, sustainable development raised expectations for environmental management, particularly by public agencies, during a time of increasingly strained government budgets around the world. The rate of change by the mid-1990s can be characterized as revolutionary, rather than evolutionary, posing significant challenges to many public resource and environmental management agencies.

Evolutionary changes are generally associated with the period prior to the mid-1990s when changes were essentially minor and incremental in nature – often successfully managed by traditional or modified planning approaches (e.g., rational-comprehensive planning), relatively minor budget cuts, and/or adjusted administrative

practices. Revolutionary changes affecting institutional arrangements increasingly occurred after the mid-1990s. Revolutionary changes are changes that occur at a rate and magnitude beyond that reasonably expected or sufficiently managed by modifying current practices – planning, budgeting or administrative (McDonald 2000; Abrahamson 2004).

Institutional arrangements represent the contexts within which an organization operates, including relevant legislation and regulations, policies and guidelines, administrative structures, economic and financial arrangements, political structures, traditional customs, and the involvement of stakeholders (Mitchell 1990). Grant (2000, 453) explains how change to any aspect of institutional arrangements “exerts pressure and influence on those participating in the planning processes.” Due to the rapid rate at which institutional changes occurred after the mid-1990s, organizations could no longer rely on traditional planning approaches alone to mitigate those changes, so alternative planning approaches emerged. One planning approach that emerged in response to revolutionary changes is adaptive capacity (Fulmer 2000; Adger and Vincent 2005).

Adaptive capacity was originally defined in biology nearly half a century ago in reference to species’ abilities to live and reproduce within their changing environment (Gallopín 2006). In social science, Smit and Wandel (2006) explain that adaptive capacity is difficult to define as it is context specific and varies over spatial scales, populations and time. Research on adaptive capacity has increased in social science and environmental management literatures over the past decade, especially as it relates to climate change (Burton *et al.* 2002; Brooks and Adger 2005; Alberim *et al.* 2006). To

date, most adaptive capacity research has concentrated on specific populations, and few definitions focus on the ability of organizations to respond to revolutionary change.

In this research, adaptive capacity refers to an organization's ability to retain and enhance management functions within its institutional arrangements during periods of revolutionary change by preparing for and responding to such changes. Management functions represent those tasks assumed by an organization and can be considered either core or non-core (Mitchell 1990). Core functions are those that are necessary for the organization to retain during times of change, while non-core functions are those less essential that might be given up to ensure survival. In water management, core functions are often those that are delegated by a higher authority and non-core are those tasks voluntarily undertaken (Mitchell 1990). Accordingly, core functions should be explicitly stated and allocated to the level of the institutional hierarchy in which they are most appropriate (Mitchell 1990; Mitchell and Hollick 1993). An organization will want to retain capacity for its core functions during revolutionary changes.

Lacking a clear definition of adaptive capacity, there have been many suggestions to make it less conceptual and more practical by discovering its generic elements (Burton *et al.* 2002; Yohe and Tol 2005; Adger and Vincent 2005). As recently as 2005, Adger and Vincent (2005, 400) identified a trend in adaptive capacity research focusing on "how to characterize adaptive capacity in a meaningful sense and to find generic determinants." Yohe and Tol (2002) explained that once generic determinants are established, local manifestations of adaptive capacity can be determined and measured. Recent assessments of adaptive capacity through generic determinants are often found in climate change research (Yohe and Tol 2002; Alberim *et al.* 2006; Smit and Wandel

2006). While adaptive capacity is becoming increasingly prevalent in the environmental management literatures, especially in response to the effects of climate change, no current conceptual frameworks allow review of an organization's ability to respond to revolutionary change to its institutional arrangements. Conceptual frameworks are used in qualitative research to organize elements of a concept in an illustrative design to demonstrate how those elements are interrelated.

This dissertation develops a framework of adaptive capacity based on elements found in management literature, and applies that framework to the experience of the conservation authorities of Ontario. Having retained their abilities to carry out management functions in the context of revolutionary change, the conservation authorities and their experiences are considered appropriate to describe in an attempt to discover lessons regarding the interrelationships of the elements of adaptive capacity and to provide suggestions for achieving adaptive capacity.

1.2 Evolutionary and Revolutionary Changes in Water Management

During the 1980's, changes to institutional arrangements affecting water management in many parts of the world would be characterized as "evolutionary." These changes were minor, incremental, and usually predictable. Also termed "continuous" and "constant" change (Pettigrew *et al.* 2001; Boonstra 2004; Weick and Quinn 2004), evolutionary changes are often accommodated by modifying or improving existing planning practices, and/or altering funding delivery mechanisms and/or administrative arrangements (Cunningham 2002; Weick and Quinn 2004). Minor reductions in program delivery that are not significantly detrimental to service provision may also be

implemented to accommodate evolutionary change. These types of adjustments are made in a context of generally stable institutional arrangements and enhanced by a supportive organizational culture (Pigram 1986; Platt and Morrill 1997; Hooper and Margerum 2000). A supportive organizational culture is determined less by the formal functions and structures of institutions and more by stakeholders' willingness to coordinate and cooperate. Examples of evolutionary changes in the developed world have been cited in the United Kingdom (UK), Australia and Canada.

Evolutionary changes were experienced in the UK in 1974 with the establishment of ten multi-functional Federal Water Authorities in England and Wales. These authorities represented a shift in water management functions from the regional to the watershed scale (Bulkley 1995; Laster 2000). Prior to the creation of the Federal Water Authorities, more than 1,600 water service entities operated, each with a single function, resulting in ineffective communication and the duplication of management activities (Bulkley 1995). The creation of the Federal Water Authorities in the UK is considered evolutionary because the original water management organizations, now amalgamated under the Water Authorities, continued to carry out traditional management activities. Only functions of large-scale management considerations, such as the implementation of national policy, were transferred to the new authorities. As a result, duplication of functions among organizations was reduced by the coordinating role of the Water Authorities (Watson 1997).

In Australia, the creation of the Council of Australian Governments (COAG) in 1992 illustrates a second example of significant but evolutionary change. COAG was created as a result of increased political pressure to improve intergovernmental

cooperation and to initiate and monitor national policy reforms. The Australian example is considered evolutionary because there was no fundamental shift in management functions or funding, and fragmentation was minimized among water management organizations of the federal, state and provincial governments, which formed a coordinating partnership (Smith and Maheshwari 2002). COAG was successful at increasing coordination without creating a centralized authority.

Canada also experienced evolutionary change in water management with the creation of the Flood Damage Reduction Program (FDRP) in 1975. The FDRP provided federal financial assistance to provincial governments to develop floodplain mapping, subsequent zoning, and the creation of warning systems (de Loë 2000; de Loë and Wojtanowski 2001). Prior to 1975, provincial programs for flood management were based on structural controls and financial disaster assistance. According to Shrubsole (2005), major floods and other considerations in the early 1970s resulted in a need to rethink floodplain development strategies. This shift led to the FDRP, which was used to shift flood management activities from structural controls to non-structural planning methods (Mitchell 1989; Clark 1998; Tucker 2000). The FDRP is evolutionary because, although there was a shift in the favoured means of flood control, structural controls remained in place and had to be managed by those organizations already involved in Canadian water management.

Since the mid-1990s, changes to many of the institutional arrangements affecting water management agencies throughout the world have been “revolutionary” and have occurred in the context of expanding neo-liberalization, globalization, increasing use of technologies, and dramatic shifts in economic circumstances and political trends

(McDonald 2000; Young *et al.* 2006). In contrast to evolutionary changes, revolutionary changes occur over a brief period of time, are discontinuous, and can often involve profound modifications to institutional arrangements (Cunningham 2002; Weick and Quinn 2004). Revolutionary change is often distinguishable to a single event (Pettigrew *et al.* 2001; Boonstra 2004). Focused at the core rather than the margins of an agency, revolutionary changes can prompt fundamental rethinking of existing planning practices, funding arrangements, and procedures within which an organization operates.

Significant changes for water management in the UK occurred earlier than in most countries when, in 1989, Prime Minister Thatcher suddenly privatized all Federal Water Authorities (Bulkley 1995; Laster 2000; Johnston and Handmer 2002). This decentralization made hierarchies of management very complex for all levels of government, non-governmental groups, insurance companies, and the public. Put simply, water management functions were placed on the open market. Some government agencies lost traditional funding and functions to private organizations. These changes occurred within one year following the announcement of privatization.

Water management in Australia has also faced revolutionary changes involving the downloading of functions and privatization. Privatization in Australia was facilitated by the application of market mechanisms to water resources, which allowed individual landowners to take over water allocation functions. For example, market mechanisms in the Murray Darling Basin began suddenly in the late 1990s with the allocation of water rights attached to a specific farm property (Blackmore 1995; Hooper *et al.* 1999; Smith and Meshwari 2002). Applying market mechanisms to water allocation amounts allowed property owners to increase their allocation of water or financial resources using

mechanisms such as the sale of property with attached water rights, the transfer or sale of water entitlements, and the adoption of a number of financial incentives aimed at increased water use efficiency (Smith and Maheshwari 2002).

Canada experienced revolutionary changes in the mid-1990s with the sudden cancellation of the FDRP. Seeking to minimize its responsibilities in water management, the federal government began phasing out the FDRP in 1996 by unilaterally announcing that it would not renew agreements or partnerships with the provinces or territories (de Loë 2000). To justify this change, the mandate of Environment Canada, the agency responsible for the FDRP agreements, was redefined to deal exclusively with quality issues of water, air and soil (Shrubsole 2000; de Loë and Wojtanowski 2001).

Each of the above examples is revolutionary and represents fundamental changes to institutional arrangements that occurred quickly and were often not anticipated. These changes occurred at such a rate and magnitude that they could not be sufficiently alleviated or accommodated without a fundamental reshaping of long-held assumptions about the role of government, planning traditions, funding arrangements, policies and procedures.

1.3 Revolutionary Change and Ontario's Conservation Authorities

In 1946, the *Conservation Authorities Act* was passed in Ontario “to further the conservation, restoration development and management of natural resources other than gas, oil, coal and minerals.” By 2003, there were 36 conservation authorities across Ontario following the amalgamation of the Moira, Napanee and Prince Edward Conservation Authorities into the Quinte Conservation Authority. The conservation

authorities of Ontario represent an initial endeavour in Canada to develop watershed-based organizations for natural resource management (Richardson 1974; Hale 1988; Shrubsole 1990).

Four major components formed the core of the conservation authority program – water management and related land resources management, recreation provision, and the provision of information and education (Mitchell and Shrubsole, 1992). Water management activities of the conservation authorities primarily involve flood protection. Originally, flood protection functions of the conservation authorities involved the creation of large multi-purpose dams, such as the Fanshawe Dam in London.

Prior to the mid-1990s, the conservation authorities experienced evolutionary changes, and institutional arrangements in Ontario were supportive of their programs. By 1988, after forty years of supportive and evolutionary changes to institutional arrangements, the conservation authorities received funding of more than \$40 million a year from the province and had a total budget of approximately \$100 million (Hale 1988). Funding at this time was available from the province for all management activities of the conservation authorities, including non-structural flood control.

The continued success of the conservation authorities was tested when revolutionary changes, began to affect them in 1995. In the 1995 Ontario election, a Conservative government was elected on a platform based on neo-liberalist perspectives called “The Common Sense Revolution.” Initial steps towards fiscal responsibility came in the form of a Provincial Economic Statement (1995). For the conservation authorities, this statement resulted in a 70% reduction in provincial funding and curtailed funding for many of their traditional watershed management functions, such as the provision of

education and non-structural flood control (Winfield and Jenish 1995; Cooper 1996; Shrubsole *et al.* 1997; O'Connor 2002a and b). Two provincial bills, Bill 20 and Bill 26, were introduced in conjunction with the Provincial Economic Statement which threatened the conservation authorities' ability to carry out numerous management functions (Winfield and Jenish 1995; Cooper 1996). These legislations removed the effectiveness of functions from the conservation authorities, such as commenting on changes to municipal official plans and by-laws, allowed municipalities to more easily appeal their levy payments to conservation authorities, and removed provincial funding for processing permits for development in the floodplain – a function of the conservation authorities under Section 28 of the *Conservation Authorities Act* (Shrubsole *et al.* 1997).

Despite such revolutionary changes, the conservation authorities survived and remained leading water management organizations in the province (O'Connor 2002b). As example of the conservation authorities' leadership in water management was seen in the aftermath of what was referred to as the "Walkerton Tragedy." In May of 2000, the small town of Walkerton, Ontario experienced contamination of the municipal water that killed seven people and left 2,300 with long-term illnesses (de Loë *et al.* 2005; de Loë and Kreutzwiser 2005 and 2007). Having demonstrated their ability to carry out watershed-based management, the conservation authorities were one of the few water management organizations praised in the resulting *Walkerton Inquiry Part II* (O'Connor 2002b). In response to the release of the *Walkerton Inquiry Part II*, in 2002 the Minister of the Environment established an Advisory Committee on Watershed-based Source Protection Planning in 2002. From the resulting report, key recommendations maintained that the conservation authorities, where they exist, be the organizations responsible for

coordinating source water protection plans and lead source water protection planning committees. Since that time, conservation authorities have undertaken strategic planning activities for coordinating and implementing new source water protection regions.

Key research questions emerge from this experience. First, how did the conservation authorities survive the political changes and budget cuts of 1995? Second, can the concept of adaptive capacity provide a framework that can be used to describe and explain the conservation authorities' response? Answers to these questions are the core of this dissertation.

A comparative case study of two conservation authorities, the Grand River Conservation Authority (GRCA) and the Ganaraska Region Conservation Authority (GaRCA), was undertaken to complete this thesis. A comparative case study investigation is especially valid for the conservation authorities, which must manage a range of similar and dissimilar responsibilities in a context of shared institutional arrangements. The GRCA and GaRCA are considered appropriate for a comparative case study analysis as they represent the range of spatial size and resource availability among the 36 conservation authorities in Ontario. While the GRCA is a complex authority that exists within a highly developed watershed, the GaRCA exists at a much smaller scale. The organizational structure for the GRCA and GaRCA in 2000, five years after revolutionary changes, is provided in Appendix 1. It is worth noting that, while both structures appear similar, the GRCA has an additional management tier with the existence of a Planning and Operations Committee, and an Administration, Finance and Personnel Committee.

The conservation authorities offer an exceptional opportunity to investigate organizations that have experienced revolutionary changes since the mid-1990s, have been able to survive those changes, and remain effective at undertaking water management functions. Questions remain as to whether or not there is a management concept sufficient to frame the conservation authorities' experience. Recently, the concept of adaptive capacity has been seen as an appropriate means of understanding how agencies prepare for and adjust to revolutionary changes. To date, there has not been a review of the conservation authorities' experience to determine what lessons they provide regarding the interrelationships of the elements of adaptive capacity and what the organizations could have done to better address revolutionary changes.

1.4 Adaptive Capacity

Adaptive capacity provides this research with a management concept that can be used to describe how the conservation authorities adjusted to revolutionary changes experienced in 1995. Adaptive capacity has recently been promoted as a management concept for preparing for and responding to revolutionary changes (Hagmann and Chuma 2002; Few 2003).

Although the definition of adaptive capacity is debated, common to most literature is that adaptive capacity requires that capacity be retained for specific functions in response to change. For example, Folke *et al.* (2002, 7) explain that systems with high levels of adaptive capacity are "able to re-configure themselves without significant declines in crucial functions in relation to primary productivity." Brooks (2003, 8) explains that while there are many definitions of adaptive capacity, it can be described as

“the ability or capacity of a system to modify or change its characteristics or behaviour so as to cope better with existing or anticipated external stresses.” Describing adaptive capacity in practical terms, Brooks and Adger (2005, 168) outline adaptive capacity as “the ability to design and implement effective adaptation strategies, or to react to evolving hazards and stresses so as to reduce the likelihood of the occurrence and/or the magnitude of harmful outcomes.”

Adaptive capacity is often considered either synonymous with, or in direct relation to concepts of adaptation and vulnerability (Allison and Hobbs 2004; Adger and Vincent 2005). For example, Brooks and Adger (2005) state that adaptive capacity is determined by the set of resources available for adaptation and how effectively they are employed to reduce vulnerability. Throughout this thesis, adaptation and vulnerability are not often mentioned separately since adaptive capacity is considered to encompass both and refers to an organization’s ability to retain and enhance management functions within its institutional arrangements during periods of revolutionary change by preparing for and responding to such changes. Since actions taken in response to revolutionary change can be an adaptation as well as reduce vulnerability, this thesis suggests that too much emphasis is placed on separating these concepts.

Without an accepted definition, recent literature has increasingly called for a method of reviewing adaptive capacity that is applicable to different communities and across spatial scales and based on generic elements (Brooks 2003; Adger and Vincent 2005; Nelson *et al.* 2000). Adger and Vincent (2005, 400) have stated that the current “challenge for emerging insights into adaptation is how to characterize this adaptive capacity in a meaningful sense and to find generic determinants of adaptive capacity at

various scales to build predictive models of its evolution into the future.” Brooks and Adger (2005) discuss why finding specific elements of adaptive capacity has been so difficult, as they describe adaptive capacity as conceptual and not directly measurable. They go on to state that elements of adaptive capacity should be qualitative in nature so that they may be applied at various scales and be applicable to unique situations.

The continuum of recent approaches for reviewing adaptive capacity based on generic elements ranges from those that involve inductive research to those that are deductive in nature. Inductive approaches for reviewing adaptive capacity often include elements that can be given a numeric value to determine the adaptive capacity of societies (Appelgren and Klohn 1999; Yohe and Tol 2002; Ferrier and Hague 2003; Brooks and Adger 2005). A difficulty with inductively-based elements is that results are largely data driven when elements are given a numerical value (Adger and Vincent 2005). This method can result in numerical conclusions that do not suggest alternatives and are impractical for policy-makers. Other researchers have determined methods of reviewing adaptive capacity based on generic determinants that are deductive in nature. Nelson *et al.* (2007) use a conceptual framework based on human, social, natural, physical and financial capitals that contribute to and help Australian land managers implement adaptive capacity. Research using deductive-based elements often provides general topics, such as social mechanisms, and suggests that the specific elements be based on the society studied (Few 2003; Nelson *et al.* 2007). There are often no specific variables or scale for measurement since elements are defined based specifically to the region and discourses that they will affect.

While the methods of reviewing adaptive capacity above are used effectively to address the research to which they are applied, no conceptual framework exists that contains generic elements of adaptive capacity targeted specifically at organizations facing or dealing with revolutionary change. Since resource management organizations increasingly have had to deal with revolutionary changes since the mid-1990s, the development of a conceptual framework was considered necessary to complete this research, and to review the experience of the conservation authorities. The framework created for this research applies theory-driven elements that sufficiently represent adaptive capacity based on their prevalence in the literature and their appropriateness for managing revolutionary changes. It is the combination of these elements, and not sizeable evidence of each separately, that represents adaptive capacity. This approach is taken so that the framework can ideally be applied to describe the experience of a variety of organizations facing revolutionary changes within their institutional arrangements.

1.5 Research Aim and Objectives

The primary purpose of this research is to develop a framework of adaptive capacity based on underlying elements, as identified in the established literature, and to apply that framework with a review of organizations that have experienced and survived revolutionary changes. A second purpose of this research is to determine if and how the conservation authorities responded to revolutionary changes by applying elements of adaptive capacity. To address these purposes, the following objectives are addressed:

1. To develop a framework of adaptive capacity in order to identify its underlying elements, and;

2. To apply the framework to describe the responses of two conservation authorities by using a longitudinal approach (pre and post revolutionary changes) to discover:
 - a) lessons provided by the conservation authorities about adaptive capacity and its constituent parts,
 - b) examples of how the GRCA and GaRCA addressed revolutionary changes with the application of elements of adaptive capacity.

Academic and practical contributions are provided by this research. The framework developed for this research advances the literature of capacity building, resilience, flexibility and adaptive capacity and substantiates the relevance of the concept of adaptive capacity. The framework also provides the literature with a conceptual framework of adaptive capacity, based on its generic elements, that is focused specifically at organizations facing revolutionary change to institutional arrangements. Although this research is intended to be relevant to other management organizations, it concentrates on water management with a more detailed comparative case study involving the GRCA and the GaRCA.

1.6 Thesis Structure

Chapter Two provides an overview of the literature relevant to this thesis. Literature topics include an explanation of the concept of adaptive capacity, including elements of adaptive capacity determined in this research. Chapter Three provides the research methods used in this research. Chapters Four and Five review how the GRCA and GaRCA responded to revolutionary changes after 1995 through strategic planning

and financial planning, respectively. Chapter Six reviews how the conservation authorities responded to revolutionary changes after the Walkerton Tragedy in 2000. Chapters Four to Six are used to investigate how the elements of adaptive capacity interrelate and how the conservation authorities could address revolutionary changes in the future to gain or retain adaptive capacity. Chapter Seven provides conclusions.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Adaptive capacity refers to an organization's ability to retain and enhance management functions within its institutional arrangements during periods of revolutionary change by preparing for and responding to such changes. This literature review provides a foundation for the development of the research framework of adaptive capacity that guided the data collection and examination. This thesis aims to describe the main elements related to adaptive capacity, amalgamate these elements into a framework and apply this framework to organizations that have experienced revolutionary changes and retained capacity to carry out key management functions.

The first section of this chapter describes why adaptive capacity is used in this thesis as the concept to describe how an organization responds to revolutionary changes. The second section of this chapter describes the elements of adaptive capacity related to the management of change and describes the framework that emerges from those elements. Three elements – capacity building, flexibility, and monitoring and learning as a proxy indicator of resilience – are central to adaptive capacity. The third section of this chapter assesses the merits of strategic planning, particularly the role of the vision statement, as a fourth element of adaptive capacity. The vision statement guides employees as to the functions that capacity is to be retained during times of change. This chapter concludes with a summary of how the different elements of adaptive capacity interrelate and how these provide an opportunity to examine an organization's ability to respond to revolutionary change.

2.2 Scoping and Defining Adaptive Capacity

Recently introduced to the management literature, adaptive capacity has not garnered a precise definition. There is some agreement that adaptive capacity is a concept focused on responding to change with adaptations aimed at reducing vulnerabilities (Allison and Hobbs 2004; Adger and Vincent 2005; Smit and Wandel 2006). In social science, much of the literature on adaptive capacity in the past decade has related to climate change (Burton *et al.* 2002; Brooks and Adger 2005; Alberim *et al.* 2006). Literature focused on climate change typically uses the definition of adaptive capacity provided by the International Panel on Climate Change (IPCC) as the “potential ability of a system, region, or community to adapt to the effects of impacts of climate change” (Smit and Pilifosova 2002, 881). Brooks and Adger (2005, 168) refined this definition by suggesting that adaptive capacity is “the property of a system to adjust its characteristics or behaviour, in order to expand its coping range under existing climate variability, for future climate conditions.” Not all recent literature on adaptive capacity relates directly to climate change. For instance, Folke *et al.* (2002, 7) define adaptive capacity in relation to resilience as “the ability of a social-ecological system to cope with novel situations without losing options for the future.” Other researchers have defined adaptive capacity in combination with various concepts, describing how such concepts are interrelated.

Specific concepts commonly used in relation to adaptive capacity include vulnerability (Blaikie *et al.* 1994; Kindzewicz *et al.* 2002; Janssen *et al.* 2006), and adaptations (Tompkins and Adger 2003; Smit and Wandel 2006). For example, Adger and Vincent (2005, 400) determine adaptive capacity as a “vector of resources and assets

that represent the asset base from which adaptation actions and investments can be made.” Smit and Wandel (2006, 285) state that a number of researchers use vulnerability and adaptive capacity interchangeably and directly related to exposure. Adger (2006, 268) is one such researcher who states that vulnerability “is the state of susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt.”

For a clearer definition of adaptive capacity, terms such as adaptation, vulnerability and adaptive capacity are often distinguished. This was one purpose of a special edition of *Global Environmental Change* organized by the International Human Dimensions Programme on Global Environmental Change in 2006. In the introduction to this edition, Janssen and Ostrom (2006, 237) describe how they “experienced a Tower of Babel in hearing definitions.” They concluded that concepts such as adaptive capacity, vulnerability and adaptations, although different, must all be considered in a manner that is multi-dimensional and that can “facilitate the understanding of the various complex interactions, among a broad range of social and natural dimensions in global environmental change, that eventually play themselves out in the world at different scales” (Janssen and Ostrom 2006, 235). Such a conclusion alludes to the lack of agreement about the definition or meanings of such terms due to the complexity of their contexts, criteria or past uses. Even among the authors within that special edition of *Global Environmental Change*, no consensus emerged for a definition or specific means of examining adaptive capacity. To move this agenda forward, the following discussion focuses on the terms “adaptation” and “vulnerability,” two terms most often considered in relation to adaptive capacity.

2.2.1 Adaptation

Adaptation has its origins in the natural sciences where it refers to characteristics that allow an organism to cope with and survive within its environment. According to Janssen *et al.* (2006), adaptation in anthropology has been applied to describe the abilities of people to respond to environmental change since the early 1900s. Related to anthropology, cultural adaptations are presented in a Darwinian view and equated to genetic characteristics. In this context, “adaptation refers to the process of structural change in response to external circumstances” (Young *et al.* 2006, 305). However, some researchers consider adaptation to encompass more than actions taken in response to change and include current abilities in their definition of adaptations. Smit *et al.* (1999, 203) describe this view of adaptation as one that “refers to both the process of adapting and the condition of being adapted.” Literature related to adaptation increased significantly after the mid-1990s, coinciding with the rise in public interest in global environmental change (Janssen *et al.* 2006). In 2001, Working Group II of the IPCC defined adaptation as an “adjustment in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts” (Smit and Pilifosova 2001, 881). Common to nearly all definitions of adaptation is that it represents actions or elements of an organism, organization or population that help to ensure survival within external environmental or institutional realities.

The various methods of examining adaptation are based on the organization, system, or type of changes being studied. According to Smit *et al.* (1999), the availability of adaptations is specific to the system studied and the adaptations are often differentiated by attributes of purposefulness, timing, temporal scope, functions/effects,

form and/or performance. Other authors have attempted to determine generic variables of adaptations that are applicable to various temporal and spatial scales (Smit *et al.* 1999; Wall *et al.* 2004). Smit and Wandel (2006, 283) explain that, in this view, adaptation “broadly refers to the development of generic or behavioral characteristics which enable organisms or systems to cope with [changes] in order to survive.”

Adaptations in this research are considered as those adjustments made in order to address change and reduce vulnerabilities. Specific adjustments by organizations are most often implemented as a result of changes to institutional arrangements that have already occurred or are expected to occur. However, organizations sometimes implement actions to minimize recognized vulnerabilities within the organization before evidence of apparent change.

2.2.2 Vulnerability

Adaptations are considered to be adjustments made to address change and reduce vulnerabilities, so it is important to explain what is meant by the term “vulnerability.” Like adaptive capacity and adaptations, there is no accepted definition of vulnerability (O’Brien *et al.* 2007). Vulnerability has been described as another “one of those terms that seems to defy consensus usage” (Few 2003, 48). One reason that defining vulnerability is difficult relates to the many disciplines, such as anthropology, psychology and engineering, that use it (Adger 2006).

A definition of vulnerability that is applicable across many fields of research has been presented as simply the “capacity to be wounded” (Smit *et al.* 1999). O’Brien *et al.* (2007) term this “outcome vulnerability” in which a linear approach is taken to assess

future impacts less the effects of adaptation measures. Climate change research often builds upon this view of vulnerability. For example, Smit and Pilifosova (2002) demonstrate that vulnerability to climate change is determined by physical exposure to environmental changes as opposed to the socioeconomic ability to adapt to these conditions. Other researchers have agreed that vulnerability is determined by exposure less the ability to cope or adapt to that change. For example, Few (2003, 48) states that there are differences “of approach between those that see vulnerability in terms of variations in exposure to hazards and those that concentrate on variation in people’s capacity to cope with hazards.” The term vulnerability in natural hazard research is frequently defined as “the characteristics of a person or group in terms of capacity to anticipate, cope with, resist, and recover from the impact of [change]” (Blaikie *et al.* 1994, 9). Though debates remain as to the exact definition of vulnerability, the one offered by Blaikie *et al.* (1994) is considered one of the most influential and accepted in social science (Few 2003; Janssen *et al.* 2006).

This research uses the definition by Blaikie *et al.* (1994) and determines vulnerability to represent the impacts of changing institutional arrangements less the effects of existing functions of an organization, as well as adaptations initiated by organizations to anticipate, cope with, resist, and recover from those changes. O’Brien *et al.* (2007) deem this view of vulnerability, based on multi-dimensional interactions, as contextual vulnerability as it is determined by two distinct aspects of an organization, adaptations and existing management practices.

Examinations of vulnerability have been done by numerous methods, often based on the field of research within which they occurred. Adger (2006, 274) explains a

difficulty in examining vulnerability, stating that reviews must “reflect social processes as well as material outcomes within systems that appear complicated and with many linkages that are difficult to pin down.” As with adaptation, numerous attempts have been made to find generic variables of vulnerability. For example, a number of researchers define vulnerability as a social product and attempt to find underlying social conditions (variables) that can be used for assessment (Cutter *et al.* 2000; Wisner 2000). Other researchers attempt to quantify social conditions into metrics that are comparable across time and location (Adger 2006).

Adaptive capacity is defined in this research as an organization’s ability to retain and enhance management functions within its institutional arrangements during periods of revolutionary change by preparing for and responding to such changes. Adaptive capacity has traditionally been closely associated with the concepts of “adaptation” and “vulnerability” (Janssen *et al.* 2006; Gallopin 2006; Smit and Wandel 2006). Unlike adaptive capacity, adaptation and vulnerability have been prevalent in the literature for over thirty years (Smit and Wandel 2006; Young *et al.* 2006). While vulnerability is based on the impacts that will occur as a result of changing institutional arrangements (Burton *et al.* 2002; Janssen *et al.* 2006; Tol and Yohe 2006), adaptations are those responses, either planned or reactive, that an organization uses to lessen its vulnerability (Burton *et al.* 2002; Brooks and Adger 2005). It is argued in this thesis that research focused on adaptive capacity has recently been too concerned with distinguishing between the concepts of adaptation and vulnerability. Instead, it is suggested that these concepts should be considered together as interrelated. As such, adaptation and vulnerability are only occasionally mentioned separately in this research and are regarded

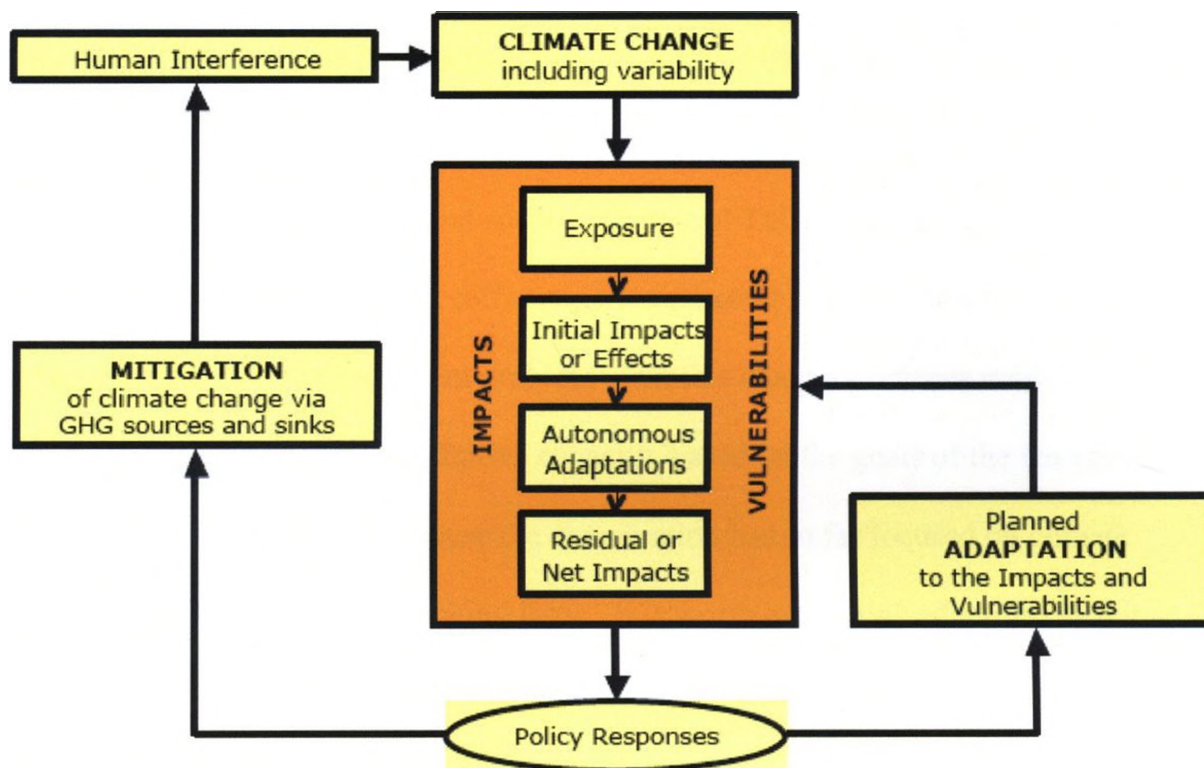
as inherent to adaptive capacity, a more appropriate management concept to more fully address revolutionary change.

2.3 Assessing Adaptive Capacity

Recent literature has increasingly called for the creation of appropriate frameworks of adaptive capacity (Yohe and Tol 2002; Kundzewicz *et al.* 2002; Alberim *et al.* 2006). Conceptual frameworks provide an illustrative design of elements that allows researchers or organizations to assemble information and demonstrate how those elements are interrelated. Though adaptive capacity is becoming increasingly prevalent in the environmental management literature, there are currently no conceptual frameworks applicable to review an organization's ability to respond to revolutionary change to its institutional arrangements. The next section briefly reviews the trends in frameworks of adaptive capacity before describing why a new framework was created to complete this research.

Elements included in frameworks of adaptive capacity related to climate change research typically include macro-scale characteristics that help a community address the potential impacts of change (Bender 2002; Ferrier and Haque 2003). For example, in their work for the IPCC, Smit and Pilifosova (2006) determined elements representative of adaptive capacity to include economic wealth, technology, information, infrastructure, institutions, and equity. Perhaps the most influential framework related to climate change and adaptive capacity was presented in Chapter 18 of the Report of the Working Group II to the Third Assessment Report of the IPCC, which was representative of mitigation and adaptation responses (Burton *et al.* 2001) (see Figure 2.1).

Figure 2.1: Mitigation and adaptation responses



Source: Burton *et al.* 2001

Resource management literature since 2001 has commonly stated that the IPCC framework is a definitive work in adaptive capacity (Yohe and Tol 2002; Few 2003; Tompkins and Adger 2003). This framework provides generic elements to examine adaptive capacity in response to climate change that can be applied to any community. However, specific variables of these elements are determined by the location of the study. The impacts of climate change are either effectively or ineffectively coped with through the combination of social, economic, political, and technical variables relevant to that community.

Researchers have recently agreed with the IPCC and created other frameworks of adaptive capacity based on generic elements. Given the different goals of researchers,

however, the range of variables spans from quantitative, ratio-based indicators (Yohe and Tol 2002; Kundzewicz *et al.* 2002) to qualitative variables that are not numerically measurable (Tompkins and Adger 2003; Hagmann and Chuma 2002; Few 2003). For example, while Tompkins and Adger (2003) suggest qualitatively analyzing variables of learning processes, institutions and society, Yohe and Tol (2002) attempt to calculate specific numerical thresholds for different environmental changes. It is obvious that even for the same resource management problem – climate change – various methods can be used to determine elements of adaptive capacity, based on the goals of the researcher. Perhaps this situation exists because the examination has so far focused on climate change, a very broad and far reaching issue. It is worth examining adaptive capacity research that is more regionally based and directly related to research in water resource management.

Attempts to develop a framework of adaptive capacity based on generic elements for water resource management have been increasing since 1999 (Appelgren and Klohn 1999; Kundzewicz *et al.* 2002; Few 2003; Adger and Vincent 2005). Although much of this research developed as a result of increased attention to the climate change issue (Adger 2001; Yohe and Tol 2002; Kundzewicz *et al.* 2002; Few 2003; Adger and Vincent 2005), others have simply focused on developing indicators for conflicts in water resource management (Appelgren and Klohn 1999). The next section uses three examples that are representative of the types of frameworks that have been created, based on generic elements of adaptive capacity, for water management.

The first framework is illustrative of the most quantitative research and was created by Yohe and Tol (2002). Based on a scalar equation, elements such as resources,

institutions, human capital, social capital, risk spreading, information management and awareness are quantified so that a region's adaptive capacity can be graphically represented. In this research, flooding responses along the Rhine River are used in a case study to measure adaptive capacity. Thresholds are calculated based on a combination of the community's economic, political, and social factors. Determinants included under the broad elements are evaluated against a specific feasibility factor, efficacy factor and coping index to develop quantified details of adaptation options for flooding. Although efficient, social variables in this framework are simplified to numerical representations that are difficult to interpret or do not influence persons unfamiliar with the initial analysis.

A second framework also uses numerical indicators but is illustrative of works that do not incorporate the same level of statistical analysis that Yohe and Tol (2002) employed. Focusing on societies facing water scarcity, Appelgren and Klohn (1999) are more pragmatic and attempt to determine elements of adaptive capacity that can be directly applied to policy making and conflict resolution. Specific elements are based on a composite index of social water scarcity, which in turn is based on elements of the hydrological environment combined with indicators for social measures. Unlike the research findings by Yohe and Tol (2002), results from these findings present social stress at the ordinal level, providing available actions in rank order, which are logical to affected stakeholders. Elements of adaptive capacity in this work are only loosely based on the Human Development Index and easier to modify than the preceding example. As explained by Appelgren and Klohn (1999, 367), elements for adaptive capacity need to be easily variable because "adaptive capacity is a general and multi-faceted concept that,

intuitively, comprises socio-economic development, education, human rights, institutional capacity, etc.” This slightly less quantified research may be more pragmatic, but it is still a highly technical and relatively difficult approach for policy-makers to make clear to stakeholders or implement in any practical sense.

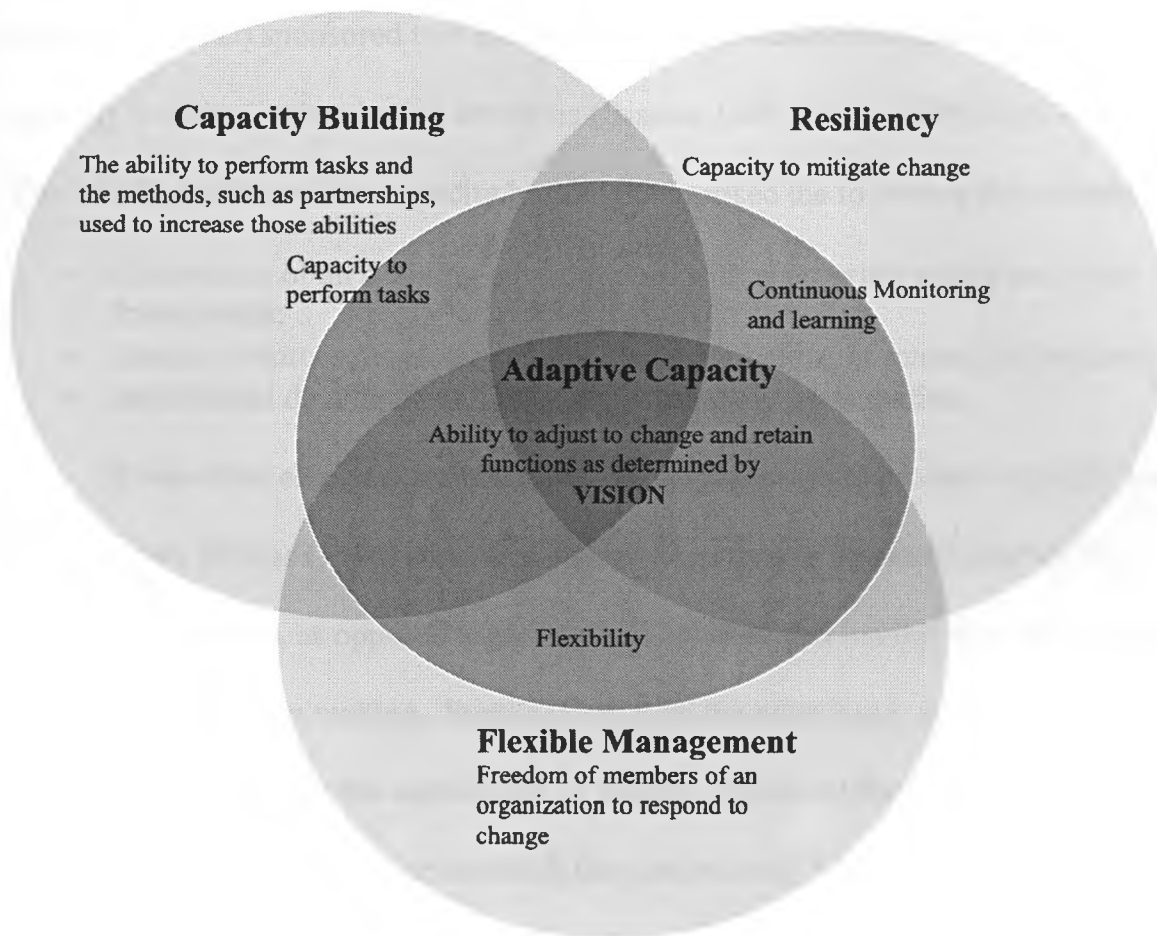
A final example of the range of elements used in frameworks of adaptive capacity is represented by Few (2003) and concerns coping strategies for flooding. By reviewing theoretical and applied research on adaptive capacity and vulnerability, Few (2003) takes an approach that is explicitly qualitative to suggest that elements of adaptive capacity should be determined by specific communities. As such, Few (2003) proposes broad elements of adaptive capacity that must be precisely determined according to each situation. These broad elements include social mechanisms, economic adjustments, technological advancement and social constructs. No specific variables or scale for measurement are provided. Few (2003, 52) explains that this inability to provide explicit variables is largely the result of people being effective actors in their own changing environments that “do not simply draw on their assets but possess sophisticated skills in managing them to cope with adversity and take advantage of opportunities.” The theoretical research provided by Few (2003) is valuable as a background for helping to understand the social variables of adaptive capacity, but is not used for this research as it is focused specifically on communities and does not provide a sufficiently illustrative structure to organize research.

A number of conclusions can be drawn from the current state of frameworks of adaptive capacity. First, variables of adaptive capacity whose evaluative criteria are purely statistical, and measured on a ratio-based scale, may be too complex to be

effectively utilized or implemented by policy-makers and organizations. In contrast, purely theoretical variables, with no specific elements or evaluative criteria, are academically useful but provide limited practical assistance to an organization wishing to increase its adaptive capacity.

It is the conclusion of this author that, to effectively review adaptive capacity in a manner that can be easily understood and pragmatically utilized, a set of general elements should be developed through a theoretical understanding of the literature, and these elements then applied appropriately to the case studies. Consequently, a new conceptual framework was created, one specifically focused on organizations that have experienced revolutionary changes to their institutional arrangements. As will be shown in the next section, the literature suggests that four elements – vision, capacity building, flexibility, and monitoring and learning as a proxy indicator of resilience – form the essence of adaptive capacity. Accepting that adaptive capacity may exist when an organization has retained and enhanced management functions, it is clear in Figure 2.2 how different combinations of elements might represent adaptive capacity. Utilization of this framework allows researchers to investigate the interrelationships among the elements of adaptive capacity and possibly provide insights to organizations on how to prepare for future revolutionary changes. The next section of this chapter explains the different elements of the framework.

Figure 2.2: Conceptual framework of adaptive capacity



2.4 Elements of Adaptive Capacity

2.4.1 Capacity and Capacity Building

While capacity commonly refers to the ability of an organization to successfully undertake certain tasks (Goodman *et al.* 1998; Franks 1999), capacity building refers to the methods applied to increase those abilities (Hartig *et al.* 1995; Lockie *et al.* 2002; Adger and Vincent 2005). Specific modes of capacity building may be the application of adaptations in response to change, or they may be retaining the *status quo* for functions that are effective during times of change. Although “capacity building” was a term used in the water management literature prior to the 1990s, it was not until the early 1990s that

the term came to prominence (Biswas 1996). In 1991, the United Nations Development Program (UNPD) sponsored two international symposia on water management and capacity building in developing countries (Biswas 1996; Franks 1999; Ivey *et al.* 2004).

The UNPD concluded that capacity building comprised the following three elements:

- the creation of an enabling environment, with appropriate policy and legal frameworks;
- human resources development and the strengthening of managerial systems; and,
- institutional development, including community participation.

These three elements are often used in varying ways to promote capacity building.

For example, Biswas (1996) considers capacity building to be determined by the attributes of leaders, as opposed to managerial systems, and having the right managers to guide proper decision making. Franks (1999), on the other hand, considers capacity building to also include the capabilities of people, the size of the tasks, the resources available, and the contexts within which they must work. Most researchers agree that capacity involves the ability of an organization or others to effectively carry out designated management functions, and capacity building refers to how people increase the ability to carry out existing and desired functions (Grindle and Hilderbrand 1995; Hartig *et al.* 1995; Franks 1999).

2.4.1.1 Capacity Building and Partnerships

Partnerships are an important aspect of capacity building (Grindle and Hilderbrand 1995; Diamond 2004). Grindle and Hildebrand (1995, 445) focus their definition of capacity building on elements such as effective communication networks and strong organizational cultures, stating that “capacity building refers to improvements in the ability of public sector organizations, either singly or in cooperation with other

organizations, to perform appropriate tasks.” Partnership is important enough in this instance to be considered necessary for the definition of capacity building to include the term “or in cooperation with others.” For a capacity building tool to be effective, either as a current management element or an adaptation in response to change, researchers have been careful to stress that partnerships must be designed so that all partners consider them beneficial to their own organizations (Hastings 1999; Coulson 2005). Ideally, assessment of partnerships would involve obtaining the views of all partners, though extensive information can be gathered with relevant material such as correspondence and interviews with influential participants. Partnerships, either pre-existing or created in response to change, have the potential to increase capacity as they are based on an understanding that capabilities can be gained when organizations share resources and/or stakeholders work towards a common goal.

The notion of partnerships as an aspect of capacity building has appeared in water management research since the mid-1990s (Hartig *et al.* 1995; Litke and Day 1998; Franks 1999). Franks (1999, 53) supports this focus on “interventions which allow professionals to work alongside one another as equals.” Interventions, such as networking, twinning arrangements, seminars and the sharing of knowledge, are specifically mentioned. Discussing Remedial Action Plans in the Great Lakes, Hartig *et al.* (1995) include partnerships or coalitions as specific means to strengthen capacity building through human elements and strategies.

Capacity and capacity building are considered in this thesis as the foundational elements of adaptive capacity. In the context of change, if an organization is unsuccessful at retaining capacity for key management functions then that function is lost

and adaptive capacity for that function is impossible (Hagmann and Chuma 2002; Adger and Vincent 2005; Brooks and Adger 2005). Brooks and Adger (2005, 170) describe capacity and capacity building as foundational to adaptive capacity, stating that “adaptive capacity inherent in a system represents the set of resources available for adaptation, as well as the ability or capacity of that system to use these resources effectively in the pursuit of adaptation.” However, capacity building by itself is often considered inappropriate to respond to change at the revolutionary scale. For example, Stoddard and Jarvenna (1995) found that revolutionary change was most commonly addressed by fundamentally changing the way in which organizations operate, by implementing approaches such as deep structural change, paradigm shifts or the “all-at-once strategy,” which assumes organizations rapidly alter technical and social systems simultaneously.

In this research, while capacity building is considered an effective response to evolutionary changes, revolutionary changes occur at a rate and magnitude that require organizations to “fundamentally” change. Two particular elements of adaptive capacity that distinguish it from capacity building and make it an improved strategy to contend with revolutionary changes include the process of constant monitoring and learning found in resilience theory and high levels of flexibility intrinsic to flexible management.

2.4.2 Resilience Theory

Rooted in Holling’s (1973; 1986) ecological work, resilience refers to the ability of a system to absorb changes and still persist (Holling 1973; Holling 1978; Folke 2006; Janssen *et al.* 2006). A forest fire is one example that represents an ecological change at a rate and magnitude that would be considered revolutionary. Holling (1973) presented

the idea of the existence of multi-stable states as an alternative to the steady state model. Multi-stable states in resilience are measured not by a finite equilibrium, but by the amount of disturbance a system can mitigate before the controls of that system shift to another set of stable variables. An example of resilience in ecology is how much infestation from disease a woodlot can experience before the dominant species of tree changes. Since Holling's initial work, the concept of resilience has increasingly shifted away from attempts to return a system to a prior state to abilities to monitor and recognize change in order to adapt to new realities (Folke *et al.* 2002; Adger 2000; Gallopin 2006). This shift has resulted in a view of resilience based on sustaining and enhancing capacity while recognizing and mitigating the unexpected (Adger 2000; Adger *et al.* 2005; Folke 2006).

Much like many biological entities, organizations possess the ability to monitor and recognize change (Adger 2000; Folke *et al.* 2002; Tompkins and Adger 2003). The comparable difference between the two is that, while the biological entity must adapt to changes in a physical ecosystem, the organization must adapt to changes in institutional arrangements. Researchers who have promoted resilience in the context of organizations have generally advocated two functions that are considered inherent to adaptive capacity: (i) mitigating change to avoid being forced into undesirable management operations or structures (Tompkins and Adger 2003; Gallopin 2006); and, (ii) promoting and preserving elements that decrease vulnerability and aid the organization's ability to effectively reorganize after change (Folke *et al.* 2002; Adger 2006; Janssen *et al.* 2006). Mitigating change to avoid being forced into undesirable management operations requires an organization to respond to change and gain or regain their capacity to undertake

desired management functions. As stated by Folke *et al.* (2002, 4), resilience “provides the capacity to absorb shocks while maintaining function.”

Promoting and preserving elements that decrease vulnerability and aid the organization’s ability to reorganize after change is the second function of resilience. This aspect refers to an organization’s ability to determine how to respond to change in the future. While the precise effects of change can not be predicted prior to it occurring, especially in the context of revolutionary change, the effects of change must be quickly ascertained and appropriate responses realized to contain or mitigate the negative consequences of those changes (Adger 2000; Weick and Sutcliffe 2001; Adger 2006). Appropriate responses may involve the preservation of capabilities internal to the organization or adaptations made to external opportunities. While internal functions represent those tasks carried out by an organization, external opportunities represent institutional arrangements that an organization can use to its advantage. The key aspect of resilience for this research is the process of continuous monitoring and learning so that when change occurs, opportunities are recognized, either from within an organization or involving new adaptations, in time to decrease vulnerability.

2.4.2.1 Continuous Monitoring and Learning from Resilience Theory

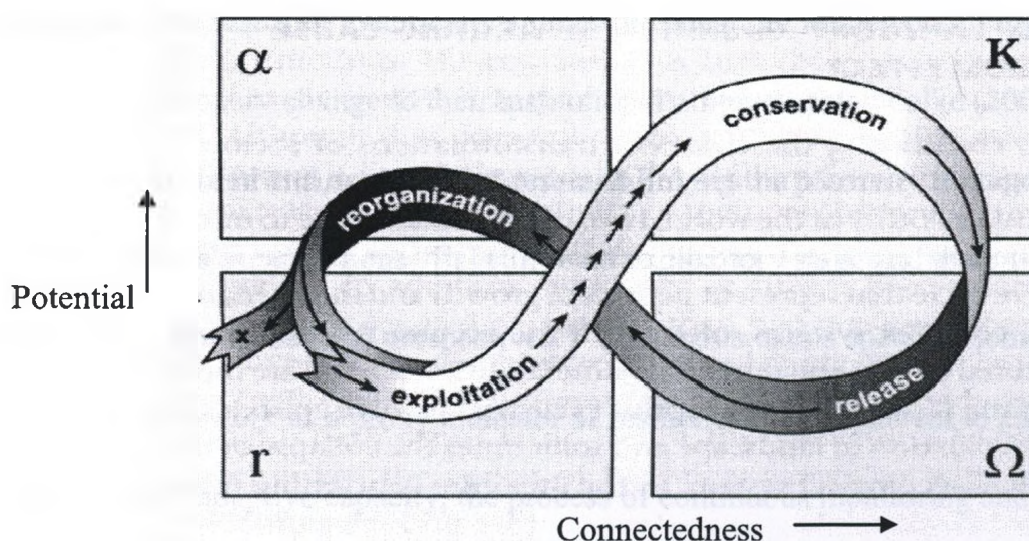
The process of continuous monitoring and learning of an organization’s internal and external institutional arrangements during revolutionary change are associated with and considered a proxy indicator of resilience theory. These are considered important elements of adaptive capacity in the literature. Authors such as Hagmann and Chuma (2002) have focused on this role of learning tools, such as experiential learning, in

enhancing adaptive capacity. At an individual level, this type of learning has been termed “transformational learning” in which adults, as opposed to children, learn through change and critical self-reflection (Diduck and Mitchell 2003). In this thesis, the focus on the process of continuous monitoring and learning as a proxy indicator of resilience refers to an organizational strategy and less on the individual.

Research that combines concepts of adaptive capacity and resilience often refers to the “panarchy” framework (see Figure 2.3) (Redman and Kinzig 2003; Folke 2006; Gallopin 2006). Holling, who created the framework, used the term “panarchy” after the name of the Greek god Pan, the god of nature, who was prone to cause sudden shock or fear (hence the term panic) in people (Gunderson and Holling 2002).

The panarchy framework builds on the adaptive renewal cycle developed by Holling (1986), which represents an adaptive cycle of nested hierarchies over time and space (Holling *et al.* 2002; Redman and Kinzig 2003; Folke 2006). Holling *et al.* (2002, 5) describe this framework as a method in which “to capture an image of unpredictable change and upon notions of hierarchies across scales to represent structures to sustain experiments, test results, and allow adaptive evolution.” As depicted in Figure 2.3, natural and organizational systems experience this cycle by passing from a stage of growth and available resources (r), to one of conservation as a system nears carrying capacity (K). Once the carrying capacity is reached, whether this be of a species in an ecosystem or a particular legal, political or economic arrangement in a social system, there is eventually a release stage (Ω) and reorganization (α). The release stage (Ω) of the panarchy framework is where revolutionary changes occur and the system moves to a new equilibrium (Folke 2006).

Figure 2.3: The Panarchy framework of resilience



Source: Redman 2005, 73 adapted from Holling 1986

The release and reorganization stages (Ω and α) combined are considered the “feedback loop” through which an organism or organization must respond, reorganize and relearn in order to remain relevant to the new system dynamic. It is during this reorganization that continual monitoring must occur so that effective responses and adaptations involving considerations relating to program delivery, financial allocation and organizational structure can be made (Gallopin 2006).

Though the term panarchy has existed for over 150 years, application of the panarchy framework to study the adaptive capacity of organizations has really occurred since only 2001 when Gunderson and Holling (2001) released *Panarchy: Understanding Transformations in Systems of Humans and Nature*. Since the release of that book, the concept of panarchy has increasingly been applied to examine resilience and adaptive capacity. Young *et al.* (2006, 304) describe how, after the introduction of the panarchy framework, studies in resilience evolved “to the study of nested cycles of adaptive change in [socio-ecological systems] in which persistence and novelty are intertwined.” While

literature relating the panarchy framework to social systems and organizations has increased, little research specifically applies the panarchy framework to organizations facing revolutionary change to their institutional arrangements. Folke (2006, 260) describes this trend and explains that research linking the panarchy framework to social systems such as organizations “[is] still in an exploratory stage and there is opportunity for creative approaches and perspectives.” This thesis uses a specific element of the panarchy framework as a proxy indicator of resilience that is inherent to an organization’s adaptive capacity, the process of continuous monitoring and learning.

Continuous monitoring and learning allow an organization to recognize revolutionary change in order to respond to that change and retain the capacity to carry out fundamental management functions. To respond quickly, organizations require an element of adaptive capacity that permits actions to take place in a timely manner, which may not be facilitated by traditional and more centralized management structures. Flexible management and the element of flexibility constitute that element.

2.4.3 Flexible Management

Flexible management is the third underlying element of adaptive capacity in this research. Flexible management is defined as the ability of an administrative system to effectively cope with change by accepting and embracing it, and then adapting to it (Hatum and Pettigrew 2004; Young *et al.* 2006). Although this definition appears to represent resilience, there is an important distinction. While resilience deals with review and understanding of change at the organizational or societal level (Cumming *et al.* 2005; Young *et al.* 2006), flexible management requires that organizations or individuals within

the organization be provided the freedom to act without formal or centralized approvals (Volberda 1997; Brooks and Adger 2005). For example, while the initiation of a program review represents a measure of resilience, the ability of employees to act without formal approval on new opportunities to meet corporate goals represents flexible management.

By accepting and welcoming change, flexible management requires an organization to be responsive in redesigning its structure and have the managerial capabilities to cope with change (Volberda 1996; Hatum and Pettigrew 2004). With respect to the former, allowing employees to make decisions during times of unexpected and revolutionary change illustrates a responsive structural design. Volberda (1997) describes how this type of flexibility has been effectively employed by corporations using the Flexibility Audit and Redesign (FAR) system. A FAR requires that employees assess the required flexibility at the organizational level based on the amount of change being experienced. The more drastic the changes experienced by an organization are, or the more revolutionary, the more likely employees of that organization will state they require higher levels of flexibility (Volberda 1996). Flexible management also requires a culture in which decisions made in the best interest of the organization by subordinates occur without the fear of reprimand, even if they prove unsuccessful.

Permitting people within an organization or organizations within a partnership to make decisions that are not drastic and are more effective when made quickly can facilitate adaptation and decrease vulnerability more effectively than in traditional, more rigid management structures (Folke 2006; Gallopini 2006). Decision-making processes within an organization or partnership are enhanced by decreasing the complexity of the organizational structure to encourage entrepreneurship, freedom of choice, sharing of

information, empowerment and positive reinforcement (Birkinshaw and Hagström 2000; Weick and Sutcliffe 2001). Birkinshaw and Hagström (2000, 2) describe how this shift within contemporary organizations has contributed to them becoming “more flexible than traditional hierarchical firms” and allows them to respond to “a fast-changing business environment.” However, successful flexible management must facilitate a balance between allowing flexible decision making and ensuring that those within the organization understand when it is appropriate to make such decisions. It should be understood by employees that, while innovative actions are encouraged, decisions should not be made if the employees do not have suitable training and authority to make the required judgments.

In the past decade, authors researching adaptive capacity have characterized revolutionary change as radical and unfamiliar, and promoted a style of strategic flexibility (Fulmer 2000; Folke 2006; Young *et al.* 2006). A number of researchers who advocate flexible management have also promoted the concept of adaptive capacity (Adger 2006; Gallopin 2006). While writing on businesses that have adapted to revolutionary change, Fulmer (2000) identifies large international corporations such as 3M, CBS, and eBay that have facilitated high levels of organizational strategic flexibility. He explains the current institutional environment of revolutionary change as operating on the “edge of chaos, where our adaptive organizations have to be” (Fulmer 2000, 177).

The next section discusses the guiding element of adaptive capacity that directs those within an organization how to employ the elements of adaptive capacity. A strong corporate vision, understood by all employees of the organization, will communicate to

employees which management functions are considered key, and how to apply indicators of adaptive capacity to retain those functions.

2.4.4 Strategic Planning

Mintzberg (1994) maintains that strategic planning was popularized in the business world in the early 1990s when American organizations faced dramatic changes triggered by factors such as globalization, international political change and neo-liberal economic trends. This popularization coincided with the time that revolutionary changes, some caused by the factors listed above, were occurring (Abrahamson 2004; Weick and Quinn 2004). Strategic planning offers organizations specific management procedures to restore management capacities by realizing mitigation measures and adaptations to be administered during change (Gordon 1993). Koteen (1997, 21) recognized that by the mid-1990s, strategic management had “become an essential tool for organization[s] to learn and develop if they wish to forge a state of excellence and respond constructively to a rapidly changing world.” Adapting strategic planning to higher education, Hunt *et al.* (1997, 32) describe the process of strategic planning as a “game plan approach” that involves “tactical decisions” to carry out a larger strategy. Since its inception, strategic planning has been embraced throughout the business world and many successful organizations, including those involved with water resource management (Bohmik 1998; Mitchell 1998).

A central aspect of strategic planning involves the appraisal of an organization’s internal strengths and weaknesses, as well as an evaluation of its external opportunities and threats, often termed a SWOT (strengths, weaknesses, opportunities, threats) analysis

(Mintzberg 1994; Bryston and Alston 1995; Ayers 1996; Hunt *et al.* 1997). The SWOT analysis is considered an appropriate planning method for addressing change by clarifying what adaptive measures are available to the organization, including both internal functions and external institutional arrangements. Young *et al.* (2006) provide a recent example of how strategic planning can be used to determine the effectiveness of adaptive capacity by examining how responses to change were undertaken in relation to a SWOT analysis.

One of the most fundamental stages of the strategic planning process, and the stage that provides employees an understanding of which adaptive measures to implement in the context of change, is the visioning process and development of the vision statement. An organization's vision statement is a view of the future that is shared, or at least respected and understood, by all employees of an organization (Bryston and Alston 1995; Ayers 1996; Miller 1998). Visioning processes represent those activities, including anything from public consultation to formal policy development, that guide the development of the vision statement (Shipley 2002). Though some researchers separate visioning from strategic planning (Thoms and Greenberger 1998; Shipley 2002), this research considers visioning and the creation of the vision statement as a fundamental step in the strategic planning process (Mintzberg 1994; Ayers 1996; Miller 1998). Strategic planning represents a fundamental change from traditional methods of planning such as the rational-comprehensive method.

Rational-comprehensive planning requires an organization to set goals, identify all the possible management alternatives, perform a quantitative analysis of the means versus the ends of those alternatives, and base final decisions on the consensus of as

many stakeholders as possible (Hudson 1979; Hostovsky 2006). Strategic planning is more accessible to all those within the organization as it involves the clarification of the organization's mission and values, and the development of strategic goals and objectives using the SWOT analysis, all of which are based on a corporate vision of where the organization would like to be in the future (Koteen 1997). Unlike rational-comprehensive planning, which is idealistic, time consuming and focused on the need for total understanding to provide the most good for the most people, strategic planning is action-oriented and allows employees to make decisions based on an understanding of the corporate values, mission and vision. It is the development of the vision statement that is the most essential aspect of the strategic planning process.

2.4.4.1 Visioning and the Vision Statement from Strategic Planning

The vision statement guides the development of the strategic plan and can help determine which management functions an organization considers key and will want to retain capacity for during change. Hagmann and Chuma (2002) determined that the ability to enhance adaptive capacity distinctly increases when guided by a strong vision. Other researchers have also determined that vision is a guiding feature of adaptive capacity (Brooks and Adger 2005; Folke 2006).

One recent example of the utilization of strategic planning and vision for water management has been in the Netherlands (Ward 2002; Woltjer and Al 2007). In addition to the multi-national complexity of the European Union (EU), the Netherlands also faced increased complications with the threat of climate change and climate variability. Water managers and governments in the Netherlands quickly realized that they might not have

the time for long and comprehensive planning processes to address these changes (Ward 2002; Woltjer and Al 2007). Strategic planning exercises helped administrators determine which specific actions would best help them contend with the threat of rising water levels. Woltjer and Al (2007) describe how those experiences resulted in the Dutch government permitting a reversal of long-standing practices and allowing some land to be reclaimed by water to meet the overall vision of retaining the most beneficial lands. By 2000, the Netherlands had refocused water management to a vision of retaining water, instead of attempting to drain as much as possible, in a new water policy described in *A Different Approach to Water* (Ministry of Transport, Public Works and Water Management, 2000).

A vision statement is relevant to adaptive capacity because it provides the organization's employees, or researchers studying response to change, an understanding of the management functions that were desired prior to the occurrence of change. It therefore allows stakeholders an opportunity to determine how the elements of adaptive capacity were used by an organization to retain capacity for significant management functions as outlined in its vision statement.

The relationship between vision and adaptive capacity is largely a result of shared elements such as capacity building through partnerships, constant monitoring, and the promotion of flexibility. One characteristic of capacity building that is recognized in strategic planning literature is the concept of mutually beneficial partnerships (Eisenstat 1993; Whyatt 2004). Capacity building through partnerships can occur in a number of different forms that are beneficial to all partners. For example, while Whyatt (2004) discusses competing firms joining a partnership alliance to create regeneration strategies

in the context of changing market realities, Eisenstat (1993) provides examples of internal partnerships between executives and subordinates, based on sharing knowledge, that create an effective implementation strategy to increase competitiveness. Through activities such as developing regeneration strategies and knowledge sharing, these partnerships are also an important part of the visioning process because the visioning process is continuous and occurs throughout times of change. Thus, the vision statement may also change to remain appropriate to current institutional contexts (Shipley 2002).

As the visioning process is continuous, constant monitoring is an important element of strategic planning to ensure that external realities are understood by those in the organization. Flexibility is also promoted in the visioning process to allow adaptive measures to be undertaken efficiently and in time to be effective. Bryston and Alston (1995, 12) explain that the corporate vision represents not only an attractive future for an organization, but it is also a means of promoting flexibility to its employees by elucidating “what is expected of them without constant direct managerial oversight.” If all employees of an organization understand what is generally expected, they can better recognize positive actions when specifics are not available.

Strategic planning and visioning facilitate adaptive capacity by confirming management goals and exposing internal organizational opportunities to adapt to an unexpected and often dynamic set of external institutional arrangements. In this manner, strategic planning, and more specifically the vision statement, can enable researchers to determine an organization’s ability to respond to revolutionary changes with the elements of adaptive capacity.

2.4.5 Adaptive Capacity Summary

Recent studies of adaptive capacity have increasingly called for the creation of frameworks for adaptive capacity based on its generic elements (Yohe and Tol 2002; Kundzewicz *et al.* 2002). Recent frameworks of adaptive capacity commonly focus on how societies respond to climate change and are either quantitative in nature and too complex to be utilized (Appelgren and Klohn 1999; Yohe and Tol 2002), or they are theoretical in nature and too general to be easily applied by policy-makers (Few 2003). There is currently a lack of conceptual frameworks of adaptive capacity that are based on generic elements and applicable to describe an organization's ability to respond to revolutionary changes to institutional arrangements. Researchers require the development and application of such a framework to examine a set of organizations that have survived revolutionary changes. Such an investigation will provide insights regarding the interrelationships of the elements of adaptive capacity and provide lessons on how to prepare for future revolutionary changes.

Figure 2.2 develops a sense of how adaptive capacity reflects the elements of capacity building, flexibility, monitoring and learning as found in resilience theory, and vision. Capacity building is still considered the foundational characteristic of adaptive capacity and refers to the ability to undertake and improve management functions during changes to institutional arrangements. However, aspects of resilience theory and flexible management are also considered necessary elements of adaptive capacity in the context of revolutionary change. What will guide how each element of adaptive capacity is to be focused on, and to what degree, is a final element of adaptive capacity, strategic planning

and the vision statement. This research used this framework to describe how a set of organizations survived revolutionary changes, the conservation authorities of Ontario.

2.5 Conservation Authorities Appropriate to Assess Adaptive Capacity

The purpose of this next section is to demonstrate why the conservation authorities are an appropriate set of organizations to apply the framework outlined above. Four stages of rates of change to institutional arrangements are used to show that the conservation authorities have been able to respond and survive in the context of revolutionary change. Those stages include changes prior to 1990 that benefited the conservation authorities, evolutionary changes in the early 1990s, revolutionary changes starting in 1995, and supportive changes after 2000 (see Table 2.1).

2.5.1 Rates of Change Affecting the Conservation Authorities

2.5.1.1 Institutional Arrangements Prior to the 1990s

By the mid-1980s, institutional arrangements for water management in Ontario affecting the conservation authorities were generally supportive (Hale 1988; Mitchell and Shrubsole 1992; Ontario Ministry of Natural Resources 1988a and b). At the end of the 1980s, provincial transfer payments to the conservation authorities approached \$50 million and it was difficult for municipalities to contest levy payments to the conservation authorities. During this period, all significant management functions carried out by conservation authorities were supported by grants from the Ministry of Natural Resources (MNR).

Table 2.1: Evolutionary and revolutionary changes to conservation authorities

| Time | Aspect of Institutional Arrangements | | | |
|--|--|--|--|---|
| | Financial | Political | Legal | Organizational Culture |
| Evolutionary changes prior to 1990 | 1988: received provincial funding of \$40 million | 1988: the Flood Plain Policy Statement added to the <i>Planning Act</i> | 1988: Bill 163 mandates municipalities "be consistent with" <i>Planning Act</i> | Strong financial political and legal contexts suggest positive cultural support |
| Evolutionary changes in the early 1990s | 1991: Wildman Committee limits funding to core functions 1992: Conservation Land Tax Program repealed for tax refunds on conservation lands | 1991: Wildman Committee limits functions of authorities and removes education | 1991: Removal of functions limits the ability to operate under <i>Planning Act</i> and other legislative tools | Removal of financial and political mechanisms limits abilities and suggests weakened organizational culture |
| Revolutionary changes following 1995 | 1995: provincial funding cut by 70% over 2 years 1995: budget removes funds for capital works 1996: Bill 26 narrows financially supported activities to structural flood control and some municipal taxes 1996: Bill 26 restricts the ability of the conservation authorities to raise municipal levies | 1996: Bill 26 transfers many approval functions to municipalities (official plans, zoning bylaws) 1996: Bill 26 gives the municipalities ability to dissolve authorities and appeal levy 1996: Bill 20 eliminates funding for Section 28 | 1996: Bill 20 revises wording of <i>Planning Act</i> so that municipalities must only "have regard for" provincial policy statements | With revolutionary changes supportive institutional arrangements declined dramatically, representing a possible decay in organizational culture |
| Institutional changes following 2000 | \$10 million provided for groundwater studies | O'Connor and MOE suggest conservation authorities lead Source Water Protection | New legislative tools such as <i>Clean Water Act</i> , <i>Safe Drinking Water Act</i> etc. | Walkerton Tragedy focuses public attention to improving management |

Regulating powers of the conservation authorities for floodplain and hazard development under Section 28 of the *Conservation Authorities Act* were increased in 1988 with the introduction of Bill 163. Of particular importance for the conservation authorities was that Bill 163 required municipalities to “be consistent” with provincial policy statements, such as the Flood Plain Planning Policy Statement under Section 3 of the *Planning Act*, which restricted development within the floodplain (Shrubsole *et al.* 1996; Shrubsole *et al.* 1997). Prior to Bill 163, municipalities needed only to “have regard for” these statements. At this time, the conservation authorities were experiencing supportive public opinion and organizational arrangements (Richardson 1974; Hale 1988; Mitchell and Shrubsole 1992; Shrubsole 1996). These well-established arrangements began to change after 1990 when Bob Rae, the first New Democratic Party (NDP) Premier in Ontario’s history, was elected. Under Rae, a tumultuous situation arose politically as the NDP government expanded spending during a recession. This financial context set the stage for developments in the 1990s.

2.5.1.2 Evolutionary Changes Prior to 1995

In the late 1980s, a series of evolutionary changes to institutional arrangements for water management in Ontario began to occur. As early as January 1988, Vincent Kerrio, the Minister of Natural Resources, acknowledged that he had established an Interministerial Committee in 1986 to review the roles, responsibilities and funding structure of the conservation authorities (Ontario Ministry of Natural Resources 1988a).

Entitled *A Review of Conservation Authorities Program* (Ontario Ministry of Natural Resources 1988c), the report suggested that conservation authorities’ functions

be categorized as either “core” or “non-core” and that the MNR restrict and specify a minimal number of core functions to be funded (see Table 2.2). In May 1991, the Minister of Natural Resources released the final findings from a second committee, which confirmed that funding from the MNR transfer payments would be provided only for the core responsibilities (Wildman 1991 in Mitchell and Shrubsole 1992). As a result of these changes, MNR transfer payments to the conservation authorities started to decrease after 1993, though they did not drastically decrease until 1995 when revolutionary changes affected the conservation authorities (see Figure 2.4).

2.5.1.3 Revolutionary Changes Starting in 1995

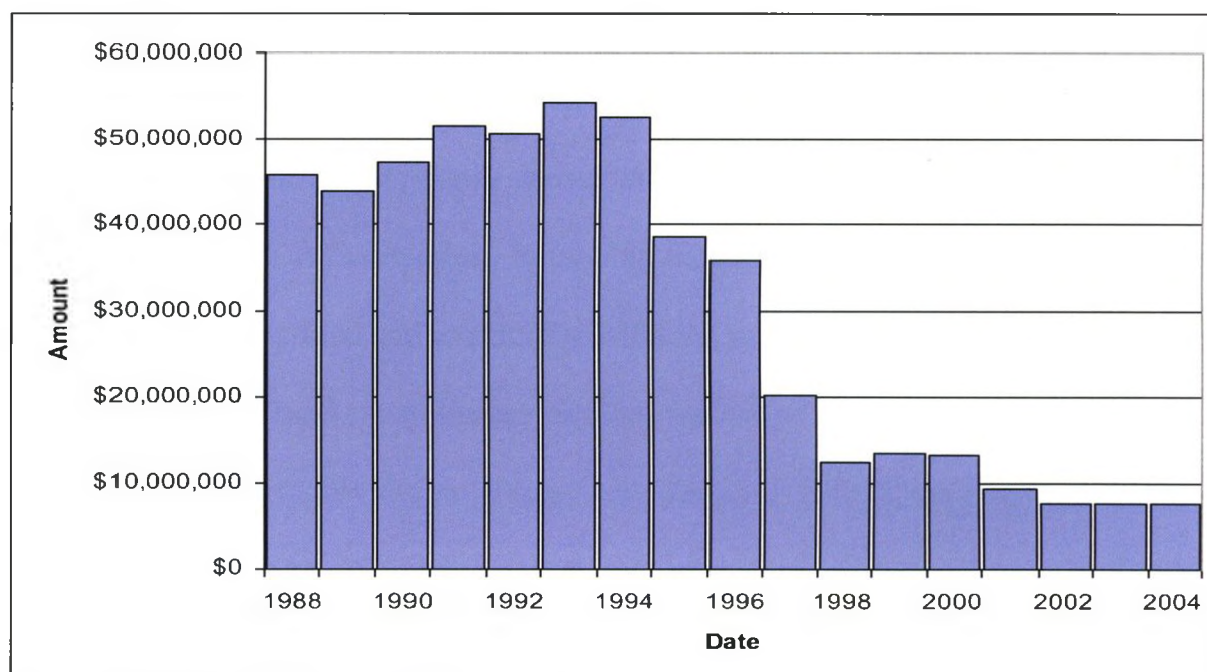
Revolutionary changes to institutional arrangements in Ontario for water management began in 1995 following the election of Mike Harris as the new Conservative Party Premier (Winfield and Jenish 1999). One effect of the changes made was the deregulation of management functions and the severe reduction of budgets to management agencies “in an ideologically driven effort to reduce the size and role of government” (de Loë and Kreutzwiser 2007, 93). The following discussion briefly details changes to the institutional arrangements relevant to the conservation authorities.

Perhaps the most revolutionary financial change to affect the conservation authorities came in the form of direct funding cuts to all provincial agencies following the November 1995 budget. For the conservation authorities, the new budget included a 70% decrease in MNR transfer payments, representing a provincial funding reduction in two years from over \$30 million to \$12 million per fiscal year (Shrubsole 1996; Shrubsole *et*

Table 2.2: Core and non-core functions of the conservation authorities

| Time | Functions of the Conservation Authorities | |
|--|---|---|
| | Core | Non-core |
| Prior to 1995 | Initially all functions funded by MNR including water management; related land management; recreation and education. | 1991: Funding limited to core functions as a result of MNR report. Education and recreation not considered core. |
| Following revolutionary changes in 1995 | After revolutionary changes, the only functions funded by the province and therefore considered core involve structural flood control. | 1995: Bills 20 and 26 remove approval functions under <i>Planning Act</i> to municipalities. Non-structural flood control no longer funded. |
| Following Walkerton in 2000 | New legislative tools make ground water and source water protection functions core for the conservation authorities. Funding from the province eventually to come as a result of the <i>Clean Water Act</i> . | While conservation authorities still treat all functions as core, MNR levy payments remain low (see Figure 2.4) |

Figure 2.4: MNR payments to Conservation Ontario between 1988 and 2004*



Source: Ministry of Treasury and Economics 1988 to 2004

* Adjusted for inflation to 1988 Dollars

al. 1997). By 2002, the conservation authorities saw their MNR transfer payments reduced in ten years by 87% (Conservation Ontario 2004a) (see Figure 2.4).

A second major funding issue in 1995 involved the introduction of Bill 26. Bill 26 limited provincially supported activities of the conservation authorities to include only structural flood control and the payment of municipal taxes on lands the conservation authorities owned that were considered environmentally significant by the province (Shrubsole *et al.* 1997; Ivey *et al.* 2002). No longer was funding available for such things as commenting on municipal planning applications, the provision of education, or many recreational functions (see Table 2.1 and Table 2.2). As funding was reduced, management functions in the province were downloaded onto the municipalities (Booth and Quinn 1995; Winfield and Jenish 1999; McCulloch and Muldoon 1999) (see Table 2.2). One important downloaded management function related to floodplain management was the review of planning permits under Section 28 (Shrubsole 1996; Shrubsole *et al.* 1996; Shrubsole *et al.* 1997; Ivey *et al.* 2002.). Reviews under Section 28 of the *Conservation Authorities Act* permits conservation authorities to regulate development on hazardous lands such as floodplains. Removing funding for this function empowered the municipalities to have final and essentially unilateral say in development applications.

Political and legal revolutionary changes were experienced by the conservation authorities when the Conservative government introduced Bill 20, the *Land Use Planning and Protection Act*. Bill 20 had an immediate impact on environmental management by affecting the *Planning Act*. On a political level, Bill 20 resulted in the loss of effectiveness of some commenting functions. In the province's attempt to become more efficient, the role of reviewing planning applications such as plans of subdivision or

changes to development by-laws by the conservation authorities was weakened (Winfield and Jenish 1995; Cooper 1996; Harbell *et al.* 1996). Legally, Bill 20 affected the conservation authorities by reverting the wording of the *Planning Act* back to that in which in which municipalities “shall have regard” for provincial policy statements, making the conservation authorities’ comments regarding development in some hazardous lands merely opinions. Although this change was done to further empower municipalities and simplify the *Planning Act*, MacLean (1996, A-1) explains that the change was actually a step backward and that “Bill 20 does not repeal Bill 163 and restore planning to the regime of the 1983 *Planning Act*, but further amends the *Planning Act*, so recently amended by Bill 163.” Bills 20 and 26 altered provincial institutional arrangements so that they were deregulated or downloaded onto municipalities (McCulloch and Muldoon 1999; Winfield and Jenish 1999). These Bills, combined with the financial changes commencing in 1995, were unexpected and drastic in timing. Collectively, these changes were revolutionary and could not be effectively managed with traditional planning approaches alone.

By 2000, only five years after the revolutionary changes to their institutional arrangements, the conservation authorities demonstrated they had survived revolutionary changes. This recovery was illustrated in 2002 when Justice O’Connor, who led the Walkerton Inquiry, called the conservation authorities the appropriate organizations to undertake new water management functions throughout the province (O’Connor 2002b).

2.6 Chapter Summary

The concept of adaptive capacity has recently been promoted as a means for organizations to respond to revolutionary changes to institutional arrangements. Revolutionary occur at a rate and magnitude beyond that reasonably expected. In the case of the conservation authorities revolutionary changes were representative of the political shift towards neo-liberal ideals after Mike Harris became the Premier of Ontario. Other revolutionary changes affecting organizations and societies might include a global economic recession, changing social attitudes resulting from a terrorist attack, or the creation of new political bodies such as the European Union. Traditional planning methods, such as rational-comprehensive and strategic planning, are insufficient to address the magnitude of revolutionary changes.

Recent concerns regarding adaptive capacity have involved the exact definition and the means by which it is examined. One of the primary concerns involving the definition of adaptive capacity is that other concepts regarding the management of change, such as adaptation and vulnerability, are being used synonymously with adaptive capacity. It is the author's contention that adaptive capacity combines these terms to represent an organization's ability to retain and enhance management functions within its institutional arrangements during periods of revolutionary changes by preparing for and responding to such changes. To examine adaptive capacity, this research framework attempts to determine elements sufficient to represent adaptive capacity and broad enough to be applied to numerous organizations facing various revolutionary changes.

Four elements are considered sufficient to represent adaptive capacity but have not been used in combination in other studies: capacity building, flexible management,

monitoring and learning as a proxy indicator of resilience, and vision. Capacity building is a foundational element of adaptive capacity and refers to an organization's potential to increase its ability to undertake tasks. For this research, characteristics of two other concepts have been added to capacity building to develop a framework of adaptive capacity in the context of revolutionary change. The two elements considered appropriate are flexible management, and monitoring learning as a proxy indicator of resilience. To examine adaptive capacity during revolutionary change, the practice of strategic planning, and specifically the development of a vision statement to guide planning, is considered the final necessary element of adaptive capacity. An organization's vision statement provides guidance and direction to an organization's adaptive responses in the face of revolutionary change.

CHAPTER 3 METHODS

3.1 Introduction

This chapter outlines the methods used to conduct this research. Methods involved applying the research framework to a document review using NVivo, qualitative analysis software, and conducting an interview-based review to confirm initial findings. To guide this research, a methodological map was created. The conservation authorities are considered appropriate for describing the interrelationships of the elements of adaptive capacity since they were able to retain core management functions within their financial, political and legal institutional arrangements during periods of revolutionary change.

To increase the reliability of this investigation, a comparative case study of two conservation authorities has been chosen. Two conservation authorities, the Grand River Conservation Authority (GRCA) and the Ganaraska Region Conservation Authority (GaRCA), were selected as illustrative of the range of spatial size and resources availability among the 36 conservation authorities in Ontario.

3.2 Research Design

To complete this research, a four-stage process was undertaken. The first stage involved the development of a framework of adaptive capacity, as seen in Chapter Two (see Figure 2.2). The second stage of this research involved the creation of a methodological map to guide research and allow for a description of which elements of adaptive capacity the conservation authorities applied during and in response to

revolutionary change. The third stage of this research included a detailed document review to determine the occurrence of elements related to adaptive capacity in relation to certain management functions undertaken by the conservation authorities for the period of 1988 to 2004. This timeframe is considered sufficient to determine the conservation authorities' management activities before and after revolutionary changes, and their ability to respond to those revolutionary changes, which began in 1995. A fourth stage of research involved elite interviews with employees of the conservation authorities to validate initial findings of the document review. Interview respondents were asked to provide context and ensure that the proper determination of the elements of adaptive capacity had been applied.

To visually demonstrate findings, the data gathered from the documents were analyzed using the framework developed in Chapter Two (see Figure 2.2) and a software program called NVivo. NVivo is a computer program that helps researchers organize data by means of phrase coding (Jakobsen and McLaughlin 2004). In this research, NVivo was used to code the occurrences of elements of adaptive capacity, specifically capacity building, flexibility, monitoring and learning as a proxy indicator of resilience, and vision, based on an understanding of the literature, as they relate to changing institutional arrangements over time. NVivo then allowed for the graphic representation of coded occurrences of the elements of adaptive capacity in relation to specific management functions. These graphical representations were compared chronologically to changes to institutional arrangements that were affecting the conservation authorities. Once trends were identified, an interview-based review was carried out to confirm what

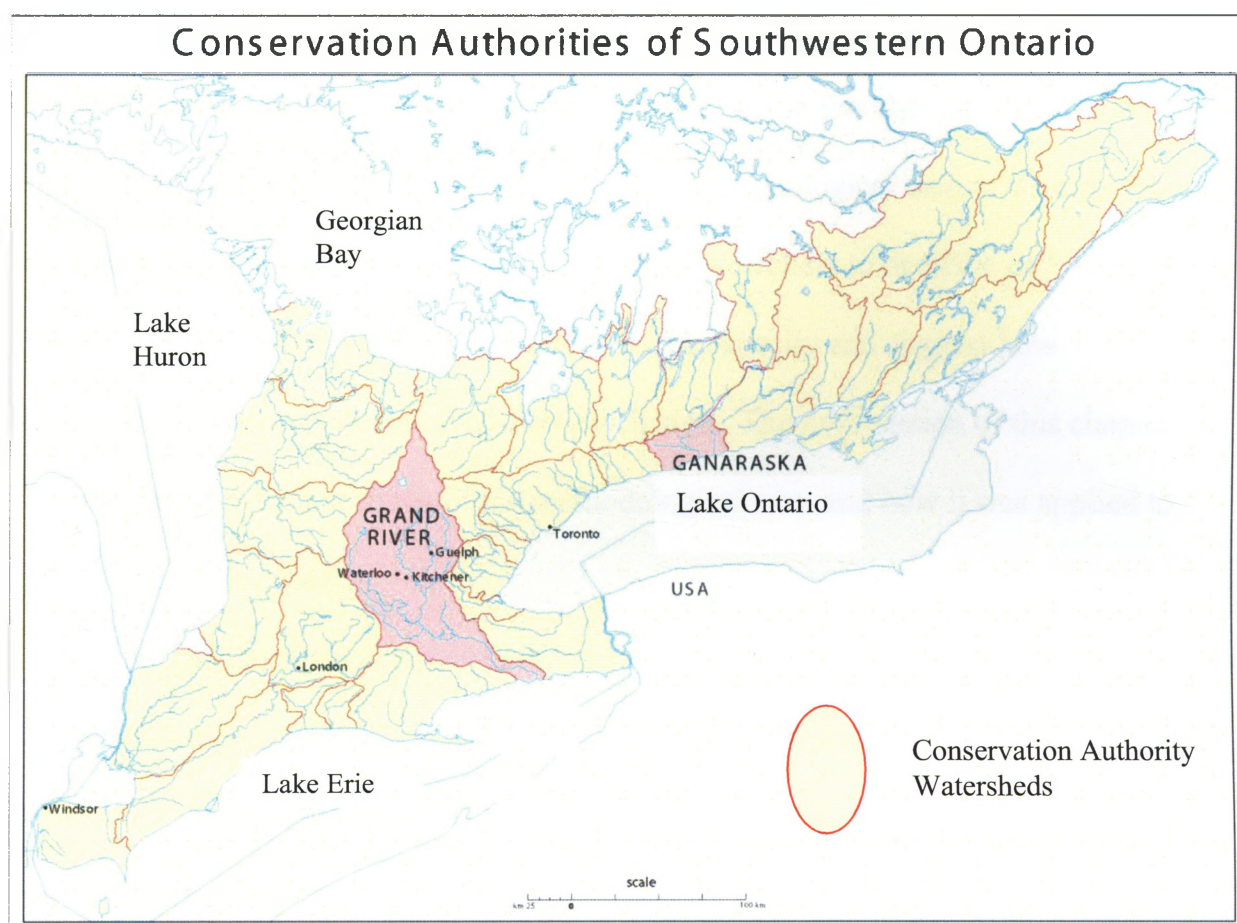
caused those trends and what lessons could be learned from those experiences and the interrelationships of the elements of adaptive capacity.

3.3 Comparative Case Study Area Selection

Since it was not considered feasible to study all 36 conservation authorities, a comparative case study was undertaken. Comparative case studies allow investigators to describe and illustrate the effects that different actions taken by organizations have on specific policies or changes to institutional arrangements (Yin 1994; Durley *et al.* 2003). This method of investigation is especially valid for conservation authorities that, although they have distinctive situations, must manage in a context of shared institutional arrangements. Having shared institutional arrangements allows for the investigation of the effectiveness of different management actions and adaptations towards the same institutional changes (Mitchell and Shrubsole 1992).

Of the 36 conservation authorities, case studies were undertaken with the GRCA and the GaRCA (see Figure 3.1 and Appendix 1). A significant reason for the choice of these organizations was their being illustrative of a range of human and physical resources (see Table 3.1). These two conservation authorities permit a description of how conservation authorities with unique experiences have employed, or could employ in the future, different elements inherent to adaptive capacity to reduce their vulnerability to change. As noted in Chapter Two, one of the key difficulties of investigating adaptive capacity is determining strategies for examining adaptive capacity that are applicable across scales (Smit *et al.* 1999; Wall *et al.* 2004). This comparative case study approach can assist in determining if the framework can overcome this shortcoming.

Figure 3.1: The Grand River and Ganaraska Region conservation authorities



Source: Adapted from Conservation Ontario, 2004

Table 3.1: Statistics of the Grand River and Ganaraska Region

| Authority | Grand River* | Ganaraska Region** |
|----------------|-----------------------|--------------------|
| Area | 6, 802km ² | 935km ² |
| Population | 721, 497 | 60, 967 |
| Municipalities | 42 | 7 |
| 2004 Budget | \$21, 425, 735*** | \$1, 776, 116 |

Sources: * Krause *et al.* 2001

** Ganaraska Region Conservation Authority, 2004

***Grand River Conservation Authority, 2004

3.4 Research Methods Focused on Research Objectives

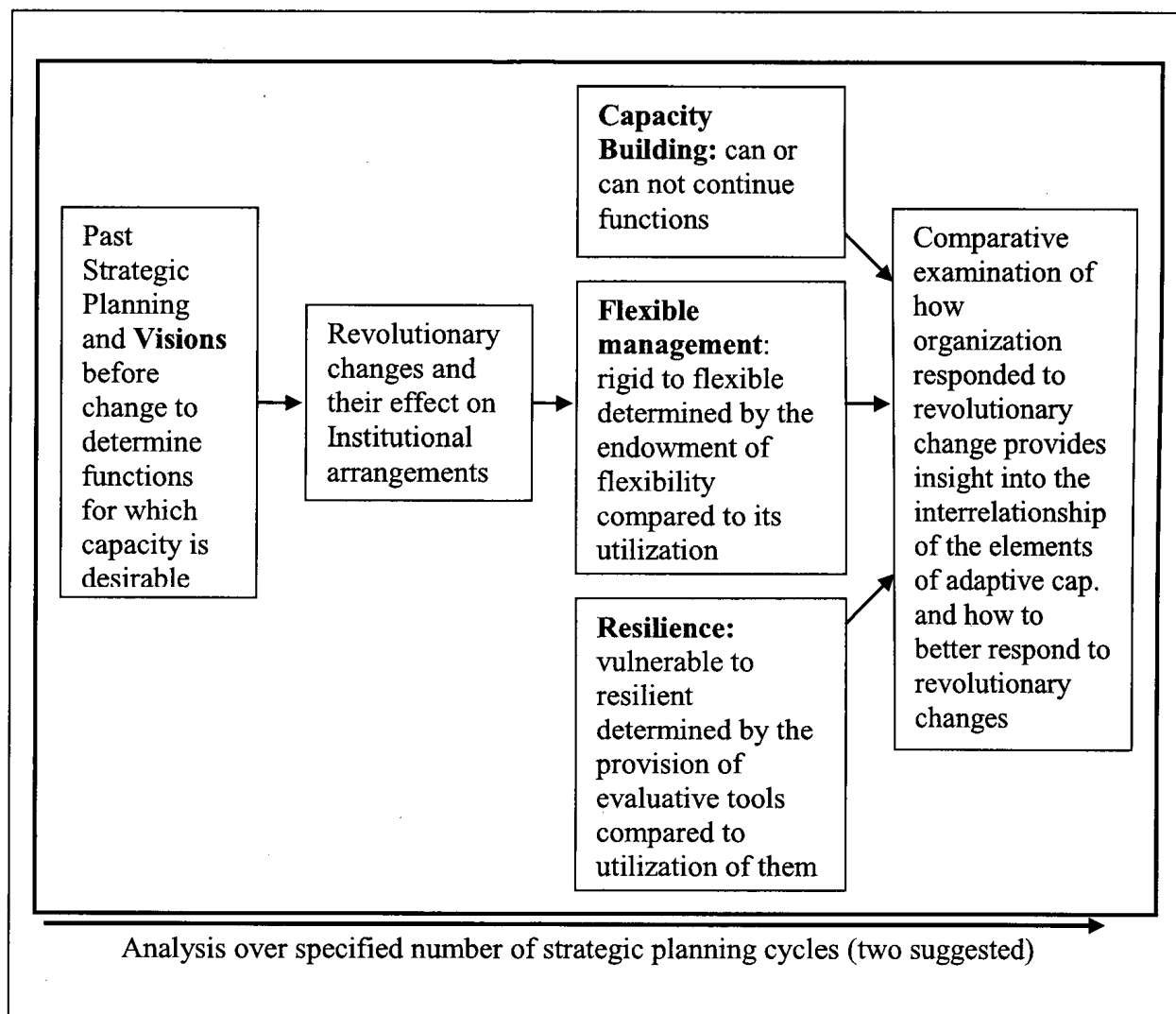
3.4.1 Application of the Methodological Map

To guide the collection and examination of data in this thesis, a methodological map was created (see Figure 3.2). Applying the methodological map to the framework of adaptive capacity presented in Figure 2.2 allows researchers to describe and illustrate the interrelationships among the elements of adaptive capacity and suggest how organizations can prepare for revolutionary change. The next section of this chapter describes the different sections of the methodological map and how it was applied to research adaptive capacity.

The first section of the methodological map guides one to recognize the functions an organization desired prior to the occurrence of revolutionary changes. As mentioned in Chapter One, management functions represent those tasks assumed by an organization that are either considered core and necessary to its survival, or non-core and voluntarily undertaken (Mitchell 1990). Past vision statements and strategic plans are considered appropriate to determine functions an organization wished to retain prior to change.

A second section of the methodological map requires an examination of the revolutionary changes that affected the organization. Some revolutionary changes may directly affect the nature of institutional arrangements. However, even if changes to one particular aspect of institutional arrangements are the focus of the study, researchers should recognize that all elements of institutional arrangements are considered connected to some extent (Mitchell 1990). Revolutionary changes were determined in this study, as in previous research, by focusing on the extent to which changes influenced the ability of the organization to undertake its management functions (Stoddard and Jarvenpaa 1995;

Figure 3.2: Methodological map to guide examination of adaptive capacity



Sircar *et al.* 2001; Abrahamson 2004). There are different methods of measuring revolutionary changes to different institutional arrangements. A revolutionary change to a financial arrangement may, for example, be measured quantitatively as determined by account records in what is termed a structured method (Sircar *et al.* 2001). In contrast, changes to political arrangements may be less quantifiable and be measured or managed through methods that require “greater involvement with behavior rather than tasks” (Leybourne 2006, 12). Key to the evaluation in this section is the appropriateness of the

criteria in relation to the institutional arrangements and the effects of revolutionary change (Pettigrew *et al.* 2001).

The bulk of the investigation occurs in the third section of the methodological map and involves a description of whether and how specific elements of adaptive capacity are apparent and to what degree each is utilized in relation to other factors to adjust to revolutionary change. An examination of how the different elements of adaptive capacity were employed by an organization then provides insights into the interrelationships among those elements and demonstrates how the organization addressed changes to institutional arrangements. Throughout this research, consideration was also given to other responses to change, such as traditional planning approaches, including public participation and advertising, to ensure that other potential elements were not neglected. While these other responses to change are included in the graphs, they are not discussed individually because they were not a significant factor and were mostly used in a manner representative of the other elements of adaptive capacity.

The methodological map presented in Figure 3.2 guided the information gathering and examination of data in this research. Application of the map allowed for a comparative examination of how the conservation authorities responded to revolutionary changes to provide insights into the interrelationship of the elements of adaptive capacity. The following sections of this chapter describe the two primary sources of information used to review the experience of the conservation authorities.

3.4.2 Document Review

The first stage of information gathering for this research was to apply the framework of adaptive capacity to the conservation authorities' recorded experiences. This work involved an in-depth review of available documentation, including meeting minutes and audited financial statements of the GRCA and GaRCA for the years 1988 to 2004. Meeting minutes represent an amalgamation of all information created by or presented to the conservation authorities' board of directors at monthly meetings.

Meeting minutes contain all conservation authority reports written by advisory committees or departments, including engineering, planning, ecology, finance, parks or marketing. Also included in meeting minutes are brief summaries of every development permit reviewed under Section 28 of the *Conservation Authorities Act* and all significant planning applications commented on. External materials found in meeting minutes include various documents, whether a letter from a concerned landowner, a report from a private consultant or information provided by a provincial ministry (e.g. MNR). Citizens or interest groups concerned with conservation authority activities may make presentations to the board, which are recorded in the meeting minutes. Finally, a brief synopsis of any relevant information, be it political, financial, administrative, social or legal in nature, can be provided to the board members through meeting minutes. In short, the meeting minutes provide a summary of the totality of institutional arrangements, both internal and external, that affect the conservation authorities, including how those institutional arrangements are changing and how those changes will influence the organizations. Audited financial statements of the GRCA and GaRCA represent the second principal source of documentation in this examination and were used to determine

patterns of revenue and expenditures as demonstrated through the use of chronological graphs. Graphs of the finances were triangulated with findings of the meeting minutes to increase the validity of findings.

The documents that were included in the meeting minutes of the GRCA and GaRCA number into the thousands. This paragraph summarizes what was reviewed. Each conservation authority's board of directors met ten to twelve times each year. The number of meetings was determined largely by the institutional arrangements and subsequent management activities carried out by each conservation authority. Each set of meeting minutes had between two and four advisory committee reports, between one and ten staff reports, and any number of delegations and amount of correspondence from the public. There was a large difference in the amount of material in meeting minutes of the GRCA compared to the GaRCA. On average, the GRCA generally required two volumes of meeting minutes for each year, with each volume between 250 and 350 pages. Exact numbers are difficult to determine as each report, items of correspondence, and other documents are numbered separately. The GaRCA, which operates in a smaller watershed with fewer participating municipalities and is involved in fewer engineering and planning activities, usually required only one volume of yearly meeting minutes of 300 to 400 pages. Based on the approximate average of the meeting minutes for each conservation authority, there were 34 volumes of meeting minutes at the GRCA, with an estimated 10,200 pages, and seventeen volumes of meeting minutes at the GaRCA, with an estimated 6,800 pages reviewed.

The meeting minutes were reviewed by applying the framework of adaptive capacity (see Figure 2.1) with the application of NVivo to undertake a content analysis.

Content analysis is a research methodology applied to both quantitative and qualitative research that involves studying the content of communications (Altheide 1987; Granheim and Lundman 2003; De Wever *et al.* 2005). In this research, coding units were made based on the occurrences of the elements of adaptive capacity, specifically capacity building, flexibility, monitoring and learning as a proxy indicator of resilience, vision and other in response to revolutionary changes for specific institutional arrangements. According to Granheim and Lundman (2003, 106) coding units are used to represent “words, sentences or paragraphs containing aspects related to each other through their content and context.” These coding units were recorded and counted to determine the frequency of their occurrence. It is the frequency of these codes that graphically illustrates how the conservation authorities responded to revolutionary changes. Content analysis is often done by the use of counts and frequency of codes (Altheide 1987). Graphic illustrations of these coding units were made possible by NVivo. An explanation of how NVivo was utilized to carry out such an assessment is provided below.

Meeting minutes were reviewed chronologically to determine trends in the occurrence of elements of adaptive capacity in response to changes to institutional arrangements. When elements of adaptive capacity were identified in the meeting minutes, the adaptive capacity literature was revisited to ensure that these identifications, while subjective, were credible. This subsequent research was not included in the NVivo analysis, as it occurred outside the conservation authorities and would not represent the application of adaptive capacity by the conservation authorities. The financial statements were used to confirm or contradict these findings.

3.4.3 Document Analysis Using NVivo

To increase the credibility of findings in the document reviews, the computer program NVivo was utilized. NVivo is software that allows for the coding of research material and helps facilitate the examination of associations among elements that have been coded. Researchers use NVivo to “store, code, index, structure, and record data and information about the data throughout the data collection and analysis” (Jakobsen and McLaughlin 2004, 596). In this thesis, primary nodes were based on the elements inherent to the framework developed and specific management activities (see Table 3.2). The document reviews were entered into NVivo and predetermined nodes were applied (see Table 3.2) so that content analysis of the conservation authorities’ planning activities in relation to elements of adaptive capacity could be carried out. A paragraph of text had to reflect a sufficient degree of a node in order to be considered an example of an element of adaptive capacity. Categories of nodes were analyzed separately and NVivo allowed for a content analysis comparing occurrences of nodes in relation to each other. Those responses to change that were not sufficient to represent a specific element of adaptive capacity were added separately to determine if a significant element had been neglected. A partial list of second tier nodes, examples of what would be considered representative of primary nodes, is provided in Appendix 2.

Material could often be coded as representing more than one node in the same category. For example, if meeting minutes indicated that a conservation authority was reviewing its municipal levy amounts as a result of provincial funding cuts, those activities would be coded as capacity building, monitoring and learning, financial change, financial response and financial planning. In this example, these codes would represent

Table 3.2: Primary nodes used in NVivo

| Category or Concept Assessed | Nodes Used |
|--|--------------------------|
| Concepts within Framework of Adaptive Capacity | Vision |
| | Capacity Building |
| | Resilience |
| | Flexibility |
| | Other Response to Change |
| Institutional Arrangement Affected by Change | Financial |
| | Political |
| | Legal |
| | Socio-cultural |
| Conservation Authorities Response | Financial |
| | Political |
| | Legal |
| | Socio-cultural |
| Conservation Authorities Planning Activities | Canadian Heritage River |
| | Oak Ridges Moraine |
| | Source Water Protection |
| | Financial Planning |
| | Other Strategic Planning |

an adaptation aimed at gaining financial resources (capacity building and financial response), determined on the review of a specific program (monitoring and learning, and financial planning). It is worth describing here how specific elements of adaptive capacity were determined.

The first and fundamental element of adaptive capacity is capacity building. Capacity building is also the easiest element to recognize as it involves any adaptation or current management practice used to reduce vulnerability to change and retain capacity (Lockie *et al.* 2002; Adger and Vincent 2005). Put simply, capacity building is recognized by actions that the organization undertakes to retain specified management functions. In the context of change, if an organization is unsuccessful at retaining capacity for such functions, those functions are lost and adaptive capacity is not possible. Actions that are considered capacity building include such things as marketing activities,

structural reorganization, fundraising and the creation of partnerships. Partnerships are specifically mentioned as they were often used by the conservation authorities. While it is a fundamental element of adaptive capacity, capacity building is considered insufficient to address contemporary rates of change. Young *et al.* (2006), explain how revolutionary changes have created a situation in which an organization needs to replace traditional planning approaches with ones that address the increasing rates of change. For this research, flexibility, and monitoring and learning as a proxy indicator of resilience are determined necessary to address those changes.

The process of monitoring and learning, commonly found in resilience literature, is a second element of adaptive capacity considered and involves those actions through which organizations recognize and realize how to address changes. Actions considered to represent monitoring and learning as a proxy indicator of resilience are those that help an organization to mitigate change to avoid being forced into undesirable management operations (Tompkins and Adger 2003; Gallopin 2006), and those that help promote and preserve elements that decrease vulnerability after change (Folke *et al.* 2002; Adger 2006; Janssen *et al.* 2006). In the meeting minutes for example, learning is evident in reports reviewing changes to institutional arrangements that included options to mitigate changes. A less formal application of resilience would involve discussions at board meetings in which members of the conservation authority realized a change to institutional arrangements and felt that they should be reviewed. If the organization was able to recognize change and able to alter management practices or implement adaptations in time to reduce vulnerability and retain the capacity to carry out fundamental management functions, then monitoring and learning was considered to

have been implemented. Such resilience would represent effective monitoring and response as represented in the reorganization stage of the panarchy framework (Gunderson and Holling 2002; Gallopin 2006).

A third element of adaptive capacity is flexibility. Flexibility is the most difficult element of adaptive capacity to recognize as it involves decisions made by individuals within the organization, or organizations within a partnership, without formal approval and would therefore perhaps not be mentioned in official documentation (Volberda 1996). According to Volberda (1996), the more revolutionary the changes experienced by the organization, the more flexibility an organization requires. When flexibility is successfully employed, it is often mentioned in the meeting minutes, even if it is simply a comment made to the board by a manager regarding an employee's actions. Flexibility was largely determined in interviews since evidence of flexibility, such as a decisions made without formal approval, would not be found in meeting minutes.

A final element of adaptive capacity that was included in the framework is the vision statement. Found in strategic planning documents, vision statements guide the implementation of the elements of adaptive capacity. For example, determining which functions of management are considered key and require capacity to be retained should be done through vision statements. Having determined these functions as key, the vision provides those within the organization guidance on which changes and functions to monitor and when to make management decisions without seeking formal approval. The vision statement also helps researchers to determine which management functions were considered key prior to revolutionary changes to determine whether or not adaptive capacity has been retained.

Other nodes applied to the document review include different institutional arrangements affected, conservation authorities' responses based on those institutional arrangements, and different strategic planning applications. Each of these nodes is independent within the assessment, allowing for comparison of all nodes to carry out content analysis over time. Graphs were created to compare the occurrence of elements of adaptive capacity in relation to changes to institutional arrangements. To add credibility and validity to the findings, NVivo permits all examples that represent specific nodes to be isolated. For example, all material coded as representative of financial change, resilience and source water protection could be provided in a summary report. To add rigor to this research, reports were read with an understanding of the adaptive capacity literature to determine whether or not the examples were in fact representative of how they were coded as an element of adaptive capacity.

The elements found within the framework created for this research have been determined as sufficiently representing adaptive capacity. To validate the elements of adaptive capacity, a test application of NVivo was carried out. In the document review, over the period of 1995 and 1996, when revolutionary changes occurred, any reference to a changing institutional arrangement was coded and compared to any reference of a response to change. It was found in this validating review that 86.77% of responses to change by the GRCA and GaRCA (59 of 68) were represented by at least one of the elements of adaptive capacity. Of the nine responses to change that were not considered representative of an element of adaptive capacity, six of those were questionable and could have possibly been coded as an element. For example, at the April 1995 board meeting of the GRCA a letter was received from an Assistant Deputy Minister at the

Ministry of Municipal Affairs stating that the Local *Disclosure of Interest Act*, which contained Bill 163, had not been proclaimed as planned on April 15 (GRCA April 25, 1995). While this letter was recorded and recognized as change to institutional arrangements, it was not added as a reference to learning as there was no review of the letter or discussion regarding the effects of its contents. With over 85% of references to change associated with as an element of adaptive capacity, and with cautious application of those elements, capacity building, flexibility, monitoring and learning as a proxy indicator of resilience, and vision are considered to sufficiently represent adaptive capacity. Such a statement is not intended as a claim that the framework created for this research is the only model representative of adaptive capacity, but, with over 85% of references to change addressed, the framework is considered appropriate. Even with this test, “other responses to change” remained a specific node to ensure other types of responses to revolutionary change were not neglected.

Other nodes were used that have not been included in Table 3.2. Grounded theory was used to employ these nodes. Grounded theory facilitates the determination of such nodes throughout the research based on situations and discourses specific to the particular case (Bailey *et al.* 1999; Charmez 2004). For example, if a management activity arose in the documentation that was not considered prior to the research, such as nutrient management, then a node was added. During final analysis, all nodes were reviewed to determine if they were sufficiently prevalent to be addressed independently. I included these nodes because NVivo is designed to allow categories “to emerge from the data, rather than being imposed in advance of data collection” (David and Sutton 2004, 225).

A positive aspect of this document review is that it covers all materials considered sufficiently important by the conservation authorities to include in meeting minutes over the entire study period. Such an extensive document set permitted the cataloguing of numerous examples, thereby allowing for a more comprehensive content analysis to be carried out and trends graphically demonstrated. A negative element of the document review is that each example catalogued was determined as significant based on the opinion of one organization or even one person. To overcome this issue, the research findings were triangulated as much as possible using the research literature, the conservation authority's documentation including financial statements, and interviews.

3.4.4 Key Informant Interviews

A second stage of information gathering involved elite interviews with participants from the conservation authorities to validate the findings from the document review. Interviews with elite stakeholders were undertaken for two significant reasons: to add detail to the documentation review and to validate the findings of that review in order to increase the reliability and credibility through triangulation (Baxter and Eyles 1997; Patton 2002). A primary reason for the interviews was to gain an in-depth understanding of how and why certain decisions were made that escaped documentation. For example, personality conflicts, while not mentioned in official documentation, might have a greater effect on management decisions than specific institutional arrangements.

A fundamental focus of the interviews was to discover measures that may have facilitated adaptive capacity that were taken inadvertently, or unofficially, by those involved in the management process. Interview respondents and the reasons for their

relevance are included in Table 3.3. It was difficult in this research to find, even at the management level, employees of each conservation authority that were involved in the decision making 19 years prior to the interviews. In the GaRCA, for example, only two managers remain that were employed during revolutionary changes in the mid-1990s. Best efforts were made to interview the most informed employee of each conservation authority in regards to planning, finance, marketing and other management functions. If senior staff had held different positions during the time of this study, interview questions were adapted to gain their insights into numerous programs. Often it was appropriate to interview past managers currently in different positions in order to determine why decisions had been made.

Only five interviews were carried out at each conservation authority. These interviews were considered sufficient as they were undertaken with elite staff and were primarily intended to add credibility to the initial document review. The review of partnerships called for an increased number of interviewees from within those partnerships; however, the time that had lapsed meant those interviews were not possible. While other external interviews would have been beneficial, especially with members of the provincial government in power during the mid-1990s, the time that had passed combined with the time available to complete research made those impractical.

Finding staff of the GaRCA who had not lost their positions as a result of revolutionary changes was difficult. Only two senior staff remained following revolutionary changes. In this case, while three of those interviewed had been hired since 2002, a majority of questions regarding all programs were also asked of the chief administrative officer and senior management to gain the opinions of those involved in

decision making. All respondents were advised that their conversations were being recorded and that information given was to be included in this thesis.

Table 3.3: Interview respondents

| Name | Position at GRCA when Interviewed | Association with conservation authority |
|------------------|--|--|
| Ralph Beaumont | Manager of Communications with Grand River Conservation Foundation | 1987 Manager of Communications and Executive Manager of Grand River Conservation Foundation 1985 (approx.) Manager of Communications 1980 (approx.) Supervisor of Information Services 1974 Information Officer |
| Paul Emerson | Chief Administrative Officer | 1988 Manager of Resource Planning 1978 Flood Plain Inspector |
| Lorrie Minshall | Source Protection Program Director | 2004 Source Protection Program Director 1994 Manager of Watershed Resources Planning 1984 Manager of Water Resources 1979 Hydrological Engineer 1976 Water Resource Engineer |
| Keith Murch | Assistant Chief Administrative Officer and Secretary Treasurer | 1994 Director of Administration and Secretary Treasurer |
| Barbara Veale | Coordinator of Policy Planning and Partnerships | 1995 Coordinator of Strategic Planning and Partnerships 1990 Manager of Policy and Research 1981 Policy and Research Planner 1978 Water and Related Land Use Planner |
| Name | Position at GaRCA when Interviewed | Association with conservation authority |
| Linda Laliberte | Chief Administrative Officer and Secretary Treasurer | 1996 General Manager, Secretary Treasurer 1992 Manager of Corporate and Communication Services 1985 Comptroller 1984 Bookkeeper |
| Pam Lancaster | Stewardship Technician | 2005 Crew Member 2002 Water Resources Assistant |
| Mark Peacock | Director of Watershed Services | 2001 Coordinator of Watershed Services 1997 Water Resources, Watershed Engineer |
| George Sousa | Director of Resource Science, Information and Policy | 2004 Director of Resource Science, Information/Policy 1990s In charge of numerous Strategic Planning and Technological Planning documents and actions 1985 Systems Engineer 1983 Hydrologic Modeler |
| Greg Wells | Manager, Planning | 2005 Watershed Planner |
| Magdi Widaatalla | Manager of Watershed Services | 2005 Watershed Hydrologist |

The second and perhaps more important role of the interviews was to increase the reliability, validity and credibility of findings from the document review (Odendahl and Shaw 2002; Patton 2002). Triangulating the analysis of interview responses with the document analysis and the literature develops a more complete understanding of which elements of adaptive capacity the GRCA and GaRCA applied in response to change. With proper interpretation, interviews can be used to increase validity by including the opinions of those actually involved in decisions (Freeman 2000; Gubrium and Holstein 2000; Richardson and Jensen 2003). Questions included in the interviews were based on elements inherent to adaptive capacity as determined by the literature review. The interview questions that were used to start conversations are provided in Appendix 3. All of the interviews took between one and three hours, were tape recorded and typed verbatim. In total, the typed interviews resulted in 552 typed pages. Findings were then reviewed against the documents in order to confirm the lessons the conservation authorities' experience provide regarding adaptive capacity and its constituent parts, and to determine what the GRCA and GaRCA could have done to address revolutionary changes.

3.5 Research Limitations

A number of limitations were recognized while completing this research. The first limitation is a result of the revolutionary changes experienced by the conservation authorities and concerns that this thesis does not focus sufficiently on neo-liberalism. It was not a goal of this thesis to provide a political commentary on neo-liberalism. The elements determined to represent adaptive capacity were based on their prevalence in the

literature and their appropriateness for managing revolutionary changes. Created from the literature, and not directly related to a set of organizations or change experienced, the framework is ideally applicable to any organizations affected by change. However, this research admittedly only reviewed resource management organizations that experienced change created by neo-liberal politics initiated in Ontario by the Harris government.

A second limitation involves suggestions that the research was based on circular logic and the application of the framework to organizations that had survived revolutionary changes. Had these organizations not already demonstrated adaptive capacity, and if so, could that not have been the result of actions taken not related to the framework? I defend this by stating that I used the framework only to describe the experiences of those organizations and that over 85% of responses to change were related to elements considered representative of adaptive capacity. There always existed the potential to discredit the framework. However, I appreciate the critique and believe that future research should include an application of the framework to describe the experiences of an organization that did not survive revolutionary change. Such an investigation could be used to reveal if the framework remains applicable to explain why an organization did not survive and/or provide suggestions on how changes could have been better addressed.

3.6 Chapter Summary

Adaptive capacity is an appropriate concept to describe how two conservation authorities with unique experiences responded to revolutionary change. Since 1995, the conservation authorities have used elements inherent to adaptive capacity to react to

revolutionary changes. What is needed now is an investigation of this experience to determine what lessons about the elements of adaptive capacity can be gained and provide organizations guidance to prepare for revolutionary changes to their institutional arrangements.

To complete this research, a four-stage process was implemented. The first stage of this research involved the development of an analytical framework based on the elements of adaptive capacity found in the literature. The second stage involved the development of a methodological map to guide research. A detailed document review was then done. This review involved importing typed summaries of the documents into NVivo to describe how the conservation authorities implemented the elements of adaptive capacity through adjustments in management functions between 1988 and 2004. The final stage of this research involved in-depth interviews with employees of the conservation authorities to validate initial findings of the document review.

CHAPTER FOUR ADAPTIVE CAPACITY RESPONSES TO REVOLUTIONARY CHANGE

4.1 Introduction

The purpose of this chapter is to review the elements of adaptive capacity and to describe how these elements were applied by the GRCA and GaRCA through strategic planning. As outlined in Chapter Two, strategic planning and the development of a vision statement are considered key guiding components of adaptive capacity. The vision statement directs employees in the selection of management functions considered fundamental and that should be retained during revolutionary changes. If those management functions identified in the vision statements are lost as a result of revolutionary changes, this suggests the organization had less than an optimal level of adaptive capacity.

This chapter begins by providing a provincial context for the changing planning environments in Ontario throughout the study period. The framework created for this research is applied to the document review to determine how the GRCA and GaRCA responded to change through strategic planning. Findings of the document review were verified through elite interviews.

4.2 Provincial Context

Institutional arrangements in Ontario for water management have undergone both evolutionary and revolutionary change over the past two decades. Specific changes that have affected the conservation authorities have involved changing financial

arrangements, shifting policies and uncertain legal support (see Table 2.1). This section briefly reviews changes to the planning environment and how they have affected the planning processes of the conservation authorities (see Table 4.1).

Table 4.1: Changing institutional arrangements and their effects on planning

| Time | Institutional Arrangements' Effects on Planning Processes | | |
|---|---|--|---|
| | Goals | Decision Criteria | Participants Involved |
| Prior to 1990s: Rational-Comprehensive or Strategic Planning | Setting of numerous long term goals. These goals were often vague and did not have timelines or means of monitoring progress. | Early 1980s: Quantitative methods. Often involved a cost-benefit analysis of as many possible solutions as could be found. Late 1980s: Attempts to streamline planning meant that the province enacted legislative tools (Flood Plain Policy Statement) that clarified decisions. More streamlined planning tools, such as Environmental Assessments were increasingly utilized | Early 1980s: Highly fragmented planning in Ontario involved many agencies involved in planning decisions. Though consensus was desired, the ultimate decision was often gained in a centralized fashion. Late 1980s: Move towards "one window" policy. Attempts at the provincial level to put legislative tools in place that would allow single-agency decisions. |
| 1990 to 1994: Strategic Planning | Goals became focused and involved increased monitoring. | Continued focus on streamlining planning process to decrease fragmentation and expedite planning decisions. | Although public participation still encouraged, there was a move to decrease the number of agencies or departments involved with decisions. |
| 1995 Forward: Moving Beyond Strategic Planning | Provincial goal of reducing deficit and downloading planning authority to the municipalities. | Decisions were streamlined drastically to single agencies. For the conservation authorities, this meant a drastic loss of management functions, and political support was delegated to municipalities. | Decisions were quickly downloaded to the municipalities. Single agency decision-making meant the conservation authorities became a commenting agency only for many functions. |

4.2.1 Positive Institutional Arrangements Prior to 1990

Planning by the conservation authorities and others across the province prior to the mid-1980s was dominated by the rational-comprehensive model of planning (Mitchell 1983; Shrubsole 1990; Shrubsole 1996; Grant 2000). Problems exist with this style of planning. Although goals are made, there are often no timelines or monitoring mechanisms to ensure organizations meet their goals. Other actions taken remove the human element, even though public participation is supposedly desired (Alexander 1992).

Conservation authorities' initial watershed reports are good examples of rational-comprehensive planning. Written when a conservation authority was first formed, these plans provide analysis of watersheds, primarily through detailed descriptions of physical features, and list goals for the conservation authority. What they did not contain were specific actions, timelines or plans for the achievement of those goals. As a result of the focus on rational-comprehensive planning, watershed reports were not effectively reviewed and many goals were not completed (Shrubsole 1996).

Beginning in the early 1970s and continuing until the late 1980s, the government of Ontario followed a philosophy of environmentalism and provided institutional support to water management agencies including the conservation authorities (Mitchell and Shrubsole 1992; McCulloch and Muldoon 1999). Towards the end of the 1980s, decisions made by the conservation authorities were still empowered by legislative tools that gave them political influence (see Table 2.1). Combined, these tools meant that the conservation authorities' vulnerability to changing institutional arrangements was low since they retained the political capacity to carry out management functions.

4.2.2 Negative Evolutionary Changes in the Early 1990s

By the late 1980s, the province of Ontario required planning agencies to demonstrate more focused goals and less fragmented processes in making decisions (Fowler and Seigel 2002). In the early 1990s, the province streamlined planning activities as its focus shifted toward strategic planning (Grant 2000). The conservation authorities were affected by this shift, as clearly seen in a review of the conservation authorities presented at the 50th anniversary of the Guelph Conference (which helped create the conservation authorities) by the Minister of Natural Resources (Mitchell and Shrubsole 1992). These findings had profound effects on planning in Ontario and increased the vulnerability of the conservation authorities.

One of the key proposals presented by Minister Wildman was that only a few core functions mandated for the conservation authorities should be funded by the province. These core responsibilities included small-scale erosion and sediment control projects on private lands, but failed to include educational functions such as the subsidization of entrance fees for student programs (see Table 2.2). The province also adopted a Municipal Conflict of Interest Review and Ontario's Commission on Planning and Development Reform (CPDR) in the early 1990s, both of which introduced reforms that decreased the duplication of planning functions under the *Planning Act* and placed them under the jurisdiction of the municipalities (see Table 2.1).

In the two decades prior to 1990, water management in Ontario and within the conservation authorities shifted from rational-comprehensive to more strategic styles of planning. In the early 1990s, water management functions in Ontario were streamlined to

the municipalities and away from the conservation authorities. In 1995 the rate of change affecting the conservation authorities was at a pace considered revolutionary.

4.2.3 Revolutionary Changes After 1995

Shortly after the election of a new Progressive Conservative Government in 1995, revolutionary changes occurred for the conservation authorities and almost every other public service organization in Ontario. For the conservation authorities, these changes were contained in a Provincial Economic Statement (1995) that included Bills 20 and 26 (Michaels *et al.* 2006). While the goal of both bills was to place greater management responsibilities with municipalities, their introduction resulted in the fragmentation of watershed responsibilities and decreased cooperation and coordination among the province, municipalities, and conservation authorities (Winfield and Jenish 1995; Harbell *et al.* 1996; Shrubsole *et al.* 1997).

Bill 26 altered the *Municipal Act* to allow municipalities and conservation authorities to restructure and reduce duplication and overlapping functions (Association of Municipalities of Ontario, 1995). As a result, Bill 26 permitted municipalities to remove commenting powers from the conservation authorities for such things as changes to by-laws and applications for plans of subdivision or official plan amendments under the *Planning Act*. Other effects of Bill 26 included the potential for municipalities to dissolve conservation authorities and the removal of Orders-in-Council for acquisition of assets where no provincial grant existed (R. Beaumont, interview, July 20, 2007).

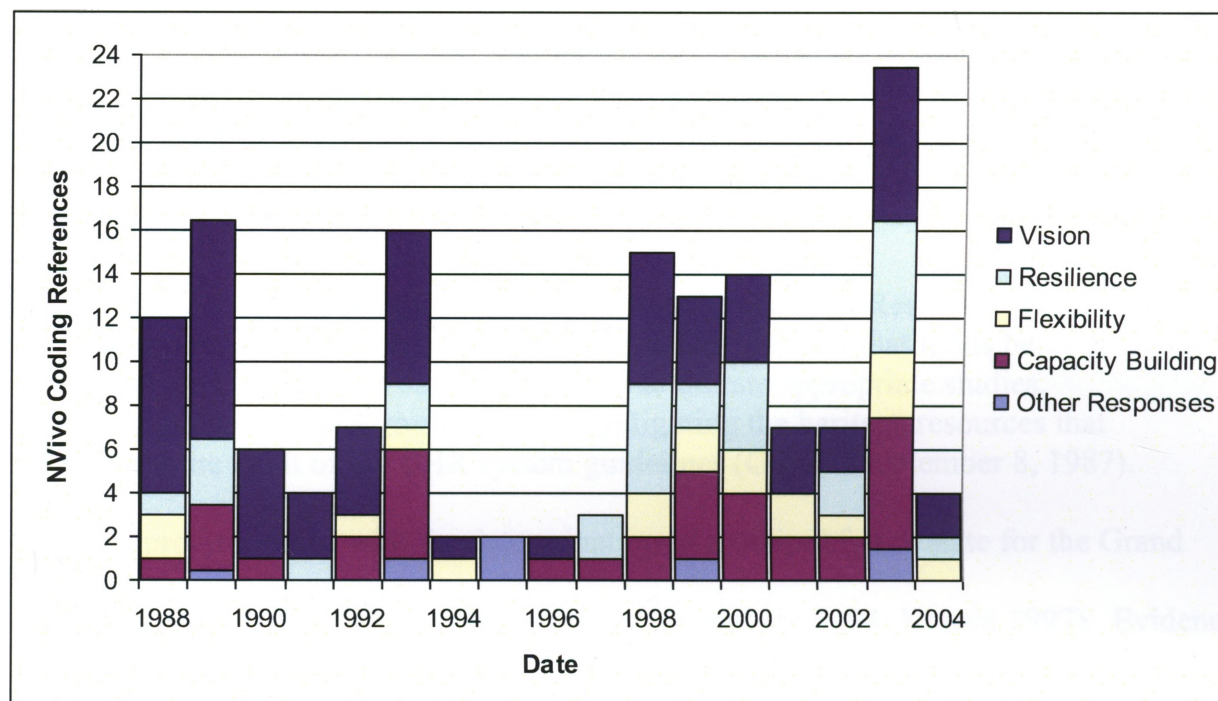
4.3 GRCA and GaRCA's Experience with Strategic Planning

The next section of this chapter uses the framework for adaptive capacity to describe how elements of adaptive capacity were applied by the GRCA and GaRCA in relation to specific planning activities prior to and in response to revolutionary change. At the GRCA, the efforts to designate the Grand River as a Canadian Heritage River (CHR) system are examined, while attention is focused on different strategic plans for the GaRCA.

4.3.1 GRCA and Planning Activities Related to their CHR Designation

In 1984, the CHR system was established in Canada to honour important Canadian rivers (Nelson and O'Neill 1989; 1990; Nelson 2004). Though the Grand River did not become a CHR until 1994, its nomination began as early as 1987. The next section examines how different elements of adaptive capacity were applied by the GRCA in relation to the CHR system to prepare for and respond to revolutionary changes (see Figure 4.1). Specific plans include *The Grand as a Canadian Heritage River: A Study for the Canadian Heritage Rivers Board and the Grand River Conservation Authority* (Nelson and O'Neill 1989), *Nominating the Grand as a Canadian Heritage River: A Study for the Canadian Heritage Rivers Board and The Grand River Conservation Authority*, (Nelson and O'Neill 1990), *The Grand Strategy for Managing the Grand River as a Canadian Heritage River* (GRCA 1994), *State of the Grand River Watershed: Focus on Watershed Issues 1996-1997* (Grand River Planning and Operations Committee 1998a) and *A Decade in the Canadian Heritage River System: A Review of The Grand Strategy* (Veale 2004).

Figure 4.1: Evidence of elements of adaptive capacity related to the Canadian Heritage River System found in GRCA Meeting Minutes



Source: GRCA Meeting Minutes 1988-2004

Note: For the year 2004 only summary notes are available

4.3.1.1 Analysis of Adaptive Capacity

4.3.1.1.1 During Positive Institutional Arrangements Prior to 1990

References at the GRCA to the Grand River becoming a CHR began in 1987 when institutional arrangements in Ontario were supportive of the conservation authorities and their activities (see Table 2.1 and Figure 2.4). In planning documents only three years prior to 1990, there are more than twice as many references to vision in the content analysis than all other elements of adaptive capacity (see Figure 4.1). Supportive institutional arrangements during this time provided evidence of other elements of adaptive capacity, including some capacity building, and monitoring and learning.

To apply for nomination as a CHR, a lead watershed organization is required to develop a strategic plan, including corporate vision focused on historical, natural, physical and human elements. The GRCA began to develop a strategic management plan for the Grand River as a CHR. To initiate its involvement in the CHR system, the GRCA Board passed the following motion:

THAT the GRCA authorize the revision of the Interim Resource Management Plan for the Grand River Watershed and that funds be included in the 1988 budget proposals to initiate appropriate studies, including the Background Study, highlighting the heritage resources that meet the spirit of the CHR system guidelines (GRCA, September 8, 1987).

Since this process began with the determination of a desired future state for the Grand River, its creation involved strategic visioning (Mintzberg 1994; Koteen 1997). Evidence of vision as early as 1988/1989, is provided in the introduction of the initial study of the Grand River as a CHR which states:

This study began in March, 1988, after about one year of negotiation with the CHR Board, provincial government personnel, representatives of the GRCA and interested citizens notably from the southern reaches of the river. A wide ranging consultation process was developed which focused on three open houses held in Caledonia, Kitchener and Fergus in early June, 1988. Various visits and presentations were made to groups such as the Inter-Municipal Tourism Committee and the Cambridge Flood Control Advisory Committee. Another major public meeting was held on October 6 and 7 at the University of Waterloo (Nelson and O'Neill 1989, 5).

Open houses such as those discussed above are considered visioning adaptations because they provide information and solicit opinions from stakeholders. According to Franks (1999), these types of forums that promote the sharing of knowledge are also a form of capacity building through partnerships. However, at this early stage, no definitive vision statement for the CHR was produced.

In May 1988, the GRCA initiated the *Heritage Landscape Plan* (unpublished) to guide planning activities for the CHR application, including an increase in historical and heritage assessment (B. Veale, interview, July 30, 2007). The vision of this *Heritage Landscape Plan* was “to develop a plan to conserve, restore and recognize the heritage landscape resources (natural and cultural) of the Grand River basin, and to plan the management, interpretation, and marketing of those heritage landscape resources” (GRCA, May 18, 1988). Activities that led to the creation of this vision largely explain why reference to vision was high in 1988 (see Figure 4.1), at a time when planning in Ontario remained focused on rational-comprehensive models of planning.

To retain an integrated focus, and conform to the focus of the CHR system, the GRCA designated a Policy and Research Planner, Barbara Veale, in 1988 to harmonize the various studies between departments to ensure that time and resources were used efficiently and effectively. Creating a new position is considered a visioning activity because it promotes a coordinated planning approach. In 1989, the Heritage Resource Centre at the University of Waterloo, in partnership with the GRCA, published *The Grand as a Canadian Heritage River: A Study for the Canadian Heritage Rivers Board and the Grand River Conservation Authority* (Nelson and O'Neill 1989). By 1990, a second document was published, *Nominating the Grand as a Canadian Heritage River: A Study for the Canadian Heritage Rivers Board and the Grand River Conservation Authority* (Nelson and O'Neill 1990). Unfortunately for the GRCA, by delegating this responsibility to an outside organization, much of the focus that had been achieved through the early visioning process was not retained at the GRCA. The initial documents were comprehensive but were based largely on describing environmental features and

lacking in strategic direction. As stated by Bennis and Nanus (1985, 101), visions are best created internally by an organizational leader that has the ability to “select, organize, structure, and interpret information about the future in an attempt to construct a viable and credible vision.” Staff at the GRCA did not feel ownership for this plan, and as shown in Figure 4.1, this resulted in a 50% decline in references to the CHR between 1988 and 1999.

Though not as prevalent in the content analysis, there is reference to capacity building in relation to the CHR prior to 1990 (see Figure 4.1). Only one month after initiating the *Heritage Landscape Plan*, the GRCA entered a partnership with the Heritage Resources Centre at the University of Waterloo. This partnership appeared mutually beneficial whereby the Heritage Resource Centre provided information and wrote the nomination document for the Grand River as a CHR, and the GRCA provided the necessary administrative body. Based on capacity building actions including the sharing of knowledge, such a partnership appeared to be mutually beneficial as “each stakeholder [was] necessary but not self-sufficient” (Wietz and Francys 2002, 26). At this stage, work by the GRCA for the CHR nomination can largely be credited to the leadership of one person, Barbara Veale, as most references to vision relating to the CHR were in reports or presentations by Ms. Veale.

Evidence of flexibility, and monitoring and learning are not as prominent in this initial period because of the infancy of planning for the CHR system. References to flexibility in relation to the CHR prior to 1990 occur only in 1988. It is during this year that reports and discussions appear in meeting minutes when staff and board members discussed the broad mandate of the conservation authorities and whether or not that

allowed them the flexibility to take on a lead role in the CHR system. The slightly higher number of evidence of monitoring and learning during this time is the result of the amalgamation and review of previous planning documents used to write the CHR nomination.

4.3.1.1.2 During Evolutionary Changes in the Early 1990s

Between 1991 and 1994, institutional arrangements began to change in a manner that was often not supportive of the conservation authorities (see Table 2.1). During 1991 and 1992, references to all elements of adaptive capacity except vision related to the CHR are seen to be minimal in the content analysis (see Figure 4.1). However, in 1993, there is increased reference to all elements of adaptive capacity, especially vision and capacity building, as the GRCA prepared to submit its strategic planning document for the CHR designation, *The Grand Strategy for Managing the Grand River as a Canadian Heritage River* (GRCA 1994). The planning document was completed in 1994, when there is almost no references to the CHR (see Figure 4.1).

Reference to vision related to the CHR increased in 1992 and 1993 when the GRCA began marketing the Grand River as a tourist destination. Guided by the vision of the *Heritage Landscape Plan* and the emerging *Grand Strategy* (GRCA 1994), the GRCA began promoting the Grand River's historical and cultural resources. B. Veale (interview, July 30, 2007), in describing marketing adaptations, explains how the GRCA created a common vision within the watershed and "committed to putting together a Grand Actions newsletter and a Grand Actions Registry, to make people feel that they

were part of a larger movement and that everyone should be commended for work they do in the watershed.”

By 1994, the Grand River was officially designated a CHR when the *Grand Strategy* was tabled with the CHR Board and a partnership was signed with the Ministers of Natural Resources; Culture, Tourism and Recreation; Municipal Affairs; and the Environment. The vision of the *Grand Strategy* is different from conventional vision statements and is written as though it is a letter from a resident in 2019 discussing the achievements that have occurred as a result of the CHR designation. Although this approach is unconventional, this vision statement effectively relates desired goals for the Grand River to those internal and external to the GRCA, stating them as if they are the desired position to be achieved by 2019. The vision of the *Grand Strategy* (1994, v), included such promotions as “the place to fish,” providing “seasonal and cultural attractions” and providing “opportunities for groups, individuals, landowners and agencies to exchange information and joint stewardship efforts.”

By the early 1990s, the GRCA had developed a vision that supported a CHR nomination and began to focus on capacity building activities to decrease vulnerability to changes in the planning environment and to obtain the CHR designation. Official partnership support for the *Heritage River Management Plan* was requested by the GRCA from all watershed municipalities in the summer of 1992 (GRCA, September 25, 1992). References to capacity building by the GRCA Board related to the CHR increased that year and more than doubled in 1993 when a focus on facilitating partnerships for the CHR occurred through many meetings held between the GRCA and local councils (see Figure 4.1). Local representatives were invited to make presentations addressing the

process of writing a strategic plan and vision for the Grand River Watershed (Grand River Executive Committee, September 7, 1993). A.R. Holmes, the Chief Administrative Officer of the GRCA at the time, described how capacity building through public participation had helped to create supportive partnerships and how it was “anticipated that the range and scope of actions being carried out in the watershed [would] grow as more and more participants become involved” (GRCA, December 17, 1993). Visioning adaptations such as the public consultation that occurred are also recognized as a means to build capacity by initiating partnerships with organizations involved with, or sponsors of, those events (Ayers 1996; Davidson 1997; Whyatt 2004) (see Table 4.1).

To further increase capacity building through a vision based on partnerships, the GRCA had the foresight to have the *Grand Strategy* signed by as many municipal councilors, provincial representatives, and relevant stakeholders as possible so that everyone had ownership of the plan. Not only does this form of partnership create ownership, but it addresses a primary element of effective visioning that “differences between various interests have given way to a single community vision” (Ayers 1996, 21). When asked about the signing of the CHR, Barbara Veale describes how there was a desire to have a ceremony reflecting a supportive discourse among watershed stakeholders:

What we decided to do to, and we’ve never done this before, is we had a little declaration of support at the beginning of our document where the different ministers signed off. But we also asked the municipalities to sign off on it. And we had signatures from councils and other groups or individuals, anyone who wanted to. I have a great big binder with people that signed a declaration of support (Barbara Veale, interview, July 30, 2007).

References to flexibility in relation to the CHR are not strong between 1991 and 1994. This lack of evidence in the content analysis may be because the flexibility initiatives by partners in the CHR were not referenced at the GRCA. For example, although every municipality was considered a partner in the CHR process, no official actions were undertaken within this process and all activities were voluntary and not approved by any board, including that of the GRCA. This ability to use the program title, without formal approval, reflects what is referenced in the literature as “strategic flexibility” (Whipp *et al.* 1989; Ahmed *et al.* 1996).

Although flexibility appears to be provided to members of the CHR within the planning framework, it is difficult to find reference to this flexibility in meeting minutes. One example of how flexibility may be present, but difficult to examine, is provided by Barbara Veale, who coordinated much of the writing of the strategic plan for the CHR.

It’s really difficult in some instances to say whether or not some things would have happened because of the Heritage River designation, or whether they would have happened without it anyway. But in terms of awareness of the river, it certainly helped to increase awareness, it helped to increase use of the river (Barbara Veale, interview, July 30, 2007).

Ms. Veale, though knowing that the flexibility provided to the various partners of the CHR may have increased the knowledge and use of the river, could not provide specific examples of that flexibility. Lack of reference in the meeting minutes likely confirms a point made in the literature that flexibility is very difficult to measure (Sharfman and Dean Jr. 1997; Wadhwa and Rao 2002).

Figure 4.1 shows that reference to monitoring and learning in the early 1990s occurred primarily in 1993, when the *Grand Strategy* was being completed. An early strategic planning document, the *Grand Strategy* was considered a “living document,”

meaning that it was to be constantly reviewed and adapted to current institutional arrangements (GRCA 1994; B. Veale, interview, July 30, 2007). This concept of a “living document” is referred to by previous researchers as part of the “learning organization” (Fry and Griswold 2003). It is stated in the *Grand Strategy* that it “will evolve and mature as increasing numbers of stakeholders commit to and carry out specific actions in support of the Grand River as a CHR” (GRCA 1994, 31). The focus on constant monitoring, rather than at specified intervals, is found in recent research on strategic planning (Koteen 1997; Young *et al.* 2006). In practice, although constant monitoring was mentioned in the *Grand Strategy*, there was little reference to it in the meeting minutes in the two years following its release (see Figure 4.1). Only one year after the *Grand Strategy* was released, revolutionary changes occurred (see Table 2.1).

4.3.1.1.3 After Revolutionary Changes in 1995

Immediately following revolutionary changes, there are few references to the elements of adaptive capacity related to the CHR (see Figure 4.1). The GRCA was focused on surviving revolutionary change and retaining management functions affected by those changes. The predominant focus of GRCA became reducing their vulnerabilities to the effects of the Conservative Government’s “Common Sense Revolution.” Abrahamson (2004, 1) explains that survival becomes a primary goal as revolutionary change is considered “change that destroys, in one short burst, all the past structures of an organization.” Discussion at the GRCA was based on the ability to continue mandated functions with little concern for implementing new strategic planning activities for the CHR (B. Veale, interview, July 30, 2007; K. Murch, interview, July 30 2007). Describing the discourse at the time, Paul Emerson (interview, July 9, 2007)

explains the feeling of survival after revolutionary changes, and specifically the Provincial Economic Statement release:

I recall very well that the minute that those announcements were made, we huddled together very quickly here and basically had to get the message out that we were still in business, and that we had every intention of staying in business and that maybe we would have to cut back on some programs and that sort of thing and try and strengthen our partnership with the municipalities.

It was not until 1998, following three years of responding to revolutionary changes, that the GRCA could “reintroduce” the CHR system. The reintroduction of the CHR designation to board members and municipal partners required significant review of the program, providing opportunities to undertake visioning activities in response to new institutional realities. As such, reference to vision, and monitoring and learning significantly increased in 1998. Once reintroduced, capacity building activities related to the CHR further increased in 1999 and are demonstrated in the content analysis (see Figure 4.1). Questions by GRCA Board members challenged the viability and direction of the *Grand Strategy*. In March of 1998, Barbara Veale reintroduced the CHR in a report to the board aimed at enhancing the vision of the CHR and included protecting human heritage resources. Adding the function of protection of human heritage resources is considered a new visioning adaptation as it introduces an innovative topic as part of the original vision. The reintroduction of the CHR is reflected in the doubling of references to visioning in meeting minutes between 1998 and 1999 (see Figure 4.1).

After revolutionary changes occurred, references to capacity building related to the CHR also stopped (see Figure 4.1). In addition, the GRCA realized that, as a consequence of Bill 26, it was increasingly vulnerable as watershed management functions were downloaded to the municipal level (see Table 4.1). The municipalities

would also experience increased vulnerability as they did not have the capacity to carry out the increasing numbers of management functions. To offset this mutual vulnerability, a strategic partnership was developed by the GRCA to help gain municipal support for the CHR designation. The creation of a Heritage Working Group, which included municipal partners, was undertaken as a project to meet the goals of the CHR designation. This Working Group focused on increasing capacity by finding ways to increase external recognition from the public and to generate funds with promotional activities exhibiting the cultural heritage within the Grand River Watershed. Partnerships gained by community involvement such as this have been promoted in both strategic planning and capacity building literature (Grindle and Hilderbrand 1995; Simpson *et al.* 2003; Whyatt 2004). One year after the creation of the Heritage Working Group, references to capacity building activities in relation to the CHR reappeared in meeting minutes, albeit minimally in both 1996 and 1997 (see Figure 4.1).

An example of the capacity building activities undertaken by the Heritage Working Group is the Heritage Day Workshops. A summary of the first 1998 workshop demonstrates evidence of capacity building adaptations, including knowledge sharing and networking:

On Heritage Day, February 16, 1998, the Heritage Working Group of the Grand Strategy hosted a highly successful workshop, attended by over 100 people, at the GRCA. The workshop was designed to encourage civic heritage groups, municipalities and others to share their experiences about the factors which influence the planning and management of heritage resources within the Grand River watershed. The response from participants was extremely positive and appreciation was expressed for providing this learning and networking opportunity (GRCA, March 17, 1998, 1).

By 1998, planning efforts at the GRCA were again able to embrace a commitment to vision and monitoring with an official review document of the first two years of the application of the CHR designation (see Figure 4.1). This evaluation was titled *State of the Grand River Watershed: Focus on Watershed Issues 1996-1997* (Grand River Planning and Operations Committee 1998a).

After the release of the *State of the Grand River Watershed: Focus on Watershed Issues 1996-1997*, reference to monitoring and learning remained high as that document renewed interest into how the CHR designation could be used by the GRCA. One such example of how continual review of such a program can lead to management decisions is provided in a staff report on March 16, 1999:

“Ms. Lorrie Minshall gave a presentation on [the 1999 Technical Work Plan for the *Grand Strategy*] report, highlighting some of the work done to date and outlining what is proposed for the future. Mr. Paul Chantree said that we should really push for the expansion of the Rural Water Quality Programme” (Grand River Planning and Operations Committee, March 16, 1999).

A concern for altering specific management functions towards issues such as water quality was a timely adaptation in 1999 as the province continued to deregulate and download planning responsibilities even after the revolutionary changes of 1995 (Davidson 1998; McCulloch and Muldoon 1999; O’Connor 2002b). In the above example, it was a board member who realized that the CHR designation might be used to find alternative funds as the province cut levy payments for core management functions (see Table 2.2).

4.3.1.1.4 During Positive Institutional Arrangements After 2000

After 2000, institutional arrangements in Ontario were again supportive of the conservation authorities (see Table 2.1). However, references to the elements of adaptive capacity in relation to the CHR decreased immediately after 2000. This decrease coincides with the year that the Walkerton Tragedy occurred (see Chapter Six). As a result of the Walkerton Tragedy, many of the planning efforts at the GRCA focused on the Walkerton Inquiry and source water protection. It was not until 2003 and following the Walkerton Inquiry that references to all elements of adaptive capacity increased to their highest levels throughout the entire study period. Such an increase was the result of renewed supportive institutional arrangements and a requirement that a ten-year monitoring report be produced.

After an increase in 1998, references to vision related to the CHR remained high in 2000. In 1998 the GRCA Board was told that “as a result of provincial downloading, the Region of Waterloo [was] forced to make choices between heritage preservation and Health and Welfare” (Grand River Planning and Operations Committee, 1998, 7). This announcement raised concerns with the board and led to a strategic visioning strategy session in October 2000 (GRCA 2000). The strategic visioning session discussed that many municipalities considered the *Grand Strategy* a completed document that did not need to be continuously evaluated or implemented. This approach contrasted with the original vision that intended it to be a “living document.” When plans are not revisited there is no resilience (Fry and Griswold 2003). In addition, the GRCA had been unable to impress upon the municipalities that the *Grand Strategy* was a planning document, and the goal was to link existing functions to that plan. As a result of this session, the GRCA

augmented its vision for the CHR by continuing to link current functions to the Grand Strategy while adopting an increased focus on new functions it wanted to become core, and, so the GRCA passed the following motion:

THAT the role of the GRCA in Watershed Planning be confirmed, with the following additions:

- add river recreation as a lead role
- add river heritage as a lead role to help keep our designation as a CHR
- with respect to subwatershed plans, take a more pro-active role in assisting municipalities in implementation.

(Grand River Information and Education Advisory Board, October 17, 2000)

In 2000, the Walkerton Tragedy occurred in the province of Ontario. The GRCA saw an opportunity to help improve planning for water management and potentially increase its core functions in the province. As a result of this new focus, there were fewer references in meeting minutes to vision for the CHR system in 2001 and 2002 (see Figure 4.1). Once the Walkerton Reports had been released (O'Connor 2002a; 2002b), and institutional arrangements were changed to a supportive position (see Table 2.1), the GRCA in 2003 again focused on developing a new vision for the CHR designation (see Figure 4.1).

To remain a CHR, a ten-year monitoring report must be undertaken. The GRCA's ten-year monitoring report was released in May 2004 and titled *A Decade in the Canadian Heritage Rivers System: A Review of The Grand Strategy* (Veale 2004). While the initial *Grand Strategy* was based on a vision of the Grand River in 2019, the ten-year review began with the vision of the Grand River in 2029. This vision was created similarly as the vision of 1988 and included such visioning adaptations as open houses and public meetings. Barbara Veale explained how the GRCA used this visioning

process to undertake capacity building activities and enhance and expand management functions based on the new institutional arrangements and planning environment:

I think that what we were able to do is we were able to take the vision, and we were able to make changes to the vision, to incorporate things that hadn't been incorporated before. And it's a broad vision, so it's not just the Heritage River, it's for the watershed. And so things like climate change, drought, air quality, that wasn't in the first one, went into the second visions (B. Veale, interview, July 30, 2007).

An example of how functions were added is a review of historical bridges. In 1998, Barbara Veale suggested to the GRCA Board that vision of the Grand Strategy be supplemented with human heritage resources. This suggestion resulted in "the inventory of human heritage values for the Grand River watershed [being] updated in 2000" (Veale 2004, 4). Five years later, a review of historical bridges that should be protected was added to the *Grand Strategy*. The review helped the GRCA to implement stewardship initiatives to protect bridges representative of the cultural heritage of the Grand River. Implementing new functions is considered a capacity building adaptation as functions were chosen to reduce vulnerability for the program in the context of new realities in the planning environment. In this instance, the GRCA recognized that cultural heritage had become a more important planning focus in Ontario.

A decrease in references to monitoring and learning related to CHR during the years 2001 and 2002 reflects the GRCA's attention on monitoring activities focused on institutional arrangements relevant to the Walkerton Tragedy (see Figure 4.1). After the Walkerton Tragedy, the GRCA focused much of its policy and planning review on contributing to the subsequent inquiry that occurred. This shift in focus is supported in a letter by Dick Hunter, General Manager of Conservation Ontario in 2002, to all conservation authorities, which in part reads that "the workload [that] year [had]

increased significantly with all of the effort around Walkerton and on many other fronts” (GaRCA, September 20, 2001, 1).

4.3.1.2 Analysis of Adaptive Capacity at the GRCA Summary

Some notable trends can be seen in Figure 4.1 regarding how the GRCA manifested elements of adaptive capacity in relation to its CHR nomination. Reference to vision was high prior to revolutionary changes when institutional arrangements were supportive of the conservation authorities and especially in years when plans for the CHR system were being created. During this period, the GRCA also showed evidence of monitoring and learning, and capacity building, largely by reviewing and amalgamating existing plans into the CHR nomination, undertaking promotional activities, and creating partnerships in support of that nomination. After revolutionary changes, all references to the elements of adaptive capacity almost disappear from the content analysis as the GRCA did not have the capacity or institutional support to carry out non-core functions. It is not until 1998, that signs of the elements of adaptive capacity reappear in the content analysis. At this time, it is vision and manifestations of monitoring and learning that are most referenced as the GRCA reintroduced the CHR system to the board and refined its vision of the CHR to coincide with, and take at advantage of, supportive institutional arrangements.

4.3.2 GaRCA and Strategic Planning Activities

Adaptive capacity is seen in the GaRCA’s adoption of numerous strategic plans over the period studied. This approach largely mirrors the example of Conservation Ontario (formerly the ACAO), the umbrella organization of the conservation authorities.

The approach was, in part, due to limited resources, both financial and technological, and in having a chairman who was also the chairman of Conservation Ontario (L. Laliberte, interview, July 16, 2007). The next section of this chapter examines a number of strategic plans undertaken by the GaRCA and discusses the content analysis of the elements of adaptive capacity that appeared. Strategic plans that are addressed include the *Ganaraska Watershed Plan* (not completed prior to becoming the 1994 *Watershed Plan*), the *GaRCA Conservation Strategy* (GaRCA 1992a), the *GaRCA Watershed Plan* (GaRCA 1994a), the *GaRCA Business Plan* (GaRCA 1996), *Strategy 2004* (GaRCA 1999) and the *Integrated Watershed Management Model* (not completed). Unlike the GRCA example, where all of the plans discussed related to a single program, the diversity of the GaRCA plans warrants an initial overview.

4.3.2.1 Overview of Strategic Plans of the GaRCA

In 1991, GaRCA staff recognized that previous work by the Ministry of the Environment (MOE) regarding development in the watershed could be adapted for a watershed plan for the GaRCA and began preparing draft reports for an updated *Ganaraska Watershed Plan*. The ACAO at this time had already released a *Conservation Strategy* that required each conservation authority to “demonstrate leadership by developing an individual Conservation Strategy within three years of the adoption of [the ACAO’s] Conservation Strategy” (ACAO 1992a, 7). On November 21, 1992, the GaRCA approved the final guiding conservation strategy titled *A Conservation Strategy for the Ganaraska Region Conservation Authority: Strategic Planning Directions*

(GaRCA 1992a). Such approval came at a time when strategic planning was becoming the preferred planning model in Ontario (see Table 4.1).

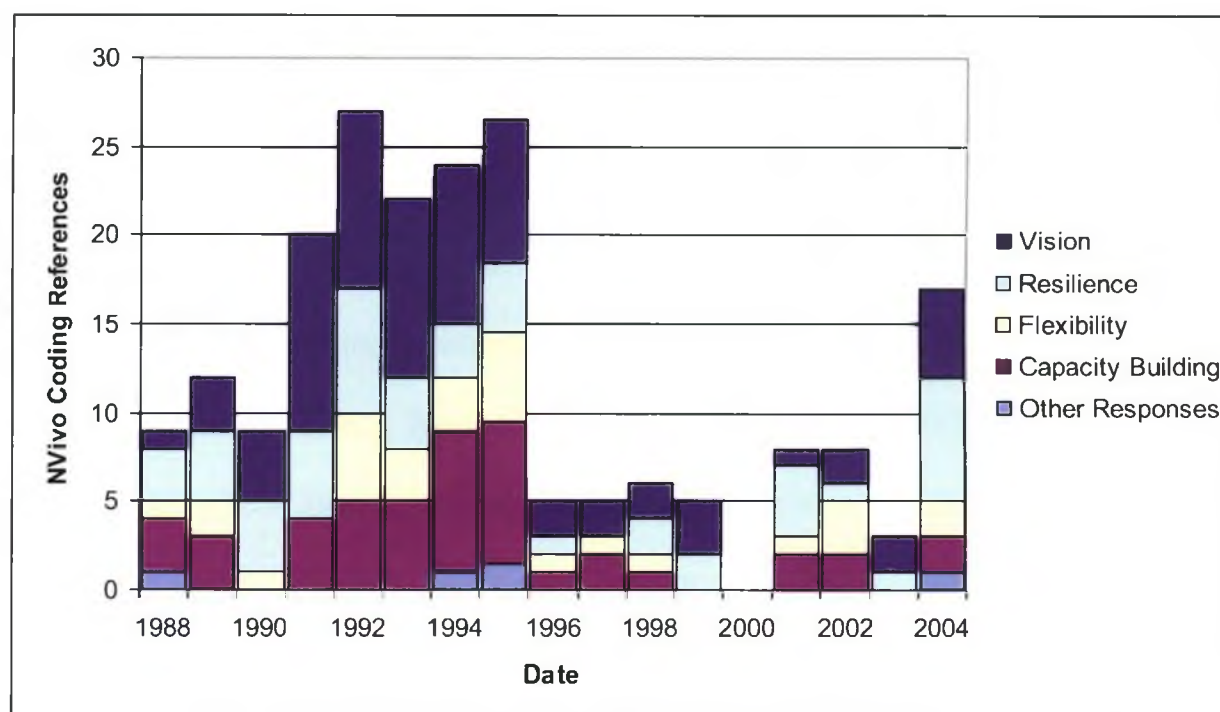
The first official strategic plan carried out under the umbrella framework of the *Conservation Strategy* was the 1994 *Ganaraska Watershed Plan* (GaRCA 1994a). As a result of decreases to MNR funding through the Multi-Year Expenditure Reduction Program (see Figure 2.4), the updated watershed planning process was not approved until the 1994 budget and with a 50% decrease in provincial funding. Traditionally, this process would be fully funded. This new watershed plan was to be the first Ganaraska watershed plan since 1983 (GaRCA 1983), and was to occur in three phases (GaRCA, October 20, 1994). In November of 1995, revolutionary changes occurred and few strategic planning activities occurred for the next five years.

Six years after passing the original *Conservation Strategy*, the GaRCA completed a second strategic plan titled *Strategy 2004* (GaRCA 1999). *Strategy 2004* was based largely on the new realities in Ontario after the mid-1990s (see Table 2.1) and was released in 1999 to update the *Conservation Strategy*. By 2002, the GaRCA better understood the importance of integrating a number of monitoring and management tools into one strategic planning document. Different methodologies for data collection meant that there had often been mismatched information between and within organizations (Leadley and Kreutzwiser 1999; Priddle 2003; Shrubsole 2000). This desire to amalgamate different analytical tools led to the final strategic planning document, called the *Integrated Watershed Management Model*.

These strategic planning documents will be discussed as per the content analysis demonstrated in Figure 4.2. Findings in Figure 4.2 were developed by combining

references to the elements of adaptive capacity as they relate to the GaRCA strategic planning documents.

Figure 4.2: NVivo coding references combining elements of adaptive capacity and strategic planning at the GaRCA



Source: GaRCA Meeting Minutes 1988-2004

4.3.2.2 Analysis of Adaptive Capacity

4.3.2.2.1 During Positive Institutional Arrangements Prior to 1990

The GaRCA did not undertake strategic planning prior to 1991, so little review of the content analysis is provided prior to this date. Instead, the next section describes one major planning initiative that led to strategic planning activities after 1990. While this initiative reflected the elements of adaptive capacity, the plan was never completed.

The major planning initiative at the GaRCA in the late 1980s that would lead to strategic planning at the GaRCA was the effort to develop an updated *Ganaraska*

Watershed Plan. The planning process to create a new *Ganaraska Watershed Plan* began in 1989 when an Environmental Assessment Advisory Committee of the MOE began soliciting oral and written comments regarding the development of the Ganaraska Watershed. According to Mitchell and Shrubsole (1992, 121), “this request was prompted by a proposal to develop a 13 estate residential lot subdivision in the headwater of the Ganaraska River.” Given this threat to the natural environment, the GaRCA staff suggested to their board that they promote selected adaptations based on a demonstration to the province of the adequacy of existing environmental planning, such as Section 28 reviews and the importance of commenting roles along the Oak Ridges Moraine (ORM) (GaRCA, August 17, 1990). Reviews of their planning functions and discussions of increasing provincial awareness of those functions resulted in evidence of monitoring and learning, and capacity building during this time (see Figure 4.2). Reference to vision was also noted in the content analysis as the GaRCA worked to create a new watershed plan.

4.3.2.2.2 During Evolutionary Changes in the Early 1990s

Strategic planning activities at the GaRCA were officially initiated in 1991. During this time, and until revolutionary changes occurred, a number of strategic plans were created to determine what functions the GaRCA considered core, and what capacity the GaRCA had to undertake those functions. Though changes to institutional arrangements did result in a decrease in manifestations of the elements of adaptive capacity after 1992, such changes were usually evolutionary and instances steadily increased between 1993 and 1995. While instances of vision and capacity building remain numerous throughout this early stage of strategic planning, references to

monitoring and learning, and flexibility are slightly fewer and vary according to the planning activities undertaken at the GaRCA.

Commencing in October 1991, and in response to the ACOA requiring each conservation authority to develop a Conservation Strategy, the GaRCA began strategic planning and visioning exercises to prepare for the creation of its *Conservation Strategy* for the 1990s. An example of such a visioning adaptation is demonstrated when “members were advised that the board Chairman had hoped to review the status of the policies, identifying areas for improvement and establishing priorities for the Community Relations Program by the end of 1991” (GaRCA October 9, 1991). Identifying areas for improvement and establishing priorities are considered visioning adaptations as they help determine a desired future state of the organization (Mintzberg 1994; Koteen 1997).

Unlike initial attempts by the GRCA to create a vision for the CHR by delegating that function to an outside organization, the GaRCA retained ownership of its vision by remaining involved in its creation while still requiring guidance from an external consultant. Shipley (2002) describes how it is appropriate to involve external parties in visioning exercises to broaden participation to the community and to improve visionary goal setting as persons external to the organization provide innovative ideas and gain a feeling of ownership for the plan. For smaller organizations such as the GaRCA, hiring outside leaders with expertise to assist in the creation of a vision may be a necessary adaptation as “synthesizing an appropriate direction for the organization is complicated by the many dimensions of vision that may be required” (Bennis and Nanus 1985, 102).

The GaRCA’s *Conservation Strategy* was released in 1992 and contained the GaRCA’s first explicit vision and mission statements. The document’s vision for the

GaRCA was brief and written as “working together for responsible stewardship of the ecosystem” (GaRCA 1992b, 5). Between 1992 and 1994, the GaRCA demonstrated references to vision by continuing to rethink its vision for the 1992 *Conservation Strategy* while preparing for the release of the *Ganaraska River Watershed Plan* (GaRCA 1994a). With the release of this new plan in 1994, evidence of vision would remain strong until revolutionary changes in 1995 (see Figure 4.2).

During this early period of strategic planning, references of capacity building in the content analysis were often closely related to references of vision (see Figure 4.2). For example, the first official vision statement of the GaRCA was released in 1992 with its *Conservation Strategy* and was written as “working together for responsible stewardship of the ecosystem” (GaRCA 1992b, 5). The GaRCA’s vision was divided into four strategic adaptations, each focused on capacity building through partnerships and leadership including leadership in advocacy; leadership in stewardship; partnership in conservation learning and living; and economic self reliance.

One example of a how a promotional activity, through leadership, was undertaken and increased evidence of capacity building at the GaRCA involved a public meeting in January 1995 to discuss Phase I of the *Ganaraska Watershed Plan*. At this public meeting, a Citizens Writing Committee was recommended, outside the Terms of Reference, to assist with the finalization of the Phase I report. Franks (1999), explains how such a committee could facilitate capacity building activities as it allows professionals and the public to work with each other as equals. This partnership was undertaken with mixed results, for although it increased evidence of capacity building in 1995 (see Figure 4.2), it did cause some unforeseen problems. These problems were the

result of political motivated citizens from outside the organization controlling decisions that were not necessarily for the good of the GaRCA. Coulson (2005) describes this as an imposed partnership that is created out of political and cultural pressure.

The experience of the GaRCA with the Citizens Writing Committee suggests that capacity building activities are more effective when related to the organization's corporate vision. For example, the vision of the GaRCA at this time included leadership in advocacy; leadership in stewardship; partnership in conservation learning and living; and economic self reliance. While the GaRCA did retain aspects of its vision such as partnership in learning, the organization faced pressure and relinquished the element of leadership contained in its vision. Evidence the GaRCA recognized the vulnerability created by the writing team is seen in a staff report stating that "the community writing team will delay the Phase 1 report, [and that with] this delay is also the risk of a reduced grant rate from the MNR, which has recently given signal regarding the reduction of grant rates for these studies from 50% to 25% in the future" (GaRCA, January 18, 1995). GaRCA staff suggested to the board that the process move to Phase 2. However, failure to convince the board resulted in a delay in Phase 1. Unfortunately for the GaRCA, delays occurred concurrently with revolutionary changes.

When initiating strategic planning processes in the early 1990s, the GaRCA initially focused on traditional five-year plans to review its *Conservation Strategy*, beginning in 1993. However, references to monitoring and learning were more constant as they were necessary for the smaller GaRCA, which was more vulnerable to changing institutional arrangements. For example, the GaRCA reviewed the 1990 *Municipal Conflict of Interest Act*, which established principles of openness for all municipal

councils and committees, including conservation authority board members. This review presents evidence of monitoring and learning and was conducted because “requirements may deter future individuals from applying to the Authority; especially the citizen appointees” (GaRCA, March 6, 1992). No such review was carried out at the GRCA, which was less vulnerable to changing institutional arrangements such as this. The GaRCA was successful in recognizing its vulnerability and ensuring that it reviewed institutional arrangements in order to recognize changes in time to mitigate them.

Evidence of monitoring and learning at the GaRCA related to strategic planning in 1992 also involve the preparation of the *Watershed Plan* and the review of external institutional arrangements (see Figure 4.2). For example, realizing that it would have to request funding from the MNR in 1993 to complete the planning process for its watershed plan, the GaRCA demonstrated at a meeting that it monitored institutional arrangements for water management in Ontario:

The watershed planning process appears to be gaining wide support as a planning tool throughout the province. Recently, John Sewell, from the Commission on Planning and Development Reform in Ontario, published a newsletter on the Commission’s most recent work. This newsletter stated “when preparing municipal plans, all municipalities should be required to plan on a watershed basis.” Conservation Authorities should be given a clear mandate to prepare watershed and subwatershed plans and make recommendations to municipal councils (GaRCA, October 1, 1992)

Recognizing a trend in the province (Crombie 1992; Sewell *et al.* 1993) to focus on the watershed as a management boundary, the GaRCA attempted to build capacity by promoting itself as the appropriate organization to be delegated and funded for developing watershed plans.

4.3.2.2.3 After Revolutionary Changes in 1995

In the year following revolutionary changes, as was seen in the GRCA example, references to all elements of adaptive capacity nearly vanished from the content analysis (see Figure 4.2). During revolutionary changes, planning at the GaRCA focused on survival and retaining core functions. Unlike the GRCA, this trend would extend beyond 2000 with vision, and monitoring and learning the most common references of adaptive capacity in the content analysis as the GaRCA tried to keep its planning activities relevant for the institutional environment at the time.

In 1995, evidence of vision drastically decreased, as it had in the GRCA, as revolutionary changes put the GaRCA in a survival mode of planning (see Figure 4.2). According to Mark Peacock (M. Peacock, interview, July 17, 2007), the references to vision that did remain related to ensuring that the GaRCA continued to undertake management functions expected at the community level:

To get into the local community, we had to move through our municipalities, which is our strength, so we couldn't say, well we get all this money from the province and it tells us we need to spend our time on flood structures, building flood structures. Well if the local community really doesn't want that, it doesn't matter how much money the province gets us, it doesn't really further what we're all about. And it made us do the things we should be doing. And I think that's the strength of the cuts [after 1995], that it made us do the things we should be doing.

To undertake effective strategic planning and reduce its vulnerability after revolutionary changes, the GaRCA modified its *Conservation Strategy* into the *GaRCA Business Plan* (GaRCA 1996). This plan retained in a small way the GaRCA's continued focus on vision (see Figure 4.2).

Revolutionary changes created trepidation amongst stakeholders, both internal and external to the GaRCA, affecting progress with strategic planning as changes to

numerous institutional arrangements after 1995 had exposed how vulnerable the conservation authorities were within the planning environment. This type of vulnerability is considered contextual vulnerability where there is not, nor is there perceived to be, a present ability to cope with changes to the organization (O'Brien *et al.* 2007). An example of why there was a decline in occurrences of the application of vision is evident in meeting minutes from 1995 where the Chair defers decisions because of the municipal community member's lack of confidence. In a board meeting, where the Chair is discussing an open house related to creating the *Business Plan*, he "indicated that some concerns were raised at [an] Open House and suggested that any decision on the report be deferred until December" (GaRCA, October 19, 1995).

Few references to visioning were present in the reviews of the GaRCA again until 2002. Unlike the GRCA, which had the resources to return to strategic planning activities only three years after revolutionary changes (see Figure 4.1), the GaRCA was unable to implement any visioning activities for nearly seven years (see Figure 4.2). An interview at the GaRCA describes how surviving revolutionary changes for planning was still more than a decade later:

So the first question [after revolutionary changes] was well what should we be doing? And the second question was, the first answer to that was, let's build enough capacity in our staff that we can actually start answering that. Then we looked at what could sustain staff, and then we said let's get at the watershed planning end of things, fisheries management plans, and those things, to build plans so that specifically on the ground we'll also know what we're doing. And that's what really moved it through. So, we're just about through that planning phase (Mark Peacock, interview, July 17, 2007)

Reference to capacity building also drastically decreased after 1995 at the GaRCA. As a result of funding cuts in 1995, the GaRCA reduced staff by 50% and

reduced the 1996 municipal levy by 25% in order to retain a positive long-term working relationship with the municipalities (see Chapter Five). The GaRCA *Business Plan* describes it as ironic but tragic that the GaRCA's capacity to continue excellent service was being threatened only four years after passing the progressive *Conservation Strategy* (GaRCA 1996). Linda Laliberte (interview, July 16, 2007), provides an example of the extent to which the GaRCA Board and staff went to ensure that the organization survived and retained capacity to undertake core functions:

When we did the [job] cuts, the board made sure that people could assume duties for other people. I assumed the General Manager's role, I was bookkeeper, Corporate Services, and payroll. So I took all of those duties and then management duties. So, all the administrative duties I basically took on because we laid off the secretary receptionist, we didn't have a General Manager, so I took on that, so I took kind of two different scales of responsibilities and they came... The regulations officer took a lot of the regulations as well as the planning. The conservations services resource technician took a lot of the flood warning regulations along with his duties, and then the General Superintendent kind of picked up some of the other duties that maybe came from some of the other people.

It is important to note that, while in survival mode and having laid off 50% of the staff, the GaRCA did not suspend any functions, core or non-core.

Written as a response to institutional change, the *Business Plan* was released in 1996 as a strategic plan to build capacity through strategic promotional adaptations to increase political and financial support. Promotional activities are discussed in the literature as a beneficial means of gaining capacity by demonstrating to stakeholders the organization's relevance (Grindle and Hilderbrand 1995; Simpson *et al.* 2003). Another key capacity building adaptation that the GaRCA promoted in the *Business Plan* was positive partnership retention. Positive partnerships are often considered a more beneficial long-term, discourse-based solution to mitigate change when compared to

reactionary actions (Jacobs 2005). Written during a survival mode of planning, the *Business Plan* did little to contribute to elements of adaptive capacity after 1996 (see Figure 4.2).

An interesting trend is seen at the GaRCA regarding flexibility. The GaRCA actually increased references to flexibility the year of revolutionary change (see Figure 4.2). This is opposite of the GRCA case, which demonstrated flexibility when institutional arrangements were supportive (see Figure 4.1). In response to changing institutional arrangements, the GaRCA was forced to decrease staff by 50%, which actually resulted in increased evidence of flexibility. This increased evidence of flexibility is considered strategic flexibility as staff of the GaRCA had to undertake numerous management functions with decreased managerial oversight.

Reference to flexibility decreased dramatically after 1995. Such a decrease may be due to the fact that, with a lack of staff available, many actions went unreported, or that flexibility was simply not present. Because staff roles were rewritten and functions previously considered flexible became the norm, many instances of flexibility likely went unreported. Sharfman and Dean Jr. (1997) explain that while flexibility is considered a very difficult concept to apply to an organization with limited resources, it is occasionally small organizations that must share responsibilities and implement flexibility unintentionally.

One example of how flexibility was provided to remaining staff members is provided by Linda Laliberte (interview, July 16, 2007), who explains how staff were given increased freedom to interpret policy and make routine decisions regarding Section 28 permit reviews, which no longer had to be signed presented in full to the board. This

flexibility was provided because decreased financial and staff resources meant that there was no longer the management staff to review all permits in a timely manner and decisions had to be made by those throughout the organization.

Evidence of monitoring and learning adaptations at the GaRCA after 1995, as with most elements of adaptive capacity, is largely absent from the reviews after revolutionary changes as they remained in a survival mode for a number of years. Unlike flexibility, this element does not appear to be affected by availability of resources, as reference to monitoring and learning was also absent from the GRCA meeting minutes.

4.3.2.2.4 During Positive Institutional Arrangements After 2000

After 2000, references to the elements of adaptive capacity did not increase at the GaRCA at the rate seen at the GRCA. This slower recovery is related to the smaller size of the GaRCA and the longer time frame required to adjust after revolutionary changes. After 2000, references to monitoring and learning, and capacity building were the first to increase as the GaRCA reviewed its plans and attempted to gain resources to carry out management functions. In 2004, resources were again available to undertake strategic planning activities at the GaRCA and references to the elements of adaptive capacity more than doubled, including a sharp rise in vision, and monitoring and learning.

Although evidence of the vision element largely disappeared in the smaller GaRCA following revolutionary changes, it surfaced again after institutional arrangements became supportive of the conservation authorities after 2000 (see Table 2.1). In 2002, the GaRCA did have the resources to again undertake a new strategic visioning process, this time aimed at determining how to integrate all management

activities. To do this, the GaRCA deemed it necessary to develop a Ganaraska Region *Integrated Watershed Management Model* (GaRCA, October 17, 2002). After 2002, and until the end of the study, the GaRCA displayed evidence that it had regained strategic planning and the guiding element of vision (see Figure 4.2).

Interestingly, 2000 is the year that no elements of adaptive capacity appear to have been included in the GaRCA's strategic planning activities (see Figure 4.2). This is the year that the province became concerned with source water protection and Walkerton (see Chapter Six). In 2000, the smaller GaRCA was waiting to see what institutional changes the province would make and how the legislative framework would evolve as a result of Walkerton. As Franks (1996, 54) explains, "without a supportive policy and legislative framework, no water agency will have the capacity to perform effectively, however much capacity the individuals within it have."

In 2001, evidence of capacity building in strategic planning at the GaRCA again appeared in the meeting minutes as a result of the writing of the *Integrated Watershed Management Model* and because of the enabling environment created in the province after Walkerton. The *Integrated Watershed Management Model* was an attempt by the GaRCA, in consultation with municipalities and other partners such as the MNR, to raise capacity and decrease vulnerability by amalgamating analytical tools so management decisions could be undertaken in a more coordinated manner within the organization and with partners. O'Connor had suggested that one of the primary causes of the Walkerton Tragedy was the inability of various organizations to effectively share information (O'Connor 2002b). The inability to share information with partners is also recognized in the literature as something that may increase an organization's vulnerability and inhibit

effective responses to change (Jacobs 2005). A portion of a staff report, presented in 2002, explains how the focus on capacity building through analytical tools such as the *Integrated Watershed Management Model* regained momentum after the Walkerton Tragedy:

Staff believes that, within the next 5 years, as models are created across the regional watershed, a single, integrated approach will be employed. It is important to remember that the models needed to satisfy the requirements of the Oak Ridges Moraine Plan and Walkerton Phase 2 will be prepared through this process (GaRCA, October 8, 2002, 1-2).

To complete the *Integrated Watershed Management Model*, the GaRCA met with Greenland International Consulting Incorporated and developed a partnership with Lake Simcoe Conservation Authority, Environment Canada, Trent University, the MOE and MNR to create a model that could be applied within the entire watershed, and possibly across the province, allowing for the eventual vision of seamless water management (GaRCA, October 17, 2002).

It was after 2000, when institutional arrangements were becoming more supportive of the conservation authorities, following the Walkerton Tragedy, that evidence of monitoring and learning adaptations for strategic planning at the GaRCA again appeared (see Figure 4.2 and Chapter Six). The sharp increase in monitoring and learning is primarily the result of reviews required for those strategic plans created in the mid to late 1990s (GaRCA Watershed Plan, Strategy 2004), as well as the review of all programs for the creation of the *Integrated Watershed Management Model*.

4.3.2.3 Analysis of Adaptive Capacity at the GaRCA Summary

Figure 4.2 demonstrates how the GaRCA used the elements of adaptive capacity in relation to strategic planning. As a smaller conservation authority, strategic planning activities did not officially occur at the GaRCA until the early 1990s. With the initiation of strategic planning, references of vision and capacity building at the GaRCA increased quickly as staff attempted to develop plans and to determine how to gain resources required to carry out functions within those plans. Unlike the GRCA, the GaRCA also had a high number of references to monitoring and learning at this early stage as the organization was smaller and more vulnerable to changing institutional arrangements. Following revolutionary changes, and due to its smaller size, the GaRCA did not provide many references to the elements of adaptive capacity until 2002 when it initiated the *Integrated Watershed Management Model*. One exception to this lack of references to the elements of adaptive capacity concerns flexibility. After revolutionary changes, the GaRCA reduced its staff complement by 50%. As a result, flexibility was required by the remaining staff who had to assume new functions without significant managerial support.

4.4 Chapter Summary

This chapter provides lessons about the interrelationships of the elements of adaptive capacity gained from the experiences of the GRCA and GaRCA. In the initial stage of strategic planning, the evidence presented clearly indicates that the creation of a vision statement is directly influenced by the extent of resources, and therefore capacity, available. With superior technical and financial resources, the GRCA was able to initiate visioning exercises in the early 1990s while the smaller GaRCA was forced to wait until

guided by the ACAO and facilitated by supportive institutional arrangements. This provided legitimacy to their planning effort. One visioning activity that helped the GRCA early was the designation of a leader, Barbara Veal, to guide the planning process of the CHR nomination. In 1998, after revolutionary changes, the GRCA was able to increase reference to visioning as a result of the GRCA being less vulnerable to those changes. Evidence of vision at the GaRCA did not increase until 2002.

This research also found that stakeholders' appreciation for corporate visions is related to their involvement in the writing of that vision. The GRCA lost a sense of ownership for the CHR when it hired out the writing of the vision. Unlike the GRCA, the GaRCA retained ownership by remaining heavily involved with its vision, even when it hired a consultant. In this instance, while assistance was required the GaRCA retained the leadership role in the planning process. Having ownership of the vision meant that staff and board members were familiar and enthusiastic about implementing the various strategic plans.

Another lesson provided from the conservation authorities' experience is that partnerships can be an effective means to build capacity in response to revolutionary change if they are created in a manner that all partners find beneficial. Partnerships can be used to increase the capacity of an organization through the sharing of resources and expertise to reach common goals. Such partnerships are beneficial only if they are done with a shared vision of the program to reduce fragmented decision making among organizations. Both the GRCA and GaRCA appeared to create partnerships that would benefit all parties, with the Heritage Working Group and the Citizens Writing Committee, respectively, after 1995. In both instances, however, the conservation authorities

delegated too much authority and decisions were made that delayed the planning process and decreased capacity for the program in question. These partnership adaptations could have been beneficial if the GRCA and GaRCA had retained leadership and the final decision-making power was equally shared among partners. It was also demonstrated, especially by the GRCA, that capacity building and visioning adaptations can be used to complement each other. For example, while a partnership can be created as a capacity building adaptation, that partnership can also undertake visioning activities. For example, creation of the Heritage Working Group, a capacity building adaptation, led to the Heritage Day Workshops, which are considered a visioning activity.

Flexibility was demonstrated in this chapter as being the element most affected by the capacity of an organization to mitigate changes to institutional arrangements. In fact, the largest disparity between the GRCA and GaRCA with references to elements of adaptive capacity is with reference to flexibility. Unlike the GRCA, the GaRCA did not have the resources, and therefore capacity, to undertake alternative functions such as the CHR. The size of an organization and the resulting availability of resources are determining factors in the ability to build capacity. The GRCA demonstrated through its application of the CHR that flexibility at the organizational scale is essentially based on capacity that exists prior to change. It is argued here that the GaRCA did not demonstrate organizational flexibility largely because it did not have the resources for planning adaptations or actions outside those mandated. A number of authors have also concluded that organizational flexibility is largely determined by the scale of the organization (Volberda 1997; Wadhwa and Rao 2002; Hatum and Pettigrew 2004). The experiences of the GRCA and GaRCA suggest that, if flexibility is provided to partners,

it is beneficial to include some form of monitoring and reporting by those partners as to the use of the designation so records exist and the sharing of knowledge can occur. A similar lesson was found in relation to monitoring and learning.

The conservation authorities' experience suggests that although constant monitoring and learning would be ideal, formal and documented program review ensures that monitoring does occur. For example, the *Grand Strategy* was stated to be a "living document," but included no specific monitoring processes and remained unreviewed for years. As a consequence, the CHR was eventually overlooked by board members and thought to be complete by municipalities. The lesson is that monitoring processes are more understood by stakeholders if there are documented records, even if they are simple updates. One of the primary reasons that the municipalities felt that the CHR planning was complete was that they had received little information since signing the *Grand Strategy*. Ironically, the GaRCA, which had included traditional five-year review processes, was able to update its strategic plan more regularly throughout the study period.

Through the experience of the GRCA and GaRCA, it was also demonstrated that the extent of monitoring and learning that occurs is directly related to the capacity of an organization to mitigate change. For example, although the GaRCA had five-year review processes, it monitored institutional arrangements more consistently as a result of being more vulnerable to changing institutional arrangements. References to monitoring and learning at the GaRCA were the second most referenced element of adaptive capacity, behind vision, throughout the study period.

Examining how adaptive capacity was gained through strategic planning by the conservation authorities has provided lessons about the interrelationships of the elements of adaptive capacity and how to implement adaptive capacity in the context of change. In summary, the experience of the conservation authorities suggests:

1. That an understanding of the capacity available to the organization can benefit those involved with visioning;
2. That a feeling of ownership of the corporate vision by those within an organization will influence the understanding and adoption of that vision;
3. That the extent to which visioning and capacity building adaptations are facilitated by partnerships is related to how beneficial members determine those partnerships to be;
4. That the type of flexibility to be implemented by an organization is influenced by the organization's vulnerability to changing institutional arrangements; and,
5. That monitoring and learning adaptations, even if informal, better influence policy change and knowledge sharing if there is some form of documented record.

CHAPTER FIVE

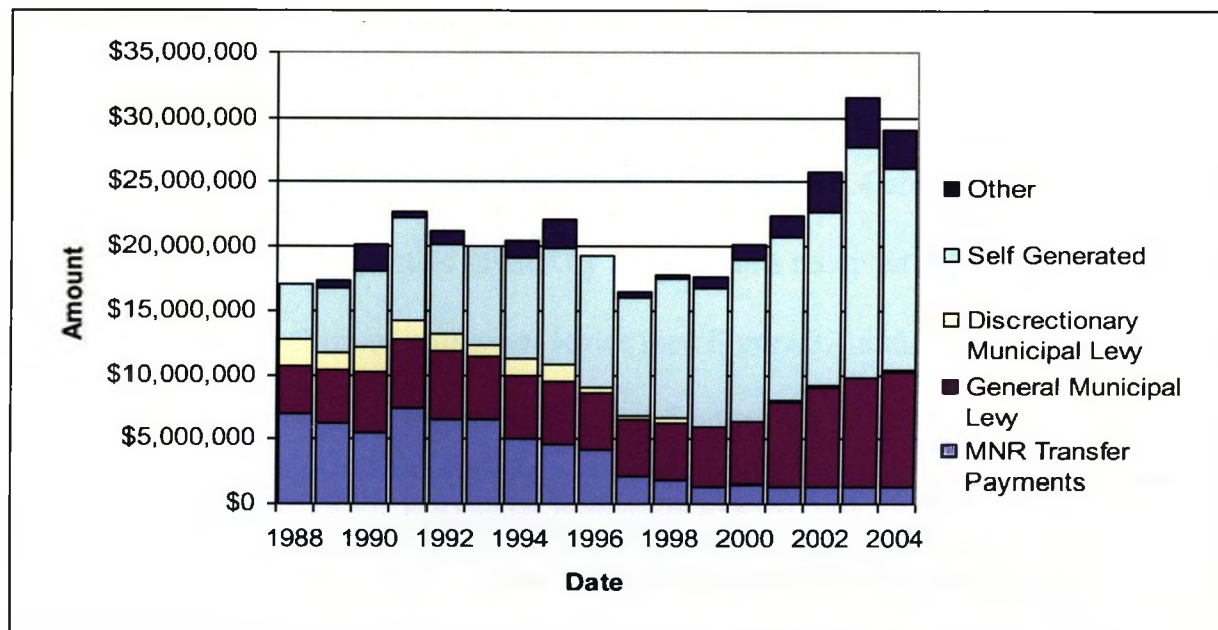
FINANCIAL ADAPTIVE CAPACITY RESPONSES TO REVOLUTIONARY CHANGE

5.1 Introduction

This chapter uses the framework created for this research to describe how the GRCA and GaRCA utilized different financial sources to respond to revolutionary changes in the mid-1990s. In addition, lessons regarding the interrelationships of the elements of adaptive capacity are identified and it is shown how these elements were utilized by the GRCA and GaRCA through financial strategies. This chapter begins with an examination of financial sources for conservation authorities.

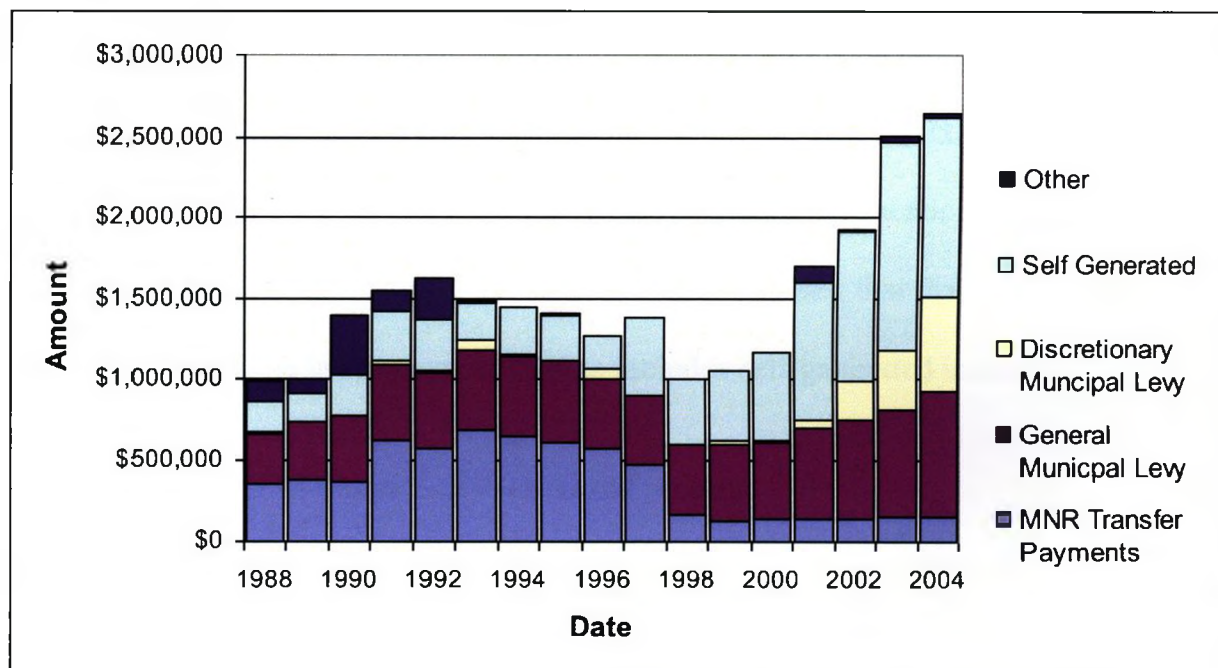
5.2 Financial Sources Considered

Traditional sources of funding for conservation authorities were identified by Mitchell and Shrubsole (1992) as senior government sources, municipal sources, recreation sources and other sources including such things as timber sales, land sales and information provision. Primary categories of revenue reviewed for this research include MNR transfer payments, general municipal levies, discretionary municipal levies and self-generated income from water resource fees, including commenting on municipal planning applications and development permits under Section 28 of the *Conservation Authorities Act* (see Figure 5.1 and Figure 5.2). Other funding sources include self-generated income such as from conservation areas, donations and land sales.

Figure 5.1: Revenue sources of the GRCA

Source: GRCA Financial Statements 1988-2004

* Adjusted for inflation to 1988 Dollars

Figure 5.2: Revenue sources of the GaRCA

Source: GaRCA Financial Statements 1988-2004

* Adjusted for inflation to 1988 Dollars

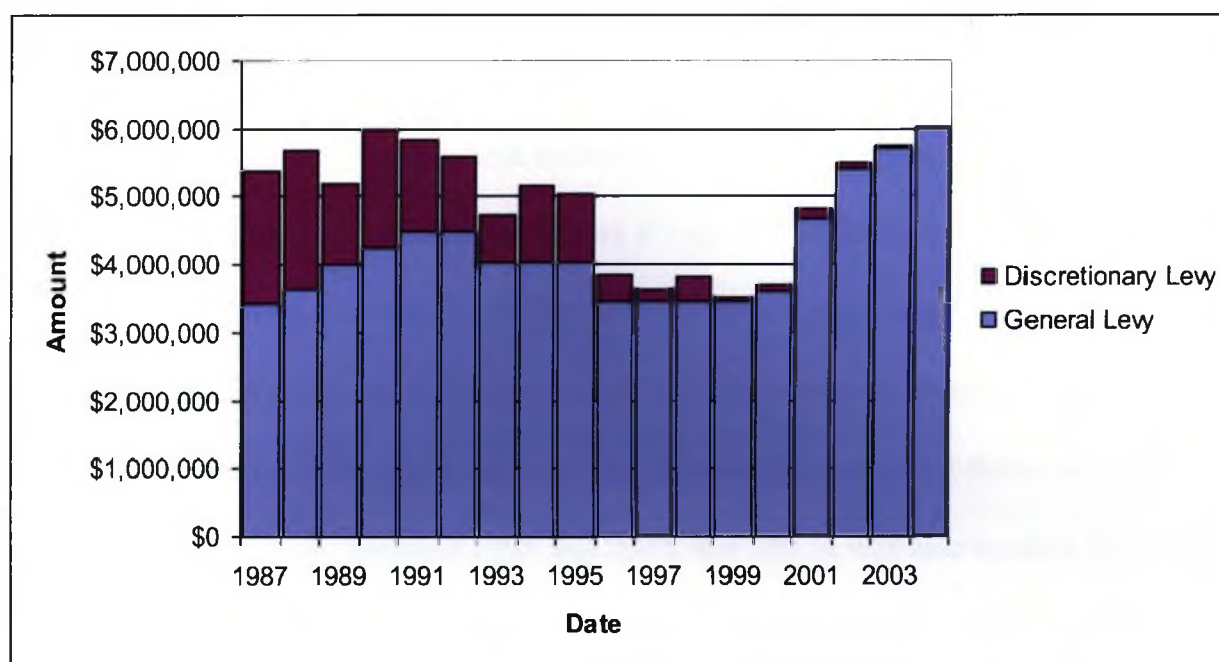
Traditionally, the most significant source of funding for conservation authorities has been grants received from the MNR for 50% of administration, conservation, and recreation activities as a result of an Order-in-Council that came into force in 1977 (Ontario Ministry on Natural Resources 1988c) (see Figure 2.4 and Table 2.2). Prior to the 1990s, projects and activities funded by MNR grants received matching funds from municipalities in the form of municipal levies (see Figure 5.3 and Figure 5.4). These municipal levies represented the second largest funding source of the conservation authorities, and reflected the provincial-municipal partnership, considered a fundamental condition of the formation of the conservation authorities (Mitchell and Shrubsole 1992).

Although most municipal levy amounts provided to the conservation authorities are earmarked for legislated functions and prescribed by the province, the conservation authorities can vary some discretionary amounts (see Figure 5.3 and Figure 5.4). These discretionary levies have become imbursements paid by municipalities for “non-core” functions that both parties agree are beneficial (Shrubsole 1996). Examples of functions that could be funded include activities such as tree planting, educational programs or grants for technological research. Another source of funding that the conservation authorities can utilize in response to change includes self-generated income.

5.2.1 Brief Review of Other Self-Generated income

Of the sources of self-generated income available, this research focuses on water resource fees. Water resource fees are charged to developers and municipal partners for commenting on planning applications, which include plans for subdivisions, official plans, zoning changes and Section 28 permit reviews (Mitchell and Shrubsole 1992).

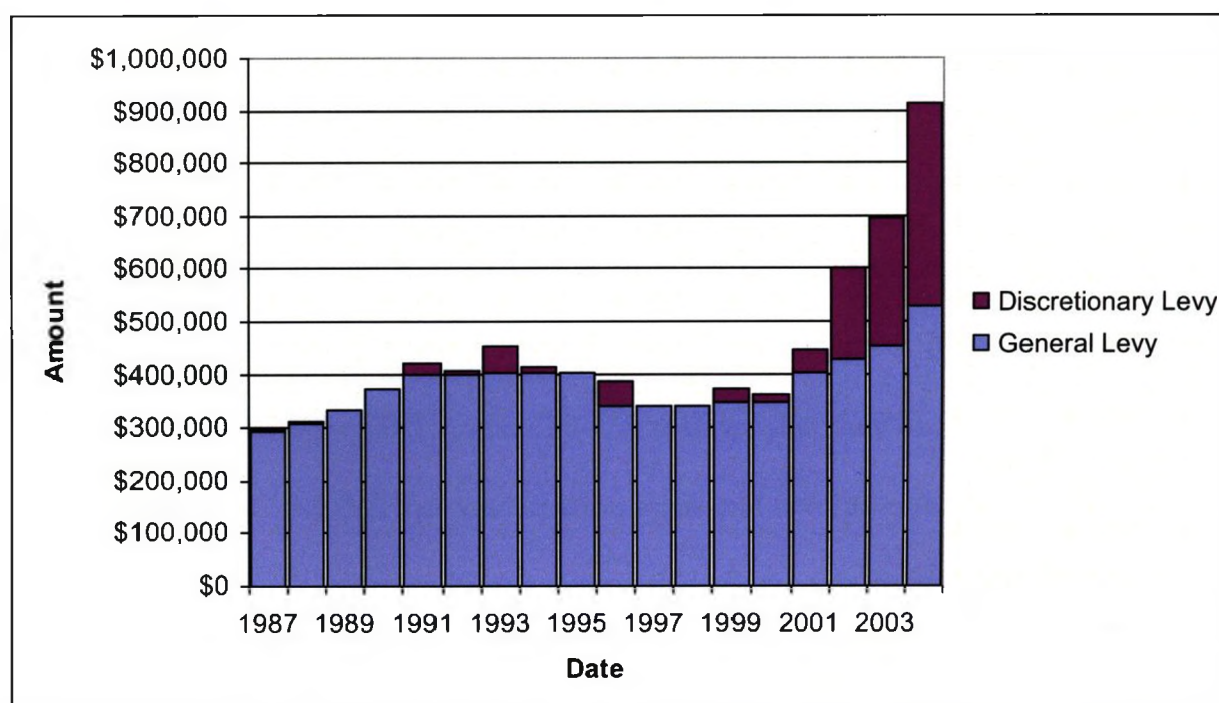
Figure 5.3: General and discretionary municipal levy funds for the GRCA*



Source: GRCA Financial Statements 1988-2004

* Adjusted for inflation to 1988 Dollars

Figure 5.4: General and discretionary municipal levy funds for the GaRCA*



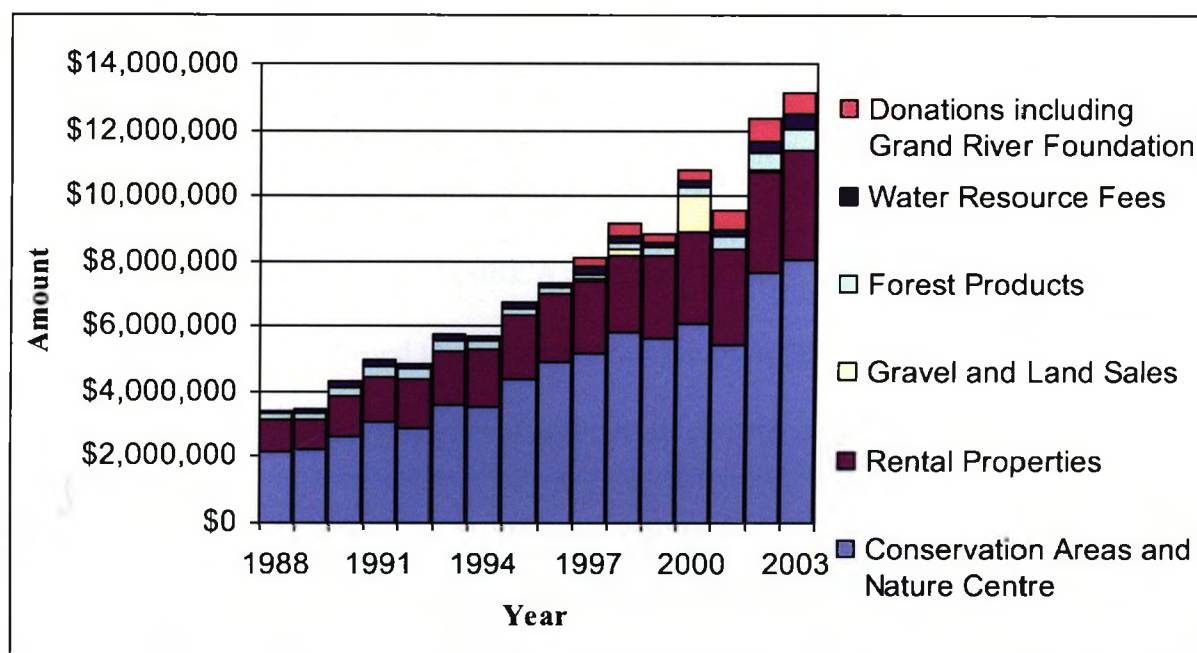
Source: GaRCA Financial Statements 1988-2004

* Adjusted to Inflation to 1988 Dollars

The next section of this chapter provides a brief review of sources of self-generated income other than water resource fees (see Figure 5.5 and Figure 5.6).

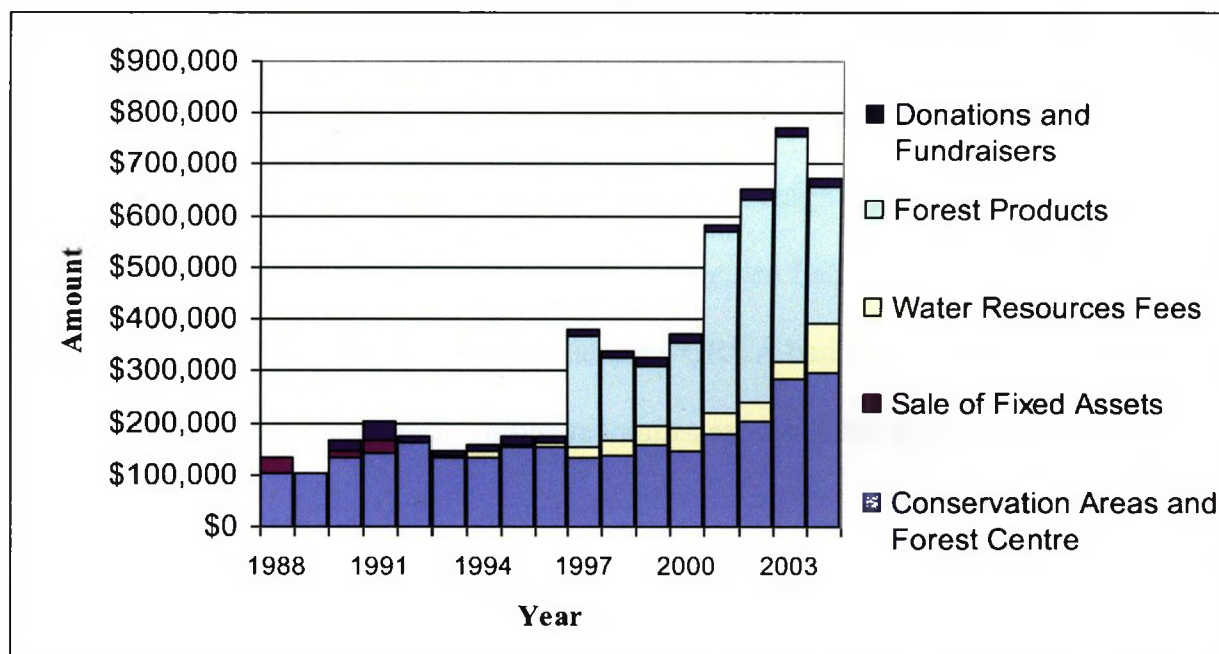
Most sources of self-generated income are determined by the availability of resources, and therefore capacity, that existed prior to revolutionary change. Hartig *et al.* (1995, 5) explain that one of the main factors of capacity building is the ability to “mobilize appropriate resources to fulfill [desired] policies and [programs].” With sufficient financial resources prior to external changes, negative changes to an organization’s financial arrangements will not significantly prevent it from carrying out functions. For example, between 1995 and 2003, the GRCA was able to raise \$3,665,052 additional revenue through its conservation areas and nature centres while the GaRCA was able to increase its income from conservation areas and the Ganaraska Forest by only \$132,574. Though there appears to be a large discrepancy between the two conservation authorities, these amounts are similar if one considers that they represent an increase in overall revenue for the GRCA and GaRCA of 45.7% and 44.6%, respectively.

Available resources dictated the ability of the conservation authorities to increase revenue immediately following revolutionary changes. Between 1995 and 1997, while the GRCA was able to continually increase revenue from its numerous conservation areas and nature centres, the GaRCA’s revenue stagnated (see Figure 5.6). After revolutionary changes in 1995, both the GRCA and GaRCA realized that they had to increase self-generated revenues and that the conservation areas and nature centres presented opportunities for such revenues. Recognizing that changes were occurring, the GaRCA submitted to the Ministry of Culture, Tourism and Recreation a request for funding to initiate a strategic planning process for the Ganaraska Forest (GaRCA May 1994). This

Figure 5.5: Self-generated sources of income of the GRCA

Source: GRCA Financial Statements 1988-2004

* Adjusted for inflation to 1988 Dollars

Figure 5.6: Self-generated sources of income at the GaRCA

Source: GaRCA Financial Statements 1988-2004

* Adjusted for inflation to 1988 Dollars

planning was to focus on a vision of increasing funds from the Ganaraska Forest and achieving financial sustainability, as apparent in the following statement from that report:

It is the Conservation Authority's belief that the Ganaraska Forest can play an important industry role in increasing tourist traffic and the important local economic benefits of visitor spending. The increased earning potential of the Forest Centre can result in greater monies going out into the community (GaRCA May 1994, 2).

Although the GaRCA applied to initiate a strategic plan prior to changes, it was unable to raise revenue from conservation areas and nature centres as quickly as the GRCA, which had more extensive resources.

Even after the GRCA turned over the Lafortune Conservation Area to the Town of Haldimand in 1993, the GRCA still owned twelve conservation areas that hosted 484,221 overnight campers and 389,150 day visitors (GRCA 1993) with revenues of \$3,604,027 that year (GRCA Financial Statements). While most conservation areas helped raise income, Lafortune had greater expenditures than revenue and the GRCA turned it over as a cost-saving measure. Of the remaining conservation areas, eight had overnight camping and ten had boating activities including two multi-purpose reservoirs with access for power boats. Combined with biking, ice fishing, hunting, other recreational activities and concession stands, the GRCA had greater options to increase revenue from conservation areas. When resources are available prior to revolutionary change, the storm is more easily weathered.

Operating in a less populated watershed, with less demand for recreation, the GaRCA had only seven conservation areas with no recorded numbers of visitors as some of the conservation areas were not staffed and were free access. In 1993, no GaRCA conservation area had overnight camping, boating activities or concession stands. Total

revenues were \$1,224,910 largely reflecting income from the Gananaska Forest of \$131,225 (GaRCA Financial Statements). Such little revenue generating ability made recreation functions of the GaRCA vulnerable to external financial changes. The one location where the GaRCA was earning revenue from tourism was the Gananaska Forest, which is located on a 10,400 acre multi-purpose forest, where admission was charged for hiking, biking, hunting, horseback riding and other recreational activities (GaRCA 1996). The Gananaska Forest was not able to recover as quickly as many GRCA conservation areas after 1997 because 72% of revenue from the Gananaska Forest was already realized from membership fees and only 15% from the province. That same year, 1996, the cost of owning and maintaining other conservation areas was offset 28% by provincial funding, which was terminated in 1997 (GaRCA 1996) (see Table 2.2). Put simply, the GaRCA did not have the revenue from conservation areas to respond to revolutionary change as quickly as the GRCA. By 1998, the GaRCA released the *Gananaska Forest Management Plan* (Gananaska Forest Recreational Users Committee October 2, 1997), which helped guide management practices and facilitated increased revenue throughout the remainder of the study period.

One source of funding that increases for the GaRCA but stays steady for the GRCA is the sale of timber and forest products. Again, this source of revenue is not applicable for a comparative examination as the GaRCA's forest products are entirely from the Gananaska Forest pine plantations, which are sustainably forested and "are being converted back to natural forests through the process of selective thinning and harvesting" (GaRCA 2009). With numerous plantations throughout the watershed, the GRCA's income from forest products has been relatively constant throughout the study

period and revenues are based on the availability of mature lumber in any year from any tract of forest.

Donations and fundraising are another source of self-generated revenue that has increased steadily at both the GRCA and GaRCA after revolutionary changes. Much like the experience with conservation areas, the larger amounts of money received by the GRCA are a result of its staff, financial and technical capacity as well as the contribution from a larger watershed population. With the human and technical resources to undertake a wide range of stewardship activities, including those not mandated to conservation authorities, and existing in a watershed with nearly one million people, the GRCA has had its own fund raising organization for over 40 years. The Grand River Foundation, previously the Grand Valley Foundation, was incorporated in 1965 as a non-profit organization comprised of watershed residents “to create and operate a fund to be used exclusively for the benefit of the GRCA in the cultivation and advancement of conservation in the Province of Ontario” (GRCA 1989). There is no equivalent at the GaRCA, which does not have the watershed population, staff or technical capacity to undertake many of the activities that the GRCA does.

A source of funding that was expected to be relevant, but did not appear to have any effect on the GRCA or GaRCA is the sale of land. While the GRCA did attempt to sell some land for development at its Laurel Creek Conservation Area in response to early financial changes, strong and vocal resistance from the residents of the City of Waterloo forced the GRCA to abandon plans to sell those lands (Flaherty 1995). Neither conservation authority successfully used land sale to gain revenue.

The final category of self-generated funds found in Figure 5.5 is rental properties.

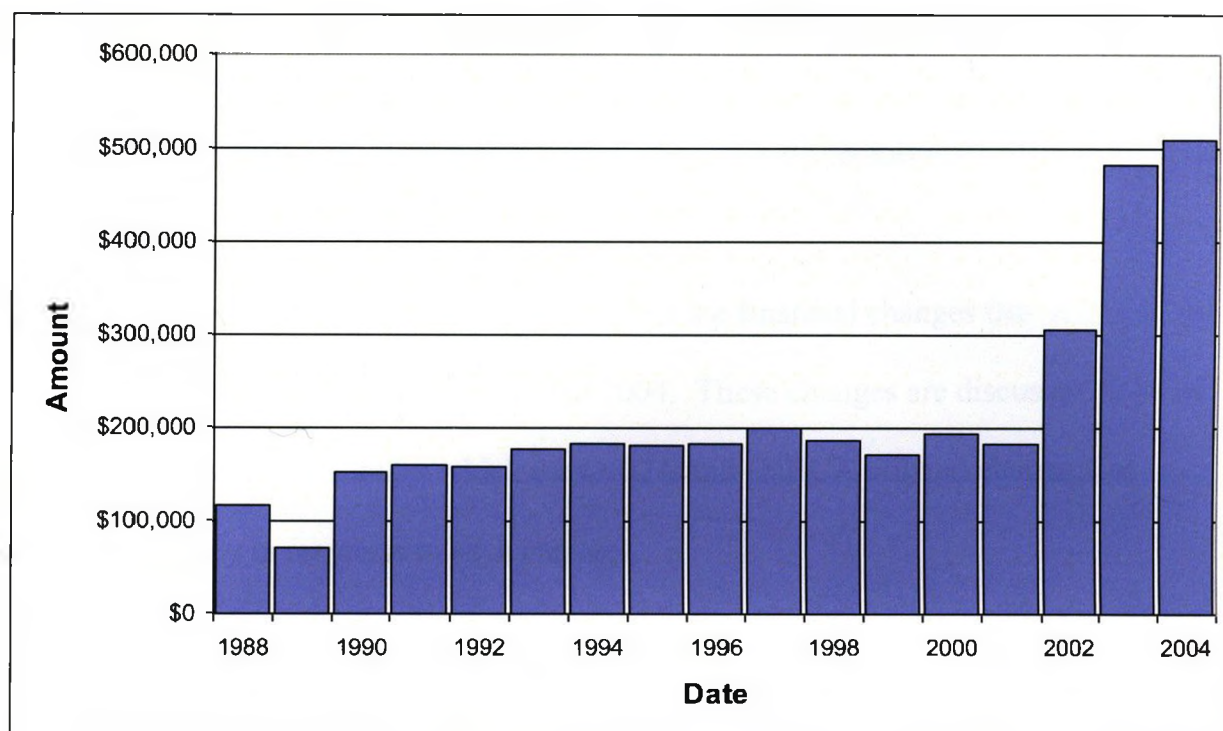
Rental properties are not seen in Figure 5.6 because they are again a source of funding that is based on the capacity to have such funding. For the GRCA, this source of revenue is the rental fees of cottage properties around Belwood and Conestogo Lakes, two of the multi-purpose reservoirs owned and operated by the GRCA.

All of the above examples, while not comparable, provide an important lesson related to the application of capacity building. The amount of financial generating sources available to an organization prior to change will heavily influence its ability to increase capacity and reduce its vulnerability to changes. While the GRCA was able to significantly increase income from numerous conservation areas that generated revenue, the GaRCA was able to dramatically increase revenue from lumber after large tracts of the Ganaraska Forest had matured.

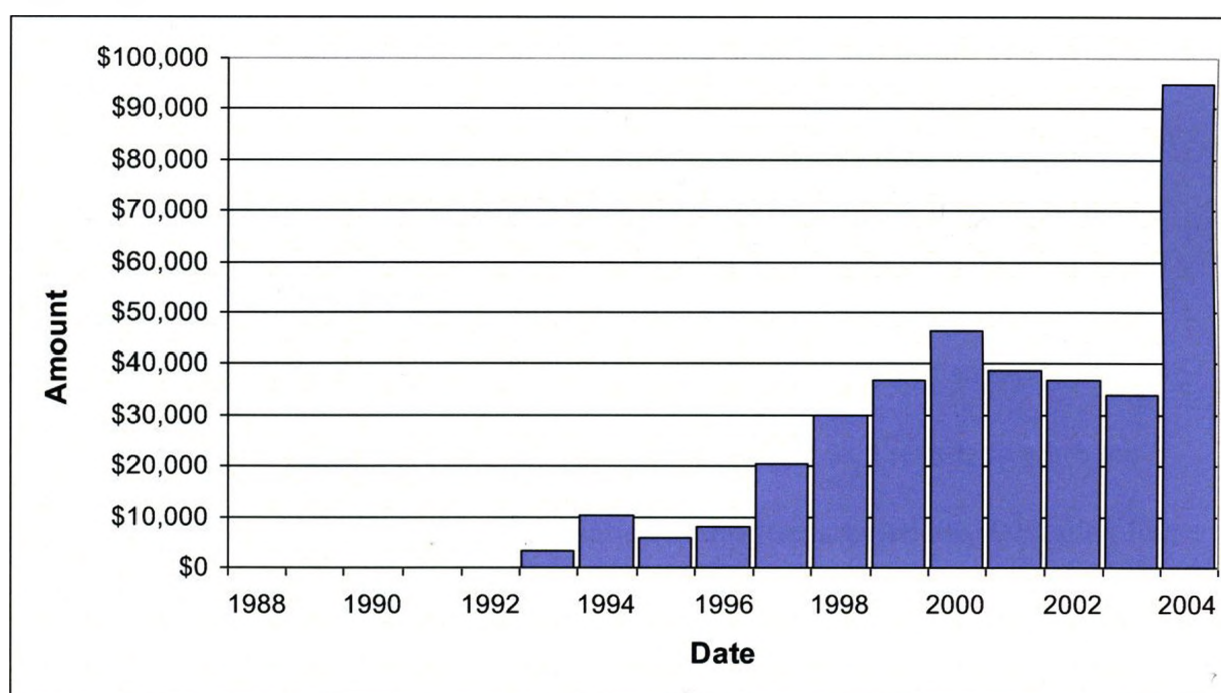
5.2.2 Self-Generated Income Through Water Resource Fees

Additional insight into the financial strategies of both conservation authorities can be seen in the context of water resource fees (see Figure 5.7 and Figure 5.8). Water resource fees were chosen for a comparative review because they represent the same functions in both conservation authorities, are equally available for adaptation in response to change, and as such, can be examined to determine how elements of adaptive capacity were applied in response to change by the different organizations. In a comparative study, it is best to assess those functions that are as generic as possible (Athens 1984).

A second reason that water resource fees were chosen involved an initial review of the literature that revealed that the removal of funding for planning applications was

Figure 5.7: Water resource fees at the GRCA

Source: GRCA Financial Statements 1988-2004
 * Adjusted for inflation to 1988 Dollars

Figure 5.8: Water resource fees at the GaRCA

Source: GaRCA Financial Statements 1988-2004
 * Adjusted for inflation to 1988 Dollars

one of the most directly affected sources of funding by revolutionary changes (Harbell *et al.* 1996; Cooper 1996). Therefore, water resource fees charged in response to changes provide a “cause and effect” relationship that appears to be corroborated by a comparison of Figure 2.4 to Figure 5.7 and Figure 5.8.

The next section of this chapter examines the financial changes that affected the conservation authorities between 1988 and 2004. These changes are discussed in order to determine the conditions under which the GRCA and GaRCA utilized elements of adaptive capacity in response to such changes.

5.3 Provincial Context

5.3.1 Positive Financial Arrangements Prior to 1990

Financial support for conservation authorities in the late 1980s was significant, as it was for many planning agencies in Ontario (Booth and Quinn 1995; Shrubsole 1996; Krause *et al.* 2001). By the end of the 1980s, MNR transfer payments to the conservation authorities were almost \$50 million (see Figure 2.4). Thus, the general municipal levy, meant to match MNR transfer payments, also provided significant income to the conservation authorities (see Figure 5.3 and Figure 5.4). Ralph Beaumont (interview, July 20, 2007) explains that by this time, “there was good monetary support, which to [him meant] the Province was stepping up to the plate, and as a result, so were the municipalities.” All functions the conservation authorities carried out, including those that were non-core such as environmental consultation, also remained eligible for provincial funding at this time (Ontario Ministry of Natural Resources 1988c) (see Table 2.2).

Throughout the 1980s, increasing the municipal levy was constant and was not significantly disputed by municipalities (K. Murch, interview, July 30, 2007). Between 1987 and 1991, even after the release of *A Review of the Conservation Authorities*, the increase in the municipal levies to the GRCA and GaRCA was 23.7% and 26.9%, respectively (see Figure 5.3 and Figure 5.4). For reference, the inflation rate between 1987 and 1992 was 19.94% (Bank of Canada 2008). Fees for watershed management services in the late 1980s and early 1990s, such as commenting on planning applications, were not a significant factor as provincial funds were still available for these functions (see Table 2.2; Figure 5.7 and Figure 5.8). To determine the effects of increased volumes of development applications, the ACAO carried out an evaluative survey in 1988 (GRCA, April 22, 1988). The survey revealed that only about 50% of the conservation authorities were charging any fees and only for minor commenting functions, such as solicitors' inquiries. These fees were only \$15 to \$25 (GRCA, April 22, 1988).

5.3.2 Negative Evolutionary Changes in the Early 1990s

Following the election of Bob Rae as Premier in 1990, evolutionary changes occurred to the conservation authorities' financial arrangements. Though the conservation authorities continued to receive supportive provincial funding during the "Rae Days" (see Figure 2.4; Figure 5.1 and Figure 5.2), larger amounts of funding were being directed towards municipalities (Sewell *et al.* 1993; McCulloch and Muldoon 1999; Grant 2000). This change represented an overall shift in the province towards strategic planning and a focus on streamlining the planning process to include fewer agencies (see Table 4.1).

Significant financial changes that affected the conservation authorities were first introduced in Minister Wildman's speech at the 50th anniversary of the Guelph Conference (Wildman 1991). This speech ended provincial funding for any non-core functions of the conservation authorities, including commenting on planning applications, education functions, and information dissemination (see Table 2.2). Conservation authorities whose watersheds contained municipalities experiencing high levels of urban growth, such as the GRCA, were vulnerable to these changes as the province no longer provided funds to review increasing numbers of planning applications.

In 1992, with the application of inflation-adjusted dollars through the Canadian Price Index, the ACAO determined that financial support by the MNR had decreased 45% since 1973 (ACAO 1992a). In 1993, the MNR introduced Bill 50. Bill 50, the *Expenditure Control Plans Statutes Law Amendment Act*, proposed continued declines in funding from the province for conservation authorities. The plan included \$5 billion spending reduction throughout the entire provincial government over three years. To mitigate the effects of this reduction, the MNR introduced its Multi-Year Expenditure Reduction Program, which cut \$100 million from the conservation authorities' budgets over three years (GaRCA, October 15, 1992) (see Figure 2.4). This decrease steadily reduced the level of funds the conservation authorities were receiving from the MNR, and therefore from the matching municipal levy, making non-core functions vulnerable as financial capacity to complete them decreased (see Figure 5.1 and Figure 5.2). As mentioned, a lack of reliable and adequate funding increases an organization's vulnerability to changing institutional arrangements (Adger 2001). Any sense of fiscal

security for the conservation authorities would come to a drastic halt in the mid-1990s, when revolutionary changes impacted their financial arrangements.

5.3.3 After Revolutionary Changes in 1995

Revolutionary changes affecting the conservation authorities' financial arrangements started in 1995 with the Provincial Economic Statement and related Bill 26 (see Table 2.1 and Table 4.1). Unlike the 1993 evolutionary cuts by the MNR, the 1995 Provincial Economic Statement resulted in severe financial reductions to the conservation authorities, including a 70% decrease in operating funds over two years (see Figure 2.4). Rather than returning to initial funding levels, as the 1993 cuts were to be repealed in 1996, the conservation authorities experienced further reduction in MNR funding from \$33 million to \$12 million per fiscal year in 1996 (Shrubsole 1996; Shrubsole *et al.* 1997). MNR funding would eventually drop under \$8 million by 2004 (see Figure 2.4; Figure 5.1 and Figure 5.2). The Provincial Economic Statement also introduced Bill 26.

Bill 26, the *Savings and Restructuring Act*, restricted financial support from the province to the conservation authorities to include only structural flood control and protection of significant lands through municipal tax coverage (Shrubsole *et al.* 1997; Ivey *et al.* 2002). As a result of Bill 26, the conservation authorities lost provincial funding for functions beyond those restrictions enacted by the Wildman speech only four years earlier (Mitchell and Shrubsole 1992) (see Table 2.2). Another of the functions impacted by the removal of funding included commenting functions for provincial regulations, such as those under the *Planning Act*, and functions related to Section 28 reviews under the *Conservation Authorities Act* (Shrubsole 1996; Shrubsole *et al.* 1996;

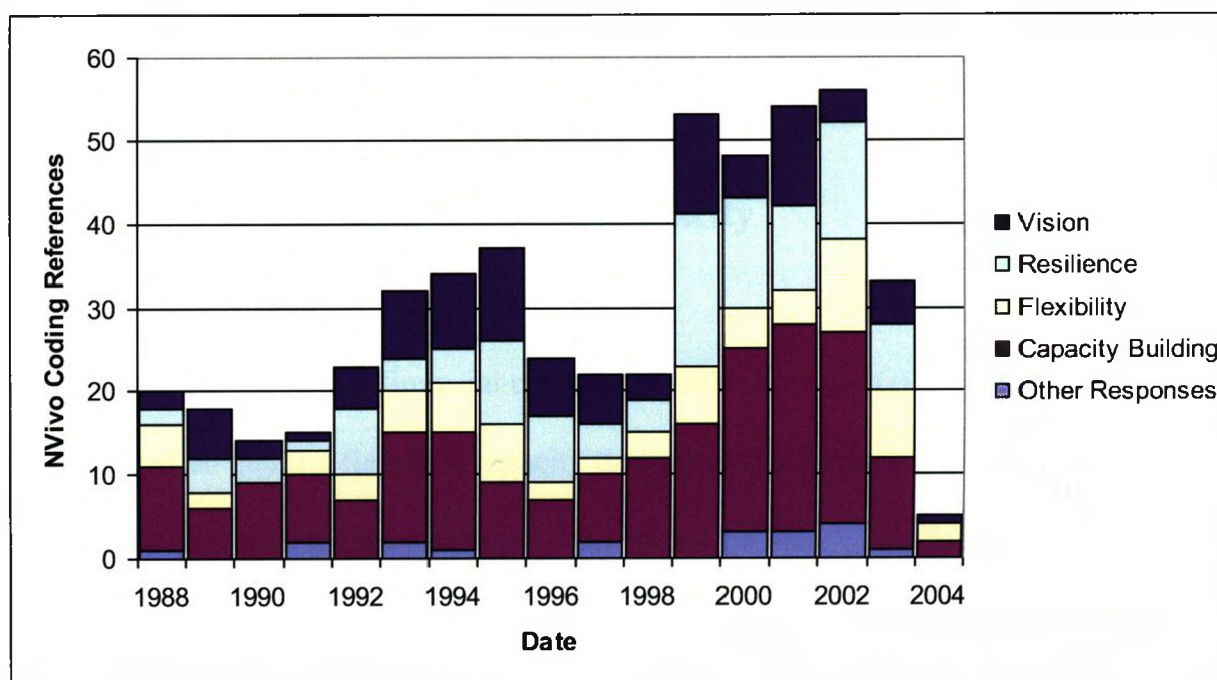
Ivey *et al.* 2002). Put simply, the conservation authorities' capacity to carry out management functions decreased as they became more reliant on external funding.

A second major effect of Bill 26, which further increased the vulnerability of the conservation authorities by weakening an existing revenue generating process, was the decreased ability to raise discretionary municipal levies. Prior to 1995, conservation authorities had been permitted to raise levies to municipalities a certain percentage, pending approval of the Minister of Natural Resources. After 1995, conservation authorities could apply these levies only for core functions applicable to provincial funding. These new restrictions caused fundamental concerns regarding funding (Shrubsole 1996). Such a reduction of funds had a severe effect on the GaRCA by threatening programs such as recreation (GaRCA Financial Statements). The GRCA was also affected but had reserve monies to continue funding these same programs while other options were explored (GRCA Financial Statements).

Financial changes unfavorable to the conservation authorities continued in Ontario until 1999 (see Figure 2.4; Figure 5.1 and Figure 5.2). The conservation authorities received a Memorandum from the MNR in late 1999, warning of additional 5% reduction in transfer payments for the 2000/01 fiscal year. For the GRCA, this meant a decrease in provincial funding of \$107,459, or 10.0%, bringing MNR funding below \$1 million dollars for the first time since receiving grants in 1972 (GRCA Financial Statements; Figure 5.1). The GaRCA reached the bottom level of MNR funding in 1999, at \$119,000, or 21% of total revenue, and therefore did not receive further cuts (GaRCA Financial Statements; Figure 5.2).

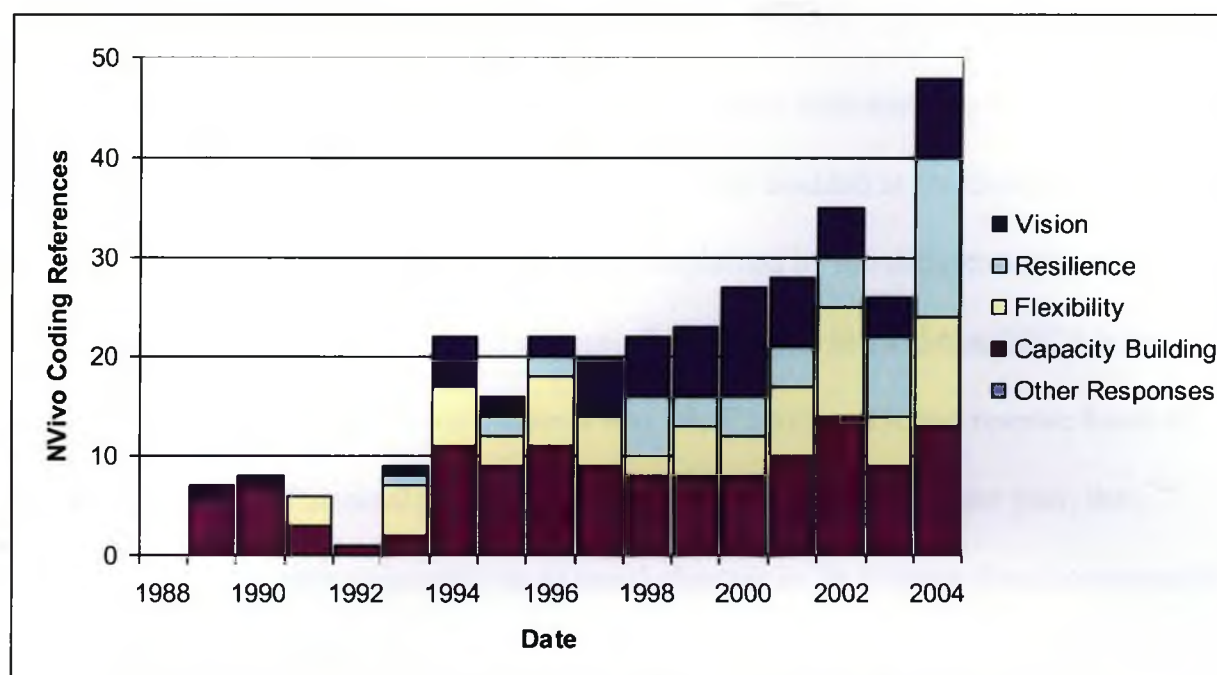
The next section of this chapter uses the framework of adaptive capacity to describe how different elements of adaptive capacity were utilized by the GRCA and GaRCA, and what lessons those experiences provide about the interrelationships of the elements of adaptive capacity. Findings in Figure 5.9 and Figure 5.10 reflect the number of times that elements of adaptive capacity, as they related to response to financial changes, were referred to in the documents review. These occurrences were coded and plotted using NVivo and both sources of funding are included in these figures.

Figure 5.9: NVivo coding for adaptive capacity and financial change at the GRCA



Source: GRCA Meeting Minutes 1988-2004
 Note: Only summary notes available for 2004

Figure 5.10: NVivo coding for adaptive capacity and financial change at the GaRCA



Source: GaRCA Meeting Minutes 1988-2004

5.4 Analysis of Financial Adaptive Capacity

5.4.1 Financial Visions

After revolutionary financial changes in 1995, both the GRCA and GaRCA concentrated on gaining financial capacity through mutually supportive partnerships, particularly with their primary partners – the municipalities. This focus was guided by the visioning activities of the previous few years as strategic planning gained prominence in Ontario (Grant 2000; Hostovsky 2006) (see Table 4.1).

The conservation authorities demonstrated that the amount of visioning that occurs after revolutionary changes will increase with a greater need to increase capacity. Initial capacity will not determine the goals in visioning, but the amount of visioning required will be based on the extent of needs and vulnerability of the organization. As stated by Ayers (1996, 23), while capacity can decrease the need for immediate

adaptations to occur, “future end results are not bound by current resources, structures, or other barriers.”

In the two years following revolutionary changes, references to visioning related to financial changes reduced by 50% at the GRCA but doubled at the GaRCA (see Figure 5.9 and Figure 5.10). This discrepancy can be explained by the differences in capacity as based on available resources prior to change. For example, in 1995 the GRCA’s income from conservation areas and nature centres was \$4,375,619 and it had reserve funds of \$7,216,214 (GRCA Financial Statements). In comparison, for this same year, the GaRCA was much more vulnerable to external changes as its revenue from conservation areas and the Ganaraska Forest was only \$133,223 and from reserves, only \$137,755 (GaRCA Financial Statements). Put simply, the GRCA had the financial capacity to manage change, at least for a few years, while the GaRCA did not have the funding sources to mitigate the impacts of change. As a result, it became more important for the GaRCA to commence visioning activities to increase financial capacity. When asked about financial recovery at this time, Linda Laliberte (interview, July 16, 2007) explains that it was not until 1997 that the GaRCA had the financial resources to hire a “part time planner to help out with planning, but [they] were still trying to keep [their] head above water, so, [they] couldn’t do a lot of capital projects.” The GaRCA’s *Business Plan* (1996, 4) was written in response to revolutionary changes:

During 1996 the Ganaraska Region Conservation Authority went into survival mode of operation. The very existence of the Conservation Authority became uncertain as the Authority celebrated its 50th Anniversary.

Differences in vulnerability, as determined by financial capacity and its effects on visioning, were demonstrated between the two conservation authorities in the two years

following revolutionary changes with financial planning. Financial capacity, which had not been included in the GRCA's vision of the *Grand Strategy*, was also not significantly mentioned in its 1996 *Joint Work Plan* (GRCA 1997) or its *State of the Grand River Watershed Report* (GRCA 1997). Both documents were written as strategic planning documents after revolutionary changes. Unlike the GRCA, the smaller GaRCA focused heavily on a vision of financial sustainability after revolutionary changes (see Figure 5.9). As mentioned in Chapter Four, economic self reliance was one of the four components of the GaRCA's initial vision in its *Conservation Strategy* (GaRCA 1992). Following revolutionary changes, the GaRCA wrote a *Business Plan* "in response to the severe funding constraints placed on the Conservation Authorities by the provincial government" (GaRCA 1996, 3). This report reasserts the vision of economic self reliance and reviews each of the GaRCA's programs, how much they cost, and what adaptations can be undertaken to increase revenue. At the GaRCA, adaptations in the two years following revolutionary change involved decreasing staff and considering the cutting of functions.

It was not until five years after revolutionary changes that the GRCA once again focused visioning on financial sustainability (see Figure 5.9). In 2000, a strategic visioning session with watershed stakeholders identified four factors that would influence its success, one of which was "to develop sustainable funding arrangements with member municipalities, The Grand River Foundation, business and manufacturing sectors, and others to support priority programs and to retain staff expertise" (Sara Fernald and Associates and Veale 2000, 16). This statement by the GRCA in 2000 suggests that

partnerships and the sharing of resources are a way to build financial capacity through visioning activities following revolutionary changes.

Common to both the GRCA and GaRCA was the reassertion of mutually beneficial partnerships as a means to decrease political pressures and survive financially through revolutionary changes. Partnerships are considered in the literature as a means of responding to financial change, largely through the sharing of resources. As stated by Coulson (2005, 154), “the funding of a project, or its delivery, may require a number of partners.” The GRCA and GaRCA demonstrate that it is beneficial to determine in initial visioning activities which partners to involve to fund and deliver a project. In its *Joint Work Plan*, the GRCA states that one of the gaps that existed in its current vision, written prior to revolutionary changes, had been a lack of focus on such partnerships and that:

the fragmentation of mandates, expertise, and work activities among government departments, institutions and non-government organizations is ensuring that change is slow; that efforts are duplicated; and, that holes are not being filled (GRCA 1997, 2).

The GaRCA, which included as a key element of its 1992 vision that it be involved in “partnership[s] in conservation and learning,” increasingly focused on partnerships after 1995. In the introduction of its *Business Plan* (GaRCA 1996, 3), the GaRCA declares that “during 1997 and beyond [it would] be exploring all avenues of resources sharing, partnering and revenue generation.” Key to this was the recognition that its primary partners, the municipalities, were also facing restraints. This recognition resulted in the GaRCA decreasing its municipal levies, as discussed below.

To maintain positive relationships with their primary partners, as guided by their visions, both the GRCA and GaRCA froze and began to decrease their general municipal levies after revolutionary change (see Figure 5.3 and 5.4). While this decrease was seen

to retain the support of municipalities politically, it actually meant that both conservation authorities, with unique circumstances, each had to cut program funding, and references to capacity building decreased that year to their lowest point (see Figure 5.9 and 5.10). It also demonstrates that these conservation authorities focused on their shared vision of long-range partnerships rather than short-term fixes to revolutionary change. While a short-term fix would have been to initially increase the municipal levy, the conservation authorities recognized that doing so would negatively impact long-range positive partnerships with the municipalities. As stated by Stoddard and Jarvenpaa (1995, 85), after revolutionary change “a new vision is needed to free existing members of the legacies of the past, allow them to see alternatives, and build confidence and capabilities for the future.” For the GRCA and GaRCA, retaining positive partnerships to ensure financial sustainability actually required initial cuts to funding.

Program funding at the GRCA dropped from \$18,414,551 in 1995 to \$14,360,868 in 1996 (22.0%), and from \$1,139,000 to \$817,949 (28.2%) at the GaRCA (GRCA and GRCA Financial Statements). Following the release of the Provincial Economic Statement (1995), the GRCA decreased its municipal levies by greater overall percentages than the GaRCA as the GRCA had other sources of revenue to help decrease vulnerability to external financial changes (see Figure 5.3 and Figure 5.4). By 1997, the GRCA’s total municipal levy dropped from \$5,051,510 to \$3,639,770, or by 28.0%. Of this decrease, the general levy declined by \$608,950 in 1996, or 12.1%, at which point it was frozen for four years (GRCA Financial Statements).

To retain its strategic vision of mutually beneficial partnerships, the GRCA undertook a visioning exercise in 1996 to determine the effects of further decreasing

general municipal levies by an additional 5% and 15% (GRCA, February 13, 1996). The GRCA Board, comprised largely of municipal representatives, implemented the 15%, or \$3,444,000 levy cut (see Figure 5.3). Such a cut was surprising for GRCA staff, who had hoped that demonstrating the effects of such a decrease would convince the board to stabilize funds (K. Murch, interview, July 30, 2007). However, the GRCA Board had not been included in the visioning exercises and did not appreciate how vulnerable this reduction made the GRCA programs to further financial changes. Much of the discussion by board members at the meeting focused on the fact that the GRCA brought forward the 15% option, which made the most sense for the municipalities that were also facing fiscal pressures. A lesson provided by the GRCA is that visioning processes are benefited by involving those involved in decision making. Lack of visioning with stakeholders during revolutionary changes partially explains why vision is not referenced as significantly at the GRCA, in relation to the other elements of adaptive capacity, as it is at the GaRCA (see Figure 5.9 and Figure 5.10). Hunt *et al.* (1997, 35) argue that decision makers should be involved in visioning as “the vision might include things that few if any of the leaders think will really come to pass in the way in which it is described today.” Failure of the board to be involved in the writing of the vision resulted in ineffectual actions taken as a result of a lack of understanding. While the GRCA did retain ownership of its visioning (unlike early attempts at being nominated as a CHR), it failed to include all decision makers in the initial visioning process.

The GaRCA also undertook drastic measures and introduced a general levy decrease of 25% after revolutionary changes (see Figure 5.4). This reduction was more significant than the GRCA’s cut. Unlike the GRCA, the GaRCA relies more heavily on

monies from provincial and municipal partners (see Figure 5.2). The smaller GaRCA did not have the numerous conservation areas, water quality programs and educational programs of the GRCA and instead relied heavily on functions involving municipal planning. While the 25% cut was considered necessary to ensure a supportive relationship, it did have a dramatic effect on the ability of the GaRCA to continue programs. Combined with reduced staff and funding cuts, non-core programs were almost eliminated at this point at the GaRCA. Put simply, the GaRCA had lost its ability to undertake planning functions and eliminated what was not considered necessary.

5.4.2 Financial Capacity Building Adaptations

5.4.2.1 Capacity Building and Municipal Levies

One of the primary financial capacity building adaptations available to the conservation authorities has traditionally been the ability to augment income by increasing municipal levies. Increasing discretionary levies was made difficult by Bill 26, which determined some functions, including education and commenting functions for planning applications and Section 28 reviews, were non-core and therefore not applicable to general municipal levies (Harbell *et al.* 1996) (see Table 2.2; Figure 5.3 and Figure 5.4). Discretionary levies after revolutionary changes had to be considered an adaptation used to “make-up” for lost general levies traditionally used for existing functions.

It was not until four years after revolutionary changes started that the GRCA and GaRCA increased the municipal levy (see Figure 5.3; Figure 5.4). This increase occurred at a time when both GRCA and GaRCA demonstrated high references to vision (see Figure 5.9 and Figure 5.10). The vision guides decisions to build capacity and it

“outlines the overall game plan or approach, while tactical decisions involve implementing various activities (such as events) which are needed to carry out the larger strategy” (Hunt *et al.* 1997, 32). Though revolutionary financial changes occurred in 1995, the conservation authorities retained their supportive partnership with the municipalities, which were also facing financial strain, and did not increase municipal levies until the municipalities had the capacity to facilitate those increases (see Figure 5.3 and Figure 5.4). When asked about when the GRCA felt it was appropriate to raise the levy again, Keith Murch describes how the GRCA waited until the municipalities had the financial capacity, and even then, discussions first occurred with municipal board members:

And the board, they recognized right away, some years had passed since the 1994, 1995 cuts. I think a lot of the political people on our board did a good job of going back to their own municipalities and speaking of the importance of having a conservation authority (K. Murch, interview, July 30, 2007).

By 1999, the GRCA’s general municipal levy had been frozen for three years and was lower than it was in 1988 (see Figure 5.3). By the new fiscal year (2000), the GRCA staff was suggesting that the board could increase the overall municipal levy by 9.3%. This increase was to help address the GRCA’s \$1,000,000 gross deficit, which reflected shortfalls to the operating reserves that had developed since 1995 (GRCA Financial Statements, K. Murch, interview, July 30, 2007). The GRCA was still not as vulnerable to financial change as the GaRCA and was actually able to mitigate the \$1,000,000 deficit with existing reserves and self-generated sources (see Figure 5.1). Even with a 9.3% increase in the levy suggested by GRCA staff, some board members, including municipal representatives, believed an increase of up to 35% should be contemplated. It

was also in 1999 that reference to vision and capacity building at the GRCA increased significantly as the GRCA involved the board in financial decisions such as the discussions above regarding increasing the municipal levy (see Figure 5.9). Here is an example of how improving partnerships with increased communication and visioning was successful at helping to guide financial decisions, as it was also the GRCA Board that had approved the 15% reduction in the levy in 1996.

GaRCA levies by 1999 had also been frozen since 1995 and were below 1991 levels (see Figure 5.4). As a result, non-core functions were threatened as available funds dwindled from just over \$1 million in 1994 to just over \$600,000 in 1996 (GaRCA Financial Statements). It was not until the very end of the 1990s that municipalities had recovered sufficiently from revolutionary changes, and the supportive nature of partnerships was strong enough with the conservation authorities, that the GaRCA believed it could undertake capacity building adaptations through fund augmentation with municipal levies. The GaRCA did not have the watershed functions that required funding, such as the operation of multi-purpose dams or operation of educational centres, to warrant a 9% increase like the GRCA implemented and opted instead for a 5% increase in levy funds. The GaRCA was still not running a deficit budget as a result of other cost-saving measures including a reduction in staff in 1995. Put simply, the GaRCA did not have a significant increase in the municipal levy because it did not need the same level of funding as the GRCA. A 5% increase in discretionary municipal levy was approved by 92.5% of board members in 1999.

In 2000, the GaRCA wanted to again increase financial capacity by increasing the municipal levies to a level that would help the organization recover from revolutionary

changes (GaRCA, October 19, 2000). The GaRCA returned combined levies in 2001 to 1995 levels, which provided higher references to capacity building for 2001 and 2002 (see Figure 5.10). Even with increased references to capacity building, a staff report given to the Finance and Administrative committee demonstrates how the GaRCA was still affected by changes to financial arrangements in the mid-1990s. In that report, it was concluded that the GaRCA needed to establish the levy based on a “keeping up” criterion versus a “catching up” criterion. In regards to the Ganaraska, the report reminds stakeholders that the levy set for 2001 was “the same levy of 1995; and therefore the Authority [was] actually six years behind in funding” (Ganaraska Region Finance and Administrative Committee, September 11, 2001, 2). The actual increase in levy between 2000 and 2001, which was passed by municipal partners, was 18.9% (see Figure 5.4).

Financial capacity building by the GRCA and GaRCA was largely done with the altering of levies charged to municipalities (see Figure 5.3 and Figure 5.4). The municipalities accepted these increases because the conservation authorities had cut levies after 1995 in order to retain supportive partnerships. Until the conservation authorities were able to utilize the municipal levy to mitigate financial changes in 2000, however, both the GRCA and GaRCA focused on self-generated income as a financial capacity building adaptation.

5.4.2.2 Capacity Building and Watershed Management Fees

Prior to 1995, only more urbanized conservation authorities such as the GRCA were able to increase fees as a result of the number of commenting functions they carried out and because of the quality of technological tools available to them (Royal

Commission on the Future of the Toronto Waterfront 1992) (see Figure 5.7). Essentially, fees could be charged only by conservation authorities with the staff and technological capacity to provide constructive comments to significant planning applications, such as large plans for subdivisions. Ironically, it is the GaRCA that provides an example of how its engineering department had the ability to charge fees for rural municipalities that did not have the expertise:

We continued to do a lot, we do a certain amount of engineering for them that other authorities don't. Like we review pipe designs and stuff for our municipalities, storm water pipe design and other authorities wouldn't do that (M. Peacock, interview, July 17, 2007).

Much the same as initial capacity influences the extent to which visioning focuses on financial sustainability, the lesson provided here is that having capacity prior to revolutionary changes will facilitate capacity building after change (Blaikie *et al.* 1994; Goodman *et al.* 1998;). The next section of this chapter demonstrates this lesson by comparing how the GRCA and GaRCA were able to raise water management fees after revolutionary change. Although the GRCA had by the late 1980s the staff and technical capacity to provide quality planning functions and justify raising fees (see Figure 5.7), the GaRCA did not have that capacity and was unable to raise fees until just prior to revolutionary change (see Figure 5.8). As a result, the GRCA also had greater financial capacity prior to change and was better able to demonstrate references to financial capacity building after revolutionary change.

The GRCA, faced with increasing numbers of planning applications, raised commenting fees between 1988 and 1990 as a method of increasing capacity by recouping some costs. This largely explains the larger reference to capacity building in relation to financial change at the GRCA prior to 1990 (see Figure 5.9). By May 1, 1990,

the GRCA had increased the fee for solicitors' inquiries by 40%, to \$35, which increased overall water resource fees (GRCA Financial Statements). By March 1990, even with a drop in the number of requested inquiries, revenue from fees for commenting functions for the GRCA had increased from \$15,373 to \$45,140, or 34% (GRCA, October 18, 1990) (see Figure 5.7). The GRCA continued to increase rates for nearly all commenting functions, including for the first time Section 28 permit reviews in June 1991 (GRCA Financial Statements). Before the end of the year, revenue from all watershed resource fees had increased self-generated income by 34% (GRCA, May 6, 1991) (see Figure 5.3 and Figure 5.7). This continued increase in revenues explains continuing reference to capacity building at the GRCA, which had the staff and technical resources to justify increases to fees (see Figure 5.9). At this point, however, even the large conservation authorities, such as the GRCA, did not have the technical capacity to provide comments relevant to the planning environment to justify large fees for services (see Figure 5.7).

Smaller conservation authorities, such as the GaRCA, did not have the demand or resources to hire the required experts, and did not have the funding to purchase the required technology, including mapping and modeling programs, to provide comments on plans to the extent that would legitimize fees (see Figure 5.8). To continue to carry out management functions under new financial realities after changes to financial arrangements in the 1990s, reference to capacity building at the GaRCA related to financial changes increased dramatically in 1994 and remained high after revolutionary changes when the GaRCA released 50% of its staff and decreased the wages of remaining staff by 2% (see Figure 5.10). These cuts in staff were a necessary cost-saving adaptation as there was insufficient flexibility to alter a large amount of discretionary functions to

retain financial capacity (L. Laliberte, interview, July 16, 2007). To retain capacity for core programs, “remaining staff were called upon to pick up the responsibilities of those no longer with the Conservation Authority and to continue carrying on with the same program areas” (GaRCA, May 7, 1997). This decision, although necessary in the eyes of those who remained at the GaRCA, weakened the capacity of the remaining staff to carry out core management functions, thereby making them increasingly vulnerable to change. As described by Linda Laliberte (interview, July 16, 2007), the GaRCA was in survival mode as it “kept all [its] programs so it just really meant that [it was delivering] all programs, but with four staff essentially.” To retain financial capacity for core functions, the GaRCA demonstrates that an organization may have to actually decrease capacities, such as staff or technical resources.

By 1998, the GaRCA had to introduce fees for commenting on simpler planning functions, such as applications for permits required under Section 28 of the *Conservation Authorities Act* (see Figure 5.4). Failure to do so would mean giving up mandated management functions and by this time the GaRCA could justify such increases with improved staff and technical resources (e.g. GIS mapping). These actions are demonstrated in Figure 5.10 as 1998 is the year that references to capacity building stop declining, as they had done since 1996. Specific water management fees added by the GaRCA included an hourly fee for section 28 reviews, though this was only \$15 an hour and started only after seven hours of review, and increasing other planning fees for such items as comments to the Committee of Adjustment. The GaRCA further implemented financial capacity building with fund augmentation through fees charged for commenting roles that it had been providing for free, such as property inquiries by real estate agents.

In a staff report that helped lead to this decision, the GaRCA determined that “land owners must be made aware that they may not abuse staff’s time on particular issues that may or may not result in other fees being brought” (GaRCA, December 17, 1998a, 2).

Funding from the MNR continued to decrease during the early 2000s (see Figure 2.4 and Figure 5.1), but at a lower rate. The GRCA and GaRCA by this time had retained funding sources to sufficiently survive financial changes in 1995 to be able to continue to undertake core management activities. This achievement was largely facilitated by a steady increase in financial capacity building adaptations after 1996 by increasing municipal levies and watershed management fees (see Figure 5.9 and Figure 5.10).

5.4.3 Financial Flexibility Adaptations

Financial flexibility adaptations, involving financial freedoms given throughout the organization to allow for desired management functions to continue, do not seem to have been utilized extensively by the GRCA or GaRCA in response to revolutionary financial changes (see Figure 5.9 and Figure 5.10). In fact, throughout the time period studied, reference to flexibility appears least when considered in relation to financial adaptations. As many of the financial sources available to the conservation authorities are strictly regulated (see Figure 5.1 and Figure 5.2), there are few opportunities for individual employees to undertake financial flexibility adaptations. Such regulations make the conservation authorities vulnerable to financial change as their possible adaptations are limited. Flexibility adaptations are traditionally considered very difficult to assess because they occur independently and without official representation in documentation (Wadhwa and Rao 2002; Ahrens and Chapman 2004; Hatum and

Pettigrew 2004). The key lesson provided by the conservation authorities' experience is that the amount of resources and number of functions that an organization performs are determinants of what kind, and how much, flexibility can be provided.

The GaRCA demonstrated corporate financial flexibility when the municipal levy was decreased after 1995. The GaRCA had little financial flexibility prior to the early 1990s, as most of its financial sources were provided provincially, with numerous restrictions on how they were to be used. When the GaRCA met with the Region of Durham to discuss the 25% reduction in the municipal levy, employees of the GaRCA were able to reach a compromise with the Region to only freeze their levy, with an agreement that the 25% of their levy that was to be cut was to be spent solely within their municipalities. Flexibility for financial arrangements is apparent here as an effective management decision occurred that mitigated change through a responsive organizational structure and without formal board approval (Ahmid *et al.* 1996; Volberda 1997). This flexibility was carried out at the organizational level, and references to flexibility increased in 1996 (see Figure 5.10). As a result, the GaRCA suggested at the next General Meeting that all municipalities could adopt this procedure, and:

THAT the Committee recommend to the Full Authority that for any municipality that contributes more than the approved levy established, a reserve be set up for works to be done strictly within that municipality (Ganaraska Region Executive Committee, March 14, 1996).

Reserves created by the GaRCA to retain revenue meant that municipalities were more willing to provide funds knowing they would benefit their jurisdiction. The example of financial flexibility adaptation provided here demonstrates a circumstance in which employees at the GaRCA had the flexibility to make financial decisions without the approval of the full GaRCA Board.

5.4.4 Financial Monitoring and Learning Adaptations

Unlike financial flexibility adaptations, financial adaptations related to monitoring and learning as a proxy indicator of resilience appear frequently in conservation authority meeting minutes as evaluation reports by staff members increased throughout the study period (see Figure 5.9 and Figure 5.10). Much like visioning, reference to monitoring and learning is undertaken to reduce vulnerability and is largely based on the capacity an organization has prior to changes occurring.

GRCA interview respondents credit their early financial monitoring and learning adaptations to Allan Foster, who was hired as a consultant to conduct strategic planning exercises in the early 1990s (R. Beaumont, interview, July 20, 2007; K. Murch, interview, July 30, 2007; G. Sousa, interview, July 10, 2007). Prior to revolutionary changes, one of Foster's challenges to GRCA employees was to imagine what would happen if "all provincial money ceased and the province pointed the proverbial gun at the conservation authority and fired 'the silver bullet'" (G. Sousa, interview, July 10, 2007). The hiring of an external consultant helped the GRCA prepare for financial adaptations aimed at reducing expenditures and resulted in an increase in references to monitoring and learning at the GRCA, especially in 1992, in relation to financial resources (see Figure 5.9).

The GRCA hired Mr. Foster to address evolutionary negative changes that had begun to affect the conservation authorities (see Table 2.1). Such recognition of evolutionary changes, and the understanding that those needed to be mitigated as soon as possible to reduce the organization's vulnerability, is crucial for successful resilience (Holling 1973; Folke 2006; Janssen *et al.* 2006). Hiring Mr. Foster also demonstrates

that while internal monitoring of an organization is important, organizations can benefit from involving external people who bring innovative ideas. Interview respondents at the GRCA made it clear that, had they not hired an outside consultant, they would not have considered the possibility in their review that all provincial funding might end (G. Sousa, interview, July 10, 2007).

5.4.4.1 Monitoring and Learning Through the Municipal Levy

Once municipal levies and other funding mechanisms began to increase after 1999, conservation authorities increasingly monitored those changes and focused on financial sustainability. This increase is demonstrated earlier at the GRCA, which had the staff complement and capability to carry out monitoring functions (see Figure 5.9). Five-year budget forecasts by all conservation authorities, as suggested by Conservation Ontario, were undertaken by the GRCA to make clear to municipal partners the financial actions being planned (Grand River Administration, Finance and Personnel Committee, June 19, 2001). Preparation of these forecasts ensured that monitoring and learning adaptations remained high until the end of the study period (see Figure 5.9). Financial monitoring and learning tools, such as reviews of internal/external economic realities and financial forecasting, are ingrained in these reports, and were revised and released each year based on changing institutional arrangements. The same types of reports were carried out at the GaRCA, though increasing references to monitoring and learning did not occur until 1998 (see Figure 5.10). This delay reflects a lack of functions to monitor or of staff to carry out monitoring functions.

It is the budget reports that increase references to monitoring and learning in this chapter and provides a distinct lesson related to adaptive capacity and responding to change. The conservation authorities demonstrate here that monitoring reviews, such as these five-year forecasts, need to be provided to partner organizations, such as the municipalities, to ensure that all stakeholders are aware of the financial need. Coulson (2005, 161) describes how changing situations need to be evaluated in collaboration amongst partners to determine whether partnerships “demonstrate the capacity to learn about their environment, and to learn from what works and what does not.”

By 1999, the GaRCA was able to suggest an increase in municipal levies that were below 1991 levels at that time. The financial review at the GRCA resulted in this motion:

THAT the Full Authority direct staff to prepare the 1999 Preliminary Budget using a 0%, 3% and 5% increase in levy and present the three scenarios at the December Full Authority Meeting (GaRCA, November 19, 1998).

The resulting staff report stated that, with a 5% increase in levy assessment, there would still be a \$73,000 funding shortfall and the organization would remain vulnerable to future financial changes. References to financial monitoring increased after this, though not as much as in 1996, and GaRCA staff and board members realized the need to cut the budget as much as they could without jeopardizing the integrity of existing programs (see Figure 5.10). This realization was demonstrated to the Financial and Administrative Committee in a staff report that described how staff had prepared the budget:

Staff prepared the budget based on the submission to the province for the staff projects in the required. The result was a \$73,000 shortfall in levy with a 5% increase in levy. Staff then reworked the budget based on what is anticipated to be funded. The next step was to cut the budget back to the bare bones of the program areas without jeopardizing the integrity of the

programs (Ganaraska Region Finance and Administrative Committee, December 10, 1998).

As a result of this report, the GaRCA Board approved an increase in municipal levy (see Figure 5.4). For the previous four years, the GaRCA had experienced deficits, greatly decreased expenditures, and spent much of its reserves (GaRCA Financial Statements). The general municipal levy was increased by 5% at this point, helping to gain financial capacity (see Figure 5.4).

In April 2000, the Region of Durham requested that the conservation authorities in the Region, including the GaRCA, provide an amalgamated five-year plan for Regional Council's consideration. This request was made the same year that the GRCA began its five-year forecasts. Such forecasts maintained references to monitoring and learning at the GaRCA, while references increased at the GRCA as a result of its staff's technical capacity to initiate full forecasting reports (see Figure 5.9 and Figure 5.10). The GaRCA and other conservation authorities felt that the Region of Durham had two justifications for making this request. First, although strategic plans for funding did exist for each conservation authority, there was no strategic budgeting among the five conservation authorities and the Region (GaRCA, April 20, 2000). Secondly, the Region of Durham had promoted a positive organizational culture with regards to funding partnerships, especially with the GaRCA, where the Region of Durham retained their levy amount while the overall municipal levies in the watershed had been approved at a 25% decrease (see Figure 5.4). While the GaRCA did not have the resources to undertake a funding review for the Region of Durham themselves, they demonstrated that partnerships can be utilized to strengthen monitoring processes.

By September 2001, a five-year report was completed by the five conservation authorities within Durham Region (GaRCA, July 19, 2001). This report, a manifestation of reviewing partnerships and financial resources, is the primary reason for references to financial monitoring and learning increasing after 2001 at the GaRCA (see Figure 5.10). The application of this financial review adaptation was continued by the GaRCA in subsequent years to plan its budget on a "keeping up" criterion.

By 2002, municipal levies at the GaRCA were to be based on the constant monitoring of financial resources to retain capacity for management functions. Such monitoring was no longer a new adaptation to reduce vulnerability to change, but by this point was an established management process. While the GaRCA had returned municipal levies to 1995 levels, in 2001 board members believed it was time to further increase levies based on inflation and increased functions, such as those for source water protection, gained as a result of the *Walkerton Inquiry Part II* (O'Connor 2002b). Much like the GRCA, the GaRCA and other conservation authorities in the Region of Durham used five-year forecasts as a means of advertising planned financial activities so that their municipal partners could undertake their own financial monitoring and learning adaptations and prepare for changing municipal levies. These plans demonstrate the importance of involving and making all partners aware of expected financial changes to allow them to plan for such changes in their own financial planning (Sheffi and Rice Jr. 2005). With the GaRCA example, the six other contributing municipalities were found to be more than 6% behind the Region of Durham's contribution. The financial review provided the GaRCA with the written studies it required to support increases across the watershed to equalize municipal levies with those at the Region of Durham.

5.5 Chapter Summary

In 1995, the Conservative government introduced the Provincial Economic Statement and Bill 26, which represented revolutionary financial changes to conservation authorities. Two fundamental methods of financial recovery used by the conservation authorities include the altering of municipal levies and increasing of self-generated income with watershed management fees.

An initial lesson regarding visioning demonstrated by the conservation authorities is that the amount of visioning that occurs after revolutionary changes is related to the need to increase capacity. This lesson was demonstrated with the differences in references to vision related to financial changes between the GRCA and GaRCA. While references to vision decreased by 50% after revolutionary changes at the GRCA, which had the staff, technical and financial capacity prior to change, references to vision more than doubled at the GaRCA, which did not have the same financial capacity. In this instance, while the GaRCA had to undertake visioning to determine how to mitigate changes to financial arrangements, as was seen in the *1996 Business Plan*, the GRCA was able to initially mitigate financial changes through income and reserves.

A lesson common to both the GRCA and GaRCA is that a focus on mutually beneficial partnerships is an effective means to decrease political pressures and to recover from financial change. With visions focused on the importance of partnerships, both the *Joint Work Plan* of the GRCA and the *Business Plan* of the GaRCA confirmed the importance of retaining positive communications within partnerships after revolutionary change. To retain long-term strategic partnerships through financial arrangements, both conservation authorities initially decreased their incomes by decreasing levy amounts to

the municipalities. An alternate action that could have been taken to immediately increase financial capacity, but disregard aspects of vision focused on partnerships, would have been to increase discretionary levy amounts. Actions such as these demonstrate that visions are to be written with consideration to long-range goals of the organization and not done as a short-term fix to revolutionary change. Eventually, as a result of retaining positive communication in these partnerships, the GRCA Board, made up of municipal members, suggested higher increases (15%) than the 9% suggested by staff while the GaRCA Board approved an 18.9% levy increase in 2001.

After financial changes, the GRCA also learned that understanding of a corporate vision is influenced by the involvement of decision makers in the visioning processes. The GRCA realized this lesson when its board approved a cut in levy of 15%. Having not been involved in the visioning process to determine the extent of levy cuts, the board did not understand that staff had reviewed the 15% option only to demonstrate how extensive those cuts were for the conservation authority.

This chapter also revealed that having capacity prior to revolutionary changes will facilitate capacity building after those changes. This was observed with the increase in water management fees. While the GRCA had the staff and technical resources, and therefore capacity, to meet the needs of municipalities and developers for comments on planning applications, the GaRCA did not have the resources to provide the same quality of comments. As a result, commenting functions for the GaRCA were more vulnerable to change. When funds for these non-core functions were removed, the GaRCA did not have the technological or staff capacity, or the demand to obtain these resources, to carry out commenting functions sufficient to justify increases in fees.

Flexibility was demonstrated as a very difficult element of adaptive capacity to implement in organizations where the use of funds is so highly regulated. One lesson that was observed regarding flexibility by the GaRCA is that the number of functions that an organization has is a primary determinant of what kind, and how much, flexibility can be provided. The GaRCA, with a smaller watershed population, fewer functions and less management staff, demonstrated organizational flexibility when it was able to retain levy amounts from the Region of Durham, while decreasing all other municipalities' levies, without formal approval by the board.

The experience of the GRCA in this chapter provides an important lesson of monitoring and learning. While constant internal reviews are necessary, organizations can benefit from the consideration of radical ideas either from staff or external persons who bring new ideas. When the GRCA hired Mr. Foster prior to revolutionary changes, he forced the organization to consider what would happen if the province cut all funds, an event that had not been considered a possibility prior to his involvement. As a result, plans were considered for changes that would be considered revolutionary.

The GRCA and GaRCA also demonstrate that stakeholders will better benefit from monitoring reviews if they are done in a transparent manner that makes stakeholders aware of internal financial changes. After 1999, this process was carried out by the conservation authorities with budget forecasts that made their municipal partners aware of how vulnerable their organizations were to even slight decreases in funding. Conservation authorities in the Region of Durham went one step further and used capacity building partnerships to enhance this monitoring when they combined resources to provide an amalgamated five-year budget to the Region of Durham. Eventually, all

budget reviews carried out by conservation authorities were used to justify levy increases, with amounts determined through constant monitoring, to ensure that their vulnerability to those changes did not increase.

Examining how adaptive capacity was manifested in response to changing financial arrangements has provided lessons about the interrelationships among the elements of adaptive capacity and the implementation of adaptive capacity. In summary, these lessons are:

1. That available capacity, in this Chapter financial capacity, is a determinant of visioning adaptations;
2. That the success of partnerships made to share resources, decrease political pressures and recover from financial change is determined by the extent to which all members feel that such an arrangement is beneficial to their organization;
3. That visioning and the creation of a vision statement are improved with the involvement of all decision makers;
4. That having capacity prior to revolutionary changes will facilitate effective capacity building after those changes;
5. That the number of functions that an organizations has is a primary determinant of what kind, and how much, flexibility can be provided;
6. That external people can aid organizations with monitoring processes; and;
7. The need for funding must be clear and transparent to partner organizations.

The next chapter examines how the conservation authorities employed elements of adaptive capacity after institutional arrangements and the planning environment again supported the conservation authority program.

CHAPTER SIX

ADAPTIVE CAPACITY ACHIEVED: THE CASE OF SOURCE WATER PROTECTION

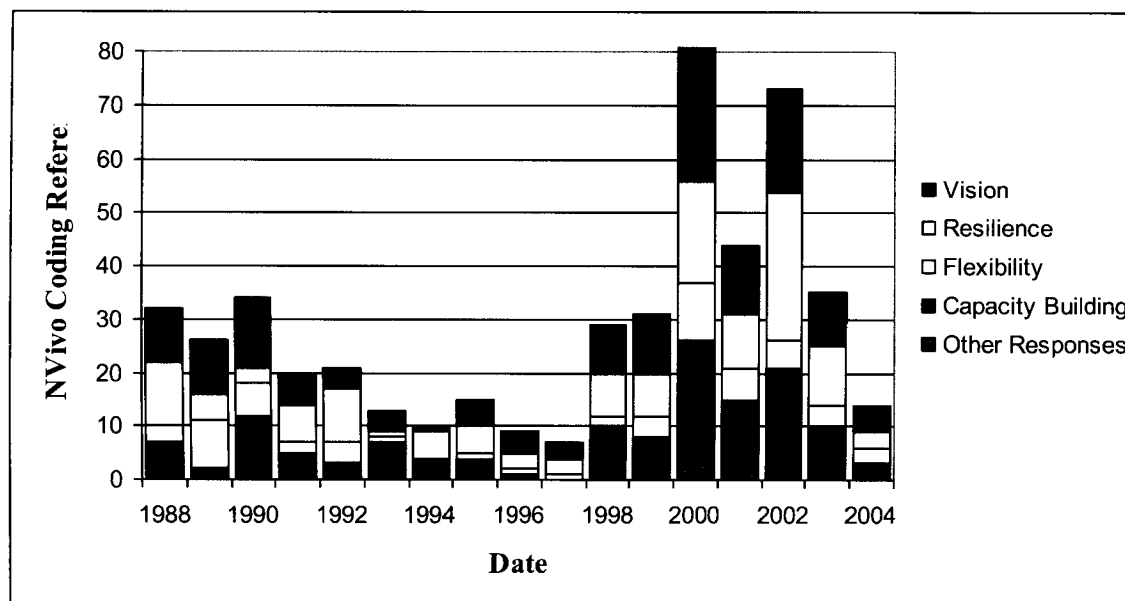
6.1 Introduction

This chapter describes how the GRCA and GaRCA demonstrated different elements of adaptive capacity in response to an environmental disaster. In addition, lessons regarding the interrelationships of the elements of adaptive capacity are developed and it is shown how the GRCA and GaRCA applied these elements to gain source water functions after the Walkerton Tragedy.

The Walkerton Tragedy resulted from contamination by livestock manure of the municipal water supply, an inappropriately placed well, and ineffective management and information dissemination. As a result of a strong media focus and the O'Connor Inquiry, the public became aware that revolutionary changes in the mid-1990s were a significant contributor to this tragedy (see Table 2.1). Institutional arrangements for water soon focused on source water protection as the first stage in a multi-barrier water management approach.

This research reveals how the GRCA and GaRCA prepared for and responded to a provincial shift towards source water protection. Figures were developed using NVivo by combining evidence of the elements of adaptive capacity found in the document review as they relate to source water protection by the GRCA and GaRCA (see Figure 6.1 and Figure 6.2).

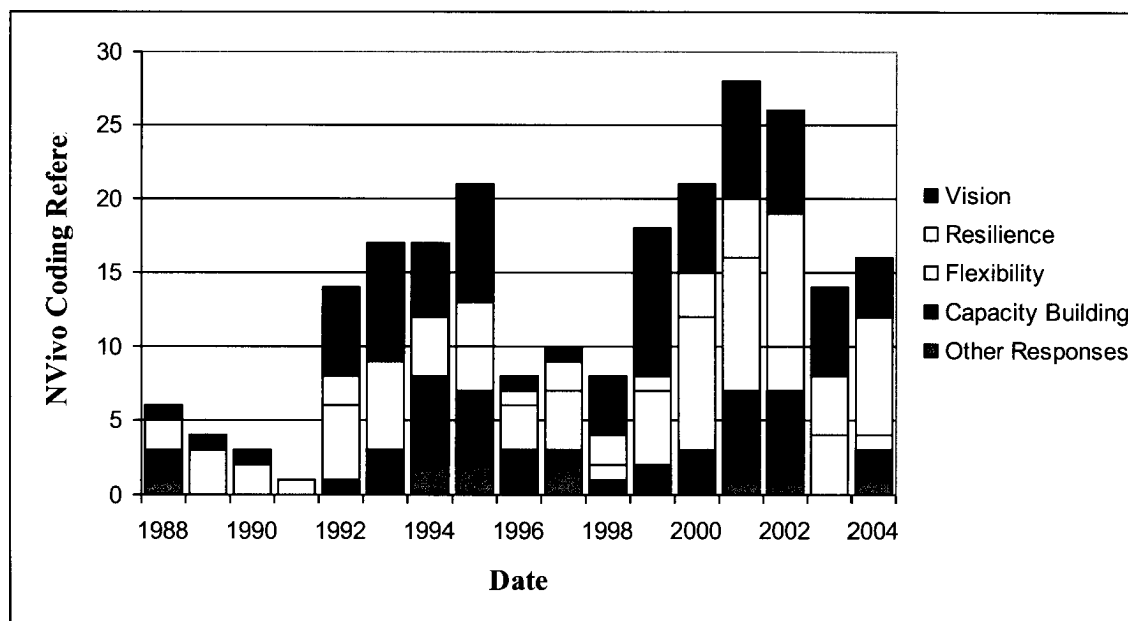
Figure 6.1: GRCA NVivo coding references combining concepts of adaptive capacity and source water protection measures 1988 - 2004



Source: GRCA Meeting Minutes 1988-2004

Note: 2004 Minutes for GRCA only provided in summary form resulting in low results

Figure 6.2: GaRCA NVivo coding references combining concepts of adaptive capacity and source water protection measures 1988 - 2004



Source: GaRCA Meeting Minutes 1988-2004

6.2 Provincial Context of Source Water Protection

The following discussion is a brief review of the planning arrangements in the province affecting the GRCA and GaRCA prior to and after the Walkerton Tragedy in regards to source water protection (see Table 6.1). Source water represents all ground, river and lake water used for human consumption (de Loë and Berg 2006). The next section reviews the historical development of programs administered by the conservation authorities related to source waters.

Table 6.1: Changing planning environments for source water

| Time | Institutional Arrangements Effects on Planning Processes | | |
|---|--|---|--|
| | Goals | Orientation of Decision | Participants |
| 1990 to 1994: Strategic Planning | Goals of improving water quality, largely for surface waters | Determination of planning activities was fragmented and based on municipal decisions as to what programs were to be funded. Usually done at single sites | Participants varied, with municipalities funding programs, conservation authorities often involved in decisions making and private landowners as the initiators of stewardship programs |
| 1995 to 1999: Moving beyond Strategic Planning | Provincial goal of reducing deficit drastically and downloading planning authority to the municipalities | Decisions were streamlined drastically to single agencies. Very little source water consideration in water management planning as demonstrated by loss of funding for programs such as CURB | Decisions downloaded to municipalities. This meant that in locations with larger municipalities, programs might contain traditional partners (Waterloo), while in others they were dispersed to conservation authorities and innovative partnerships (TCC) |
| After 2000: Results of Walkerton Tragedy | Provincial goal of broad-based, multi-barrier approach to management focused on source-to-tap system | New political mechanisms facilitated decisions (e.g. Bills 81, 75 and 95). After O'Connor 2002b, source water and the focus on the watershed were ingrained in legislation and planning decisions | Province provided political and financial support for source water protection and created source water committees, including conservation authorities, NGOS and the public, to be primary decision makers |

6.2.1 Clean Up Rural Beaches (CURB) and Related Programs

The Rural Beaches Strategy was initiated in 1985 in partnership with the MOE. Implementation of the Rural Beaches Strategy resulted from a finding that 10% of Ontario's beaches failed MOE guidelines of 100 fecal coliform/100ml up to 10% of the time. The vision of the Rural Beaches Strategy was to provide technical and financial assistance to landowners as support to implement actions to improve water quality upstream from beaches unsafe for swimming (Ganaraska Region Resource Management Advisory Board, November 25, 1992a).

In response to pressures throughout southwestern Ontario to continue the Rural Beaches Strategy, the MOE introduced the CURB program in 1991. Programs for water quality at this time in Ontario were largely based on municipal funding for stewardship programs provided to landowners (see Table 6.1). The CURB program was initiated with a \$57 million provincial investment effective September 1, 1991 (Ganaraska Region Executive Committee, September 27 1991). Like the Rural Beaches Strategy, the CURB program provided financial incentives to landowners for actions that would protect water quality. Under the CURB program, conservation authorities were given responsibility for determining which landowners received provincial funds. Grants were provided for between 50% and 75% of costs for works restricting livestock from water, improving manure handling, disposing of washwater, and introducing private sewage systems (GRCA September 27, 1991). Water quality projects at this time were still based on stewardship and facilitating actions at the individual landowner level (see Table 6.1).

In 1995, provincial funding for CURB and related programs was removed with the Provincial Economic Statement. Subsequently, revolutionary changes decreased

references to all of the elements of adaptive capacity in the document review (see Figure 6.1 and Figure 6.2). In 2000, an environmental crisis prompted another set of revolutionary changes, The Walkerton Tragedy.

6.2.2 Walkerton Tragedy: An Environmental Revolutionary Change

The Walkerton Tragedy resulted from contamination by livestock manure of the municipal water supply in the region, caused by an inappropriately placed well and ineffective management or expertise in the Public Utilities Commission in Walkerton (O'Connor 2002a and b; de Loë and Kreutzwiser 2007). Two contaminants that entered municipal wells included *Escherichia coli* O157:H7 (commonly referred to as E. coli) and *Campylobacter jejuni*, which are toxic and caused the deaths of seven persons and serious long-term health effects in over 2,300 others (O'Connor 2002a; de Loë *et al.* 2005; de Loë and Kreutzwiser 2005 and 2007; Nowlan 2007).

As a result of the Walkerton Tragedy, Ontario residents were made acutely aware of how vulnerable their water resources were to contamination. This vulnerability was worsened by revolutionary changes that affected institutional arrangements and weakened water management. When the facts of the tragedy emerged, the public realized that the severity of the disaster was exacerbated by poorly considered changes that had degraded institutional oversight and removed monitoring functions from the institutional environment (O'Connor 2002b; Bertels and Vredenburg 2004; de Loë and Kreutzwiser 2007). Following the tragedy, the province called an inquiry headed by Justice Dennis O'Connor to determine the causes of the outbreak, "including, very importantly, the effect, if any, of government policies, procedures, and practices" (O'Connor 2002a, 2).

Two reports resulted from the inquiry, one based on the events and causes of the tragedy (O'Connor 2002a), which led to the second report that provided recommendations to effectively manage Ontario's drinking water (O'Connor 2002b).

According to O'Connor (2002a), there are five components to a multi-barrier approach to protect drinking water: protection, treatment, distribution, monitoring and response to adverse conditions. Other researchers have identified many, if not all of these, as best practices for source water protection (Hrudy *et al.* 2002; Ontario Ministry of the Environment, Integrated Environmental Planning Division, Strategic Policy Branch 2004). One of the key findings of the *Walkerton Inquiry Part I* was that revolutionary changes in the mid-1990s had removed a number of barriers to water quality management in the province, including effective monitoring and inspections, making management increasingly vulnerable to change (O'Connor 2002a). Justice O'Connor notes how the MOE's budget faced "very substantial" reductions with losses between 1992 and 1996 of 30%, or \$210 million. He goes on to describe how the MOE was forced to decrease budgets by an additional 40% in 1996/97 and 20% again in 1997/98. Numerous MOE employees describe how financial cuts forced them to manage in a reactionary manner:

James Merritt, a former MOE assistant deputy minister of the Operations Division, testified that staff increasingly found much of their day taken up with "reactive work," leaving little time for proactive work such as planned inspections and inspection follow-ups. Robert Shaw, the regional director of the MOE's Central Region, confirmed that the cutbacks reduced the MOE's ability to conduct proactive work. He testified that the reduction in staffing made it difficult to do more than just reactive work (O'Connor 2002a, 410).

According to O'Connor (2002a), provincial cuts also affected the municipalities' ability to enforce required reporting to health institutions. In addition, the Public Utilities

Commission in Walkerton was more concerned with financial issues than with technical understanding, and the commission falsified reports to draw less attention to its situation.

It is further determined in the *Walkerton Inquiry Part II*, that budget reductions to the MOE had two specific effects regarding the Walkerton Tragedy:

First, with respect to the decision to privatize the laboratory testing of drinking water samples, and especially the way in which that decision was implemented, the budget reductions are connected directly to the events of May 2000. Second, in the case of the MOE's approvals and inspections programs, the budget reductions are indirectly linked to the events in May 2000 in that they made it less likely that the MOE would pursue proactive measures that would have prevented or limited the tragedy (O'Connor 2002b, 406).

According to de Loë and Kreutzwiser (2007, 95), "the significance of the Walkerton contamination incident as a catalyst for changes in water governance in Ontario and other parts of Canada cannot be overstated." After May 2000, institutional arrangements for water management in Ontario were refocused on source water protection. The next section of this chapter uses the framework of adaptive capacity created for this research to describe how different elements of adaptive capacity were applied by the GRCA and GaRCA prior to the Walkerton Tragedy. With no official source water functions at the time, only vision and capacity building are reviewed prior to 2000, as they are both aspects of traditional strategic planning. Lessons are derived from these experiences to determine how elements of adaptive capacity were implemented to prepare the conservation authorities for revolutionary changes.

6.3 Adaptive Capacity for Source Water Protection Prior to 2000

6.3.1 Vision and Predecessor Partnership Programs

In the late 1980s, the GRCA had institutional support from the province (see Table 2.1) and sufficient staff and financial resources (see Figure 2.4 and Figure 5.1) to be involved with non-mandated water quality functions. With its greater resources, the GRCA provided ten times more references to vision for source water protection than the smaller GaRCA (see Figure 6.1 and Figure 6.2). As the Rural Beaches program had no official vision, references to vision by the GRCA were predominantly the result of its having the capacity to carry out visioning activities, including numerous stakeholder workshops in 1988 and 1989 (at least five). A description of one of those workshops, held in June 1989, is provided in the meeting minutes:

On June 29th and 30th, Rural Beaches staff hosted a Rural Beaches Workshop at the Authority Head Office. Up to 75 people were in attendance to listen to several conservation authorities outline their respective Rural Beaches studies and the implementation programmes devised to reduce coliform contamination of rural beaches in Ontario (GRCA July 14, 1989).

The GRCA continued to carry out visioning activities, such as workshops and open houses, throughout the early 1990s and references to visioning only slightly decreased after 1991 when CURB was officially implemented and the activities of the program clearly stated. With programs clarified, the need for visioning activities diminishes, though visioning should continue to address changing external realities (Ayers 1996).

The GaRCA provided only three references to vision and source water protection related programs prior to 1992 (see Figure 6.2). Evidence of vision is absent as a result of the GaRCA not having the financial, technical or staff capacity to undertake functions other than those provincially mandated. Bryston and Alston (1995, 19) explain how the

existence of capacity is required to help determine visioning activities as “the capacity, or ‘readiness’ of an organization to undertake strategic planning should be clearly understood by the organization and its project leaders before the process is begun.” Pam Lancaster describes how the GaRCA did have a Conservation Services program that “gave funding to landowners for doing things, but that probably wasn’t the same structure as what the Grand did” (interview, July 17, 2007). The GRCA demonstrates through its involvement with CURB that visioning for alternative programs is an effective way to gain functions that are not mandated through the GRCA’s focus on a vision of partnership with private landowners. However, comparing this experience to the GaRCA’s provides a clear lesson that consideration of an organization’s capacity should be given prior to visioning for alternative functions.

In 1995, the Provincial Economic Statement ended funding from the province for all non-core functions of the conservation authorities, including the CURB program (see Table 2.1). Between 1995 and 1997, references to the elements of adaptive capacity related to source water all but disappeared at the GRCA (see Figure 6.1). However, using vision and partnership helped the GRCA to retain a limited CURB program. This achievement was realized in partnership with a major municipality. The Regional Municipality of Waterloo wanted to continue the program and was willing to replace some lost funding (R. Beaumont, interview, July 20, 2007). Evidence of support for the CURB program was demonstrated throughout the Region as demonstrated in a letter from Brian Turnbull, then Mayor of the City of Waterloo, and reviewed for the GRCA Board:

The Chairman reviewed the letter received from Mayor Brian Turnbull regarding the GRCA CURB Final Report. Mrs. Joan McKinnon provided background information stating that the City of Waterloo considers the CURB programme a clean water issue. They hope there is a way to

continue this type of work. She suggested that GRCA staff contact the Mayor and Regional staff to discuss the possibilities. Mr. Bill Weichel went on to say that the GRCA has the expertise to carry out a project like this and that it would be inefficient for municipalities to duplicate it.

Even with this partnership, references to vision and source water drastically declined after 1995 for both the GRCA and GaRCA as non-core functions, such as source water protection, were vulnerable to institutional changes (see Figure 6.1 and Figure 6.2).

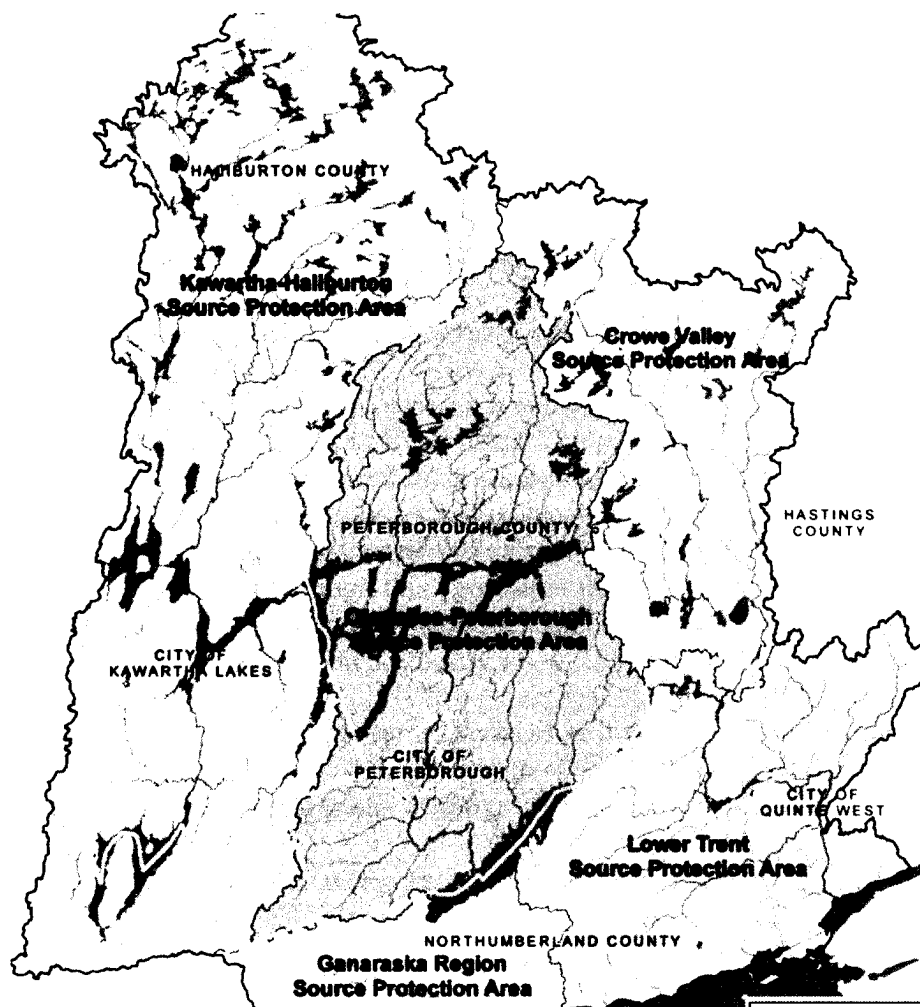
References to vision and source water protection at both conservation authorities quadrupled between 1997 and 1998 as a result of their focus on partnerships (see Figure 6.1 and Figure 6.2). Used to mitigate changing institutional arrangements, these types of partnerships have been considered "alliance relationships," in which resources are shared to gain capacity to fulfill common goals (Whyatt 2004). At the GRCA, this increase in reference to vision is the result of a new partnership with the Regional Municipality of Waterloo, Ontario Federation of Agriculture and numerous private citizens to legitimize the continuation of functions initiated through the CURB program with the Rural Water Quality Program (RWQP), as explained below:

Together with the GRCA and a variety of partners the Regional Municipality of Waterloo has initiated an innovative program to improve water quality in the Grand River and its tributaries. The Regional Municipality of Waterloo has committed \$1.5 million over 5 years to assist agricultural landowners to improve water quality. The GRCA is coordinating and delivering the program on behalf of the Region. The goal of the RWQP is to establish a sustainable partnership between the rural landowners, farm organizations and the Region to improve water quality, where all those benefiting share in the cost of clean water (GRCA February 17a, 1989).

At the GaRCA, it was also a mutually beneficial partnership, one with the Trent Conservation Coalition (TCC), that increased references of vision related to source water protection after 1998 (TCC) (see Figure 6.3). The TCC was created because of the

changing planning environment in the province and the desire to streamline management functions in the province to single agencies (see Table 2.1 and Table 4.1).

Figure 6.3: Map of the Trent Conservation Coalition



Source: Kawartha Conservation 2007

Created in 1994, the TCC partnership was initiated to share staff and technical resources, in a type of alliance relationship, to carry out functions of the CURB program. At this time, only the GaRCA, the Lower Trent Conservation Authority and the Otonabee Conservation Authority were involved as the TCC was passed as a Tri-Authority CURB

project for Rice Lake, a region of vulnerable wetlands and tallgrass, to commence in April 1995 (GaRCA, November 17, 1994a). By the end of 1994, the Kawartha Conservation Authority and the Crowe Valley Conservation Authority had also joined in order to complete projects related to water quality. A sixth member, the Trent Severn Waterway, later joined to work on common projects. The TCC did not have a limited vision, but instead allowed conservation authorities to combine resources in order to undertake management programs of shared concern (M. Widaatalla, interview, July 17, 2007). Written like a vision, the formal *TCC Agreement* did have a statement focused heavily on the partnership concept that organizations signed, stating:

This agreement is between conservation authorities, but it is not about conservation authorities. It is about natural resources and our collective desire to improve our commitment to the management of these resources. The underlying foundation upon which the agreement is drafted is that effective and efficient management of natural resources is important to everyone. Moreover, through this agreement the conservation authorities acknowledge that more can be accomplished collectively than alone (Crowe Valley Conservation Authority *et al.* 1994).

Such a statement is considered to represent a vision as it presents a sense of purpose and empowers employees by helping them “distinguish between what’s good and what’s bad for the [partnership], and what is worthwhile to want to achieve...and most important, it makes it possible to distribute decision making” (Bennis and Nanus 1985, 92). Written as a strategic partnership, this agreement was a five-year plan with funding and partnerships to be evaluated in 1999 (Crowe Valley Conservation Authority *et al.* 1994).

Since the original partnership for the TCC was expiring and provincial funding for the CURB program had been discontinued in 1995, references of visioning in 1998 increased dramatically at the GaRCA as the conservation authorities involved began to resolve how to continue water quality programs carried out under the TCC umbrella (see

Figure 6.2). Visioning undertaken at the GaRCA, including activities such as meetings with partner conservation authorities to determine how the TCC could be best applied to resource management, resulted in the renewal of the TCC after 1999. As seen in previous chapters, visions at both the GRCA (GRCA 1994; GRCA 2000) and GaRCA (GaRCA 1992a; GaRCA 1992b; GaRCA 1999) focused on the benefits of working with partnerships. While numerous references in the meeting minutes were representative of visioning regarding how to retain the TCC partnership, it was difficult to examine the dynamics of those meetings as no one currently at the GaRCA was involved.

It was stated in the conclusion of Chapter Five that a focus on mutually beneficial partnerships in the vision is an effective means to decrease political pressures and recover from financial change (Coulson 2005). This lesson is clearly reinforced with the GRCA and GaRCA through their experiences with programs considered predecessors to source water protection. While the GRCA used its vision of mutually beneficial partnerships to replace the CURB program with the RWQP, the GaRCA was able to retain the TCC partnership even after funding was discontinued by the province.

6.3.2 Capacity Building Prior to Walkerton

Prior to 1995, both the GRCA and GaRCA had the capacity to carry out programs related to water quality, such as CURB, largely because of provincial support through funding. After revolutionary changes, continuation of such programs was made possible by securing financial resources from alternative partners. As has been seen in previous chapters, the lesson provided by the GRCA and GaRCA is that the sharing of resources and expertise through mutually beneficial partnerships is an effective capacity building

adaptation in response to revolutionary changes. This lesson is confirmed by the literature (Jacobs 2004; Franks 1999). At the GRCA and GaRCA, specific partnerships that demonstrate this lesson include the RWQP at the GRCA and the TCC at the GaRCA.

6.3.2.1 Rural Water Quality Program and Regional Municipality of Waterloo

Particularly strong municipal allies to the GRCA, which helped the GRCA build the financial capacity to undertake the CURB program after 1995, were the Regional Municipality of Waterloo and the City of Waterloo's Mayor Brian Turnbull. Mr. Turnbull wrote a letter to the GRCA in 1998 stating that he considered the CURB program a clean waters issue and encouraged the GRCA to continue this type of work in the Region (GRCA, February 27, 1998). This support led to a partnership in which the municipality agreed to fund 25% of what the province had provided for CURB functions after 1998 (Grand River Planning and Operation Committee, February 17, 1998a). Meetings and discussions leading to this agreement were the prime reasons that references to capacity building quadrupled at the GRCA in 1998 in relation to source water (see Figure 6.1). Franks (1999, 53) describes how such meetings and discussions help partners share resources and are capacity building mechanisms as they "allow professionals to work alongside one another as equals." Only three years after revolutionary changes, the RWQP was initiated in 1998 to continue work aimed at improving water quality through a partnership based on Regional funds and the conservation authority's expertise and monitoring ability. The Regional Municipality of Waterloo eventually committed \$1.5 million and the GRCA \$393,000, over a five-year period, commencing in 1998 (GRCA Financial Statements).

Soon after the initiation of the RWQP, the National Soil and Water Conservation Committee, a non-government organization, joined the partnership with a commitment of \$225,000 over two years (GRCA July 21, 1998). Such partnerships were increasing in Ontario as the province encouraged innovative strategic planning and conservation authorities became decision-making bodies for increased planning functions in Ontario (see Table 4.1).

6.3.2.2 Ganaraska Experience and the Trent Conservation Coalition

The GaRCA implemented the CURB program in 1992 with an initial commitment of \$37,840, as compared to the GRCA's \$83,000. Such disparity is the result of the different resource scales in which these conservation authorities operated (see Table 3.1, Figure 5.3 and Figure 5.4). Initiating the CURB program in 1992 led to the first references to capacity building related to source water at the GaRCA in four years (see Figure 6.2). However, much like the GRCA example, capacity building was still not significant as necessary funding was still provided by provincial and municipal partners (see Table 2.1 and Figure 2.4). In 1994, reference to capacity building for programs related to source water more than doubled at the GaRCA as it entered a partnership with the MOE and Lower Trent Conservation Authority to carry out a five-year CURB program (see Figure 6.2). Partnerships are again demonstrated as an effective means of building capacity that combine resources, including those that are not tangible such as knowledge, as they bring "together partners from sectors with different cultures, perspectives and attitudes" (Hastings 1999, 93).

In 1994, as a result of early evolutionary changes, the province limited funding for the Rice Lake CURB program. Due to limited funding commitments and after evolutionary changes had exposed how vulnerable non-core functions were to provincial funding changes, the conservation authorities involved with the Rice Lake initiative increased financial capacity building activities to retain the CURB program (see Figure 6.2). Eventually, a compromise was passed:

THAT the Authority attempt to raise their share of the CURB program administration funds for years 2 to 5 through a combination of special levies to municipalities and through donations from contractors and other agencies who directly benefit from the program subject to conflict of interest legislation (GaRCA, November 17, 1994a, 4).

Prior to any capacity building adaptations being implemented, revolutionary changes occurred. In 1995, the Rice Lake CURB program was transferred to the newly formed TCC, which would eventually undertake source water protection works in the region.

6.3.2.2.1 The Trent Conservation Coalition

In 1994, the Rice Lake CURB was approved as a "one window" partnership to distribute funds in a collaborative manner by conservation authorities in the Rice Lake Region (GaRCA, November 17, 1994b). Signed the same year that revolutionary changes occurred, the Rice Lake CURB program was provided financial assistance by the MOE until March 1996.

Since providing funds for water quality projects is not a mandated function of the conservation authorities, Bill 26 removed provincial funding for the TCC CURB program in 1995. With the removal of provincial funds, references to capacity building for source water protection at the GaRCA dropped by a third in 1996 and all but disappeared in

1997 and 1998 when the GaRCA went into survival mode and concentrated on retaining capacity for core functions (see Figure 6.2).

In 1999, just prior to Walkerton, references to all elements of adaptive capacity drastically increased at the GaRCA in reference to source water and related programs (see Figure 6.2). That year, a Ground Water Monitoring Network (GMN) began at the GaRCA. This GMN is an MOE-funded program supporting information management regarding groundwater sources. Operating costs of carrying out this program could be claimed from the MOE to a total cost of \$6 million. Little detail is provided here of the GMN, for although it is an innovative partnership related to source water, it was overshadowed by the Walkerton Tragedy, which occurred one month after it was signed.

The key lesson provided by the GRCA and GaRCA above is that mutually beneficial partnerships are an effective method of capacity building in response to changing institutional arrangements. As such, visions benefit from being revised or created to conform to new institutional realities to define what functions partnerships wish to retain capacity for. In May 2000, the conservation authorities' ability to survive unknown revolutionary changes would be exposed as a result of the Walkerton Tragedy.

6.4 Adaptive Capacity Following Walkerton

6.4.1 Vision and Source Water Protection After Walkerton

Source water protection became a topic of primary concern in Ontario after the Walkerton Tragedy and was soon the focus of municipal publications in the province in early 2000 (Association of Municipalities of Ontario 2000; Association of Municipalities of Ontario 2002). Both the planning community and the public were advised that source

water protection was to be considered the first barrier in a multi-barrier approach to protect drinking water in Ontario and should occur on a watershed scale (Ontario Ministry of the Environment 2004; de Loë and Kreutzwiser 2007).

The application of source water as the first barrier and a potential provincial vision for protecting drinking water were made clear in the *Walkerton Inquiry Part II* (O'Connor 2002b). References to vision and source water protection at the GRCA and GaRCA accelerated during the period between the Walkerton Tragedy and the release of the *Walkerton Inquiry Part II*, as the conservation authorities undertook visioning activities aimed at demonstrating their relevance to the new provincial planning environment (see Figure 6.1 and Figure 6.2). Shipley (2002) explains how altering a vision to new realities is not a concept always understood by planning practitioners who are often not clear if the vision should be constant or malleable.

The GRCA undertook visioning at the same time as Conservation Ontario. Both organizations reacted to changing external institutional arrangements by becoming involved in the Walkerton Inquiry, though it involved events outside of their jurisdictional boundary. Here is a clear example of how vision can change, or new visions created, to address new external realities (Shipley 2002). In his final report, O'Connor describes the influence the GRCA had on his recommendations, explaining that "the Grand River Conservation Authority has received global recognition for its efforts in watershed planning, and I suggest that its model, combined with the model provided in the 1993 planning framework, may be a good starting point" (O'Connor 2002b, 103).

Adaptations that increased manifestations of visioning in 2000/20001 by the GRCA included promotion of the conservation authority's programs to those involved with the inquiry and letters to municipal and provincial partners regarding their desire for involvement in source water activities (see Figure 6.1). A primary focus of that correspondence demonstrated how conservation authorities can adapt to facilitate functions of source water protection. George Sousa describes how this was done:

I think it took a significant amount of effort by some of the larger conservation authorities to convince folks like [Justice] O'Connor and, more importantly the province, that as a unit, as a collective, we were strong enough to do this, clever enough to do this...I look at the way that source protection planning has been rolled out, and it is modeled very much like the work that we were doing, but it doesn't scale very well to organizations that don't have the same issues that we have. So the idea that we have many different disciplines with many different experts wasn't because we were somehow smarter than everyone else, and thought, we need an expert in this, and we need an expert in this, it was just the nature of the beast, just the nature of the problems we were trying to solve (interview, July 10, 2007)

The GRCA even invited Justice O'Connor for a watershed tour of the Grand River to demonstrate the watershed-based programs that had been initiated over the previous 50 years (P. Emerson, interview, July 9, 2007).

Between 2000 and 2002, the GaRCA did not have the technical expertise or staff and financial resources to undertake the promotional visioning activities that had been done at the GRCA, though reference to visioning remained high (see Figure 6.2). Although there was discussion of Walkerton at the GaRCA, demonstrated by the existence of "other responses to change" (see Figure 6.2), little to no visioning work took place regarding Walkerton specifically. This lack of evidence again demonstrates that the extent an organization applies its vision to external functions is determined by the capacity it has to carry out the required activities. As stated by Bennis and Nanus (1985),

a vision is for a future that is not only desired, but also realistic and credible. Increasing references to visioning at the GaRCA did occur for source water, though the increase was based on a focus on groundwater and the GMN. While no specific vision was created for this program, a partial list of the functions of the GaRCA in 2000 demonstrates why evidence of visioning occurs in the organizing of such a program:

The Minister of the Environment has proposed an agreement to provide for the design, implementation and operation of a groundwater monitoring network in the area under jurisdiction of the Conservation Authority...it is suggested that the Conservation Authority will:

- participate in and agree to the design of the monitoring network
- participate in and agree to the selection of well sites and development of sampling analysis parameters
- communicate network details to local stakeholders
- negotiate access to and maintain equipment at well sites
- act as liaison with watershed municipalities where necessary to facilitate implementation
- participate as a member of the local Technical Committee
- ensure project staff are trained
- participate with MOE on project communication initiative and audits
- maintain and operate the equipment subsequent to year 1 for the duration of the Agreement

(GaRCA May 18, 2000)

Employees at the GaRCA realized that institutional arrangements in Ontario were becoming focused on source water and related programs such as the GMN. Staff also realized that past visioning based on water quality, such as that for the CURB program and TCC, could be adapted to the Ontario trend focused on source and groundwater.

Both the GRCA and GaRCA were correct to consider source water protection as a key focus for water management planning in Ontario. By 2004, the final draft of the *White Paper on Watershed-based Source Protection* was officially released (Ontario Ministry of the Environment 2004). Although it did not have a distinct vision statement,

it is argued here that the *White Paper* provided a vision of source water for Ontario stating that:

The Ontario government is planning to introduce legislation that would make locally developed source water protection planning mandatory in watersheds across the [P]rovince. This is consistent with the recommendations of Commissioner O'Connor in the *Part Two Report of the Walkerton Inquiry* and of the Advisory Committee on Watershed-based Source Protection Planning. Detailed regulations would also be developed to support the source water protection planning process (Ontario Ministry of the Environment 2004, 9).

Suggested source water protection regions were included in this report (see Figure 6.4).

Figure 6.4: Map of potential source protection watershed regions



Source: Ontario Ministry of the Environment 2004, 37

The source protection planning committee in each of these regions was to create strategic source water protection plans to ensure protection of the quality and quantity of sources of drinking water (Ontario Ministry of the Environment 2004). Promoted as the agency to approve source protection plans developed by source protection planning committees, all conservation authorities demonstrated to the province that they had the capability to write and implement effective plans and to be the key agencies in the source water protection committees. As such, source water protection regions were based on conservation authority boundaries where conservation authorities exist. By the end of this study, vision statements were being created for all source water protection regions by the conservation authorities.

6.4.2 Capacity Building After Walkerton

Following the Walkerton Tragedy, the province promptly implemented legislation to provide water planning organizations the capacity to stop activities that could adversely affect water quality, including the *Nutrient Management Act* (Bill 81), the *Safe Drinking Water Act* (Bill 195) and a *Sustainable Water and Sewage Systems Act* (Bill 75). Legislative tools such as these increased references to capacity building at the GRCA and GaRCA by providing them support within the planning environment that had been lacking since 1995 (see Figure 6.1, Figure 6.2 and Table 6.1). As has been stated throughout the thesis, supportive institutional arrangements such as these create an enabling environment, often considered necessary for capacity building (Biswas 1996; Franks 1999; Ivey *et al.* 2004).

In the summer of 2000, within months of the Walkerton Tragedy, the GRCA increased its capacity for groundwater planning by entering a partnership with the MOE and the Credit Valley Conservation Authority (CVCA) to expand a joint GMN. Much like the GaRCA experienced with the TCC in the 1990s (see Figure 6.2), this GMN partnership resulted in increased references to capacity building at the GRCA in 2000 (see Figure 6.1). Again it is demonstrated that mutually beneficial partnerships are an effective capacity building tool by combining resources (Whyatt 2004).

A second effective method of capacity building activity undertaken by the GRCA involved promotional activities aimed at gaining financial resources. Goodman *et al.* (1998, 267) describes alternate sources of funding that can be used to increase capacity when traditional sources have been removed, including “funding from both community and outside agencies and foundations; organized citizen groups; competent professionals, such as lawyers and accountants” and others. An example of attempting to gain alternative funds through promotion is provided with the GRCA’s application for Healthy Futures funding. Following the rejection of provincial funding through the Healthy Futures program in 2000, the GRCA initiated self-promotional activities to gain funding for its RWQP, which helped increase instances of capacity building in 2000 (see Figure 6.1). Healthy Futures provided provincial funds from the Ministry of Agriculture, Food and Rural Affairs to rural landowners to promote water quality and food safety. While the GRCA was initially rejected as ineligible for funds, it decided to promote its RWQP as an eligible program. Promotional activities included writing letters to the MOE and Ministry of Agriculture, Food and Rural Affairs regarding the continuation of the RWQP and the possibility of its acceptance as a Healthy Futures project. As a result of

promotional activities, combined with political and public pressure in the wake of Walkerton, the Ministry of Agriculture, Food and Rural Affairs announced in May 2001 that it had relaxed restrictions and provided the first Healthy Futures program grant for a conservation authority. This grant was provided to the GRCA for \$74,000 to be applied to the RWQP (GRCA, May 25, 2001). As a result of promotional activities and obtaining funding for this program, capacity building was high at the GRCA in 2000 and 2001 (see Figure 6.1).

6.4.2.1 Capacity Building After 2002 and the Walkerton Reports (GRCA)

After Justice O'Connor visited the GRCA, he praised the conservation authority and congratulated it for winning the Thiess Riverprize award that year. He also recommended the GRCA's involvement in the Walkerton Inquiry (G. Sousa, interview, July 10, 2007). The Thiess Riverprize is presented at the International Riverfestival in Brisbane to an organization that has demonstrated best practices in river management. The GRCA won this award only five years after revolutionary changes. This win by the GRCA was attributed to "a combination of programs undertaken over the last fifty years by the GRCA and its partners, [which allowed the Grand River to recover] after years of degradation and industrialization" (International Riverfoundation 2008). For the second time in 9 years the Thiess Riverprize was won by a Conservation Authority, the Lake Simcoe Conservation Authority, in 2009. Separate standing was granted to the GRCA as a commenting agency for Part II of the Walkerton Inquiry as Justice O'Connor realized that the GRCA had the capacity to carry out successful programs related to water quality (Grand River Planning and Operations Committee, September 19, 2000). The lesson

reiterated here is that having capacity prior to revolutionary changes will enhance an organization's capacity building abilities once changes have occurred. It also demonstrates that new or existing visions may need to be altered to address changing external realities (Koteen 1997; Shipley 2002). References to capacity building more than doubled between 1999 and 2000 at the GRCA as a result of its involvement with the Walkerton Inquiry (see Figure 6.1).

Capacity building activities by the GRCA between 2000 and 2002 included the preparation of submissions to the Walkerton Inquiry, which are considered capacity building documents as they promote to those in the planning environment the merits of the conservation authority program. Franks (1999, 60) describes how such capacity building for functions outside those mandated can be important because "the processes and methodologies being applied should be seen to contribute to the overall goals of the sector or society as a whole." In this case, the GRCA was building capacity for functions that were becoming important only to water management in Ontario. Only five years after the province created revolutionary changes in the mid-1990s, the GRCA was now being used by the province as an example of how things could be done in the absence of provincial funding (GRCA, February 23, 2001).

The *Walkerton Inquiry Part II* was released in 2002 and provided 155 recommendations for a safe drinking water strategy in Ontario (O'Connor 2002b). This was the first provincially significant report in Ontario that focused heavily on the creation of strategic planning activities for source water protection plans (de Loë and Kreutzwiser 2007). A short list of those recommendations, as compared to the final Conservation Ontario submission to the Walkerton Inquiry, demonstrates how influential the

conservation authorities' submissions were (see Table 6.2). The *Walkerton Inquiry Part II* represents a revolutionary change because it shifts water management and planning in Ontario towards a focus on source water protection, the extent of which can not be understated (de Loë and Kreutzwiser 2007). The conservation authorities, having effectively altered their visioning to source water related programs and being involved in the Walkerton Inquiry, are one of the few water management organizations praised in the *Walkerton Inquiry Part II*. That report identified conservation authorities as the appropriate organizations to be delegated source water functions:

Conservation Authorities are well positioned to manage the development of draft watershed-based source protection plans. They have the mandate and, in many cases, the experience and the respect of affected local groups that will be required to coordinate the development of the plans (O'Connor 2002b, 100).

After the 2003 provincial election that saw the Liberal government win a large majority, Conservation Ontario and individual conservation authorities found that they were again supported by institutional arrangements in the province (see Table 2.1).

Early in 2003, the GRCA responded to positive institutional arrangements by beginning to combine different groundwater planning activities into the *Source Water Protection Plan for the Grand River Watershed* (GRCA, March 28, 2003). This action was supported by the new *Safe Drinking Water Act* and provided references to vision that year (GRCA, February 23, 2003) (see Figure 6.1). The GRCA passed the following motions to continue integration and consistency of source water protection across the watershed:

Table 6.2: Examples of relations between recommendations by Conservation Ontario and Justice O'Connor

| Conservation Ontario | Related O'Connor Recommendations (abridged) |
|--|--|
| Protection of drinking water sources as permanent and integral | <p>4. Provincial government decisions that affect the quality of drinking water sources must be consistent with approved source protection plans.</p> <p>55. The drinking water quality management standard should come into force by a date to be fixed by the provincial government. All municipalities should be required under the <i>Safe Drinking Water Act</i> (see Recommendation 67) to have an operating agency for their water system accredited within a specified time.</p> |
| Watershed as management unit | <p>1. Drinking water sources should be protected by developing watershed-based source protection plans.</p> <p>66. The Ministry of the Environment should be the lead ministry responsible for developing and implementing the "source to tap" Drinking Water Policy.</p> |
| Provincial integrated policy | <p>65. The provincial government should develop a comprehensive "source to tap" drinking water policy covering all elements of the provision of drinking water, from source protection to standards development, treatment, distribution, and emergency response.</p> <p>77. A steering group should be established within each public health unit area in the province, comprised of representatives of affected local hospitals, municipalities, local Ministry of the Environment offices and local boards of health, for the purpose of developing in a coordinated fashion emergency response plans for the control of, or the response to, infectious diseases and public health hazard outbreaks.</p> |
| Adequate and stable funding | <p>7. The provincial government should ensure that sufficient funds are available to complete the planning and adoption of source protection plans.</p> <p>48. As a general principle, municipalities should plan to raise adequate resources for their water systems from local revenue sources, barring exceptional circumstances.</p> <p>78. The provincial government should ensure that programs relating to the safety of drinking water are adequately funded.</p> |
| National Water Strategy | <p>21. I suggest that the federal-provincial process for proposing drinking water quality guidelines be refined to provide for greater transparency and public participation.</p> <p>22. I suggest that the Federal-Provincial Subcommittee on Drinking Water focus on drinking water quality guidelines.</p> |
| Conservation Authority Support | <p>2. The Ministry of the Environment should ensure that draft source protection plans are prepared through an inclusive process of local consultation. Where appropriate, this process should be managed by conservation authorities.</p> <p>8. Conservation authorities (or, in their absence, the Ministry of the Environment) should be responsible for implementing local initiatives to educate landowners, industry, and the public about the requirements and importance of drinking water source protection.</p> |

Source: Amalgamated from Conservation Ontario 2001a; O'Connor 2002b

THAT the GRCA adopt the "Grand River Watershed Consolidation of Municipal Groundwater Studies Project" as a project of the Conservation Authority;

and,

THAT the GRCA agrees to the terms and conditions of MOE funding as stipulated by the document "Provincially Funded Groundwater Studies 2001-2002, Terms and Conditions of Ministry Funding." This includes funding 15% of the total cost of the project (GRCA, March 28, 2003a, 7).

In 2003, the provincial government further supported financial capacity for source water with a \$750 million commitment over three years. To gain access to some of the provincial funds, and as a result of a focus on watershed-based source protection by the province (see Table 6.1), the GRCA signed a Memorandum of Understanding for Source Protection Planning by recommending (GRCA, August 29, 2003, 6):

THAT the GRCA enter into a Memorandum of Understanding with the Catfish Creek Conservation Authority, and the Long Point Conservation Authority to form a Source Protection Planning Area to establish and implement a cooperative process to prepare Source Protection Plans that protect riverine, groundwater and Lake Erie drinking water sources.

The GRCA demonstrates that even when institutional arrangements support an organization's programs, mutually beneficial partnerships where resources are shared should continue as part of long-range strategic planning. Poister and Streib (2005) demonstrate that this lesson has not always been accepted by organizations. They found that only slightly more than 60% of organizations reported external partners involved in strategic planning. By the end of 2003, the GRCA had amalgamated numerous programs to undertake source water protection functions, and references to capacity building have remained stable since the Walkerton Tragedy (see Figure 6.1).

6.4.2.2 Capacity Building After 2002 and the Walkerton Reports (GaRCA)

Previous visioning and capacity building resulted in increasing references to capacity building at the GaRCA following 2000 as a result of the TCC (see Figure 6.2). Even though the TCC had not undertaken any functional activities since the mid-1990s, the GaRCA's ongoing vision, which promoted partnerships, resulted in the Minister of the Environment supporting the GaRCA as the proper organization to provide groundwater management functions after 2000. By August 2001, the MOE announced \$10 million in support for groundwater projects. The TCC was reconfirmed as relevant by gaining a portion of these funds.

With the release of the *Walkerton Inquiry Part II*, the GaRCA increased promotional measures for groundwater protection through the TCC with a symposium on groundwater at Trent University. This event and the planning meetings leading up to it, considered visioning and capacity building adaptations respectively, were largely responsible for moderately increasing references to capacity building at the GaRCA in 2000 (see Figure 6.2). Development of promotional material is often considered a capacity building measure that helps create an enabling environment through public support (Grindle and Hilderbrand 1995; Whyatt 2004). The symposium at Trent University was focused on groundwater monitoring and protection, was organized with the aid of local health units, and was open to MPs, MPPs and other stakeholders from municipalities, agricultural landholders and any other interested member of the public (GaRCA, June 20, 2002).

The GaRCA was also able to provide numerous references to capacity building in 2001 and 2002 (see Figure 6.2). The lesson that is provided by the GaRCA is that

capacity building focused on an organization's vision benefits when consideration is given to the organization's internal strengths. For example, although the GaRCA did not have the resources to be participants in the Walkerton Inquiry, it focused capacity building activities on programs related to the provincial shift concerning water quality and monitoring, including the GMN, drainage studies, subwatershed planning, the Ontario Low Water Response (OLWR), subwatershed planning and drainage studies (L. Laliberte, interview, July 16, 2007).

By 2004, the GaRCA believed that the TCC had the capacity to undertake functions for source water (M. Widaatalla, interview, July 17, 2007). The TCC drafted a proposal for the development of a source protection area in its region. The proposal was signed and submitted to Conservation Ontario. Work towards this designation explains why instances of capacity related to source water planning increased in 2001 and 2002 (see Figure 6.2). Approval of the TCC as a source water region demonstrates that the province agreed that the TCC had the technical and staff capacity within its partnership to undertake source water functions.

The first action taken in 2004 by the TCC as a source water protection region was the immediate creation of a Source Protection Committee. Reports to be completed by this committee included a Watershed Characterization Report to be completed by 2007; Terms of Reference to be completed in 2007; a Water Budget and Water Quantity Risk Assessment to be completed in 2008; an Assessment Report to be completed in 2009; and, a Source Water Protection Plan to be completed between 2010 and 2012 (Lower Trent Conservation Authority 2007). Each of these reports focused on a common vision supporting timely and effective management decisions when changes to institutional

arrangements occur, and each is necessary in effective strategic planning (Mintzberg 1994; Miller 1998). An example of how source water was used to gain capacity after 2004 was provided by Magdi Widaatalla, who discussed how the GaRCA uses source water to undertake studies beyond the boundaries of its watershed:

Right now we have a study that is being done for Lake Ontario. And for that study we are not focusing on a specific conservation authority or on a specific source water protection region, we are focusing on all the municipalities and all the [conservation authorities] that have something to do with Lake Ontario. So a huge study, so that's an example of the bigger role for source water protection (M. Widaatalla, interview, July 17, 2007).

As seen in previous chapters, references to vision and capacity building adaptations are the most prominent elements of adaptive capacity. Such prominence is the result of their representing aspects of planning for, and the ability to undertake, specific functions. However, references to other elements are present.

6.4.3 Allowance of Flexibility

Flexibility is clearer in this chapter than the previous chapters on strategic and financial planning. With limited external resources providing financial capacity after revolutionary changes, both the GRCA and GaRCA demonstrated organizational flexibility after 2000 (see Figure 6.1 and Figure 6.2). Organizational flexibility in the context of revolutionary changes often involves capacity building mechanisms (Volberda 1997). The lesson provided by the following examples demonstrates that flexibility adaptations are not limited to individual organizations and partnerships can be designed to permit responsive actions, especially in the context of diminished external resources. As stated by Ahmed *et al.* (1996, 562), such flexibility is required as organizations, or

partnerships, experience change and “will have to abandon traditional routines of business practice.”

Flexibility can be found in a GRCA agreement with the CVCA and MOE regarding the GMN. Both the GRCA and the CVCA responded to changing institutional arrangements by suggesting to the MOE that flexibility could be applied through information gained with the GMN. That information would be applied to alternative functions related to groundwater, such as the Permit to Take Water Program and elements of Section 28 development reviews. This desire for flexibility is demonstrated with the GRCA’s resolution “that the GRCA request the MOE to support the joint proposal by the GRCA and CVCA to demonstrate how data from the network can be used to plan for and resolve water budget and allocation issues” (Grand River Planning and Operations Committee, June 30, 2000, 4). The pursuit of flexibility with the MOE in 2000, and work leading up to the above resolution, is demonstrated with a near tripling of references to flexibility (see Figure 6.1). Other references to flexibility by the GRCA are largely explained by the GRCA exploring new functions as it strove to adjust to changing institutional arrangements in support of source water protection (see Table 2.1 and Table 6.1) (O’Connor 2002b; de Loë and Kreutzwiser 2007).

A second GRCA example of flexibility involves the invitation of Justice O’Connor to visit its head office and subsequently his invitation to them to be a commenting member of the inquiry. The GRCA’s request to be involved with the Walkerton Inquiry demonstrates flexibility within Conservation Ontario. Conservation Ontario recognized that the GRCA had the capacity and resources to make beneficial comments and did not impede its involvement in the Walkerton Inquiry, even though it

was outside the GRCA's mandate and watershed. Such flexibility, provided in response to change, has been considered an element of adaptation and strategic decision making (Sharfman and Dean Jr. 1997). Visits by Justice O'Connor to conservation authorities were later mentioned in the O'Connor reports, which recommended that conservation authorities be granted source water functions (O'Connor 2002b). George Sousa explains how influential this visit was at eventually gaining functions for source water:

I actually think that that may have been the pivotal day. If you look at his recommendations around, you know source protection, you know, you could have written right from our recommendations, and I believe we gave him most of those recommendations on that day (G. Sousa, interview, July 10, 2007).

Without the resources to undertake functions outside its watershed, the GaRCA manifested increased instances of flexibility after 2000 by partnering with other conservation authorities and provincial ministries to increase its region of influence (see Figure 6.2). Altering organizational structures in response to change is a lesson provided by the GaRCA and is often considered a significant aspect of strategic flexibility (Volberda 1996; Hatum and Pettigrew 2004).

The GaRCA entered the GMN agreement with the MOE in 2000 largely because the GaRCA had the flexibility to enter into new partnerships outside of those mandated. However, the more significant example of organizational flexibility by the GaRCA involves the TCC. Originally created as a partnership to gain strategic and financial capacity, the TCC was formed in a manner that allowed each conservation authority to act without approval of the full coalition. As was seen with the GRCA and the CHR in Chapter Four, permitting those within the organization, or in this case a coalition, to make decisions without formal approval, represents a responsive structural design and

can facilitate a level of adaptation that is difficult to obtain in traditional, more rigid management structures (Folke 2006; Gallopin 2006). The creation of this partnership largely explains why 1994 is only the second year with instances of flexibility (see Figure 6.2).

After 2000, the TCC again demonstrates that organizational flexibility is an effective adaptation when it altered its vision to address changing institutional arrangements and successfully appealed for involvement in source water protection. Once the TCC became active again in 2000, this time for source water protection, flexibility becomes the most referenced element of adaptive capacity at the GaRCA (see Figure 6.2). Approval of the TCC as a source water protection region demonstrates that the province believed this partnership had the capacity to undertake source water functions and that the partnership was created with sufficient flexibility to adapt its vision to new institutional realities.

Volberda (1997) explains how measuring flexibility is difficult for persons external to an organization, and that even internal measurement must involve purposeful consideration and assessment of the required flexibility, based on the amount of change being experienced. In this chapter, flexibility became evident through examples of innovative partnerships to undertake functions outside those mandated. When source water protection became the new management focus in Ontario, the flexibility the conservation authorities had acquired enabled them to adapt to new functions and become the administrative bodies of Source Water Protection Committees.

6.4.4 Demonstrations of Monitoring and Learning

After the Walkerton Tragedy, references to monitoring and learning adaptations at the GRCA tripled (see Figure 6.1). At this time, conservation authorities realized the potential importance of Walkerton, and increased references to monitoring institutional arrangements are seen in numerous conversations and reports in meeting minutes, especially in 2000 and 2002 after the Walkerton Tragedy and the *Walkerton Inquiry Part II* (see Figure 6.1 and Figure 6.2). The timely ability to recognize change is often deemed crucial to resilience (Adger 2006; Janssen *et al.* 2006). The GRCA and GaRCA experience confirms this lesson. References to monitoring and learning as a proxy indicator of resilience by the GRCA and GaRCA largely reflect the amount of employee concerns focused on how to react to provincial concerns (see Figure 6.1 and Figure 6.2). In fact, in 2000 alone, three reports addressing how to respond to Walkerton were presented to the GRCA Board by the Chairman (GRCA Meeting Minutes 2000). This monitoring would benefit the conservation authorities as funding for water quality programs soon became available, including \$10 million from the province for groundwater monitoring, a program which both conservation authorities were involved with through GMNs.

A second lesson provided by the GRCA and GaRCA is that the monitoring of institutional arrangements will influence an organization's ability to recognize where there exists political will and public opinion to build capacity through alternative resources. By undertaking new functions related to source water only five years after revolutionary change, the conservation authorities demonstrated that they had recognized and adapted to new provincial realities. Undertaking management functions supported by

the province helped to secure financial and political resources and decreased the conservation authorities' vulnerability to changing institutional arrangements. In the panarchy framework (see Figure 2.3), these actions would be an example of effectively going through the release and reorganization stages (Ω and α), through which an organization responds, reorganizes and relearns in order to remain relevant to the new system dynamic (Holling 1986; Redman 2005).

An example of monitoring in relation to capacity building is provided by the GRCA in September 2002, when board members passed a motion in recognition that the political will in Ontario was to focus on source water:

THAT the Authority continue to participate in discussion with the watershed municipalities, Conservation Ontario, and the province regarding the requirements of watershed-based source protection plans and the specific role of Conservation Authorities;
and,
THAT the Authority pursue Provincial funding sources in support of source protection planning initiatives
(Grand River Planning and Operations Committee, September 17, 2002).

Learning through monitoring external financial resources to change current management practices was also demonstrated by the GRCA with its adaptation of the RWQP funding. Funding sources for the RWQP were provided on a yearly basis, and the capacity to carry out the program varied prior to 2000. The GRCA, wanting to ensure the RWQP's continuation, realized that this program could be incorporated into source water protection. To ensure financial capacity, the GRCA investigated the viability of adopting RWQP programs to suit provincial protection criteria (Grand River Planning and Operations Committee, February 12, 2002). Activities undertaken to investigate this viability, along with other monitoring activities taken after the Walkerton Tragedy, increased reference to monitoring and learning at the GRCA in 2000 (see Figure 6.1). By

the end of 2002, largely as a result of consideration for funding programs, aspects of the RWQP were integrated into source water protection. For example, the GRCA successfully initiated the RWQP watershed-wide for source water protection, a recommendation made in the *Walkerton Inquiry Part II* (O'Connor 2002b).

One of the best examples of GaRCA's monitoring and learning was its recognition that capacity could be gained as a result of organizational culture, which is demonstrated by the TCC. By August 2001, the MOE had announced \$10 million for groundwater projects previously mentioned. The TCC recognized the significance of this and was able to make an application and receive financial resources for a groundwater project with the County of Haliburton and 38 municipal partners. This funding was not available to the conservation authorities prior to the provincial focus on source water protection.

A second clear example of the GaRCA applying lessons learned through monitoring to build management capacity involved its response to the 2003 budget. The provincial government increased financial support for source water protection in the 2003 budget, including a \$750 million commitment over three years. The GaRCA understood the importance of this commitment and changed its monitoring processes to ensure that any new information could be integrated into the final report of the Source Protection Advisory Committee. In short, the GaRCA changed its planning activities to address new institutional realities in the province. Prior to 2003, financial decisions of this magnitude were undertaken in five-year financial reports that were updated with yearly reports (GaRCA Financial Statements 1988-2004). Including this consideration in the budget involves an ability to act immediately to changing institutional arrangements, a

key factor in effective resilience (Holling 1986; Redman 2005; Gunderson and Holling 2002). Reference to monitoring and learning as a result of altering reviewing processes increased significantly at the GaRCA in 2003 (see Figure 6.2).

Between the Walkerton Tragedy in 2000 and the issuance of the *Walkerton Inquiry Part II* in 2002, both the GRCA and GaRCA demonstrated effective monitoring and learning related to source water protection. The GRCA and GaRCA recognized provincial priorities and identified where they might apply for external resources, such as alternative sources of funding for new functions.

6.5 Chapter Summary

In 2000, the Walkerton Tragedy exposed the impacts revolutionary changes to institutional arrangements, caused by the neo-liberalist views of the Harris government, had on water management in Ontario. A number of important lessons regarding the elements of adaptive capacity are provided by the GRCA and GaRCA and their ability to secure source water protection functions five years after revolutionary changes.

The chapter's first lesson regarding vision was provided by the GRCA prior to the Walkerton Tragedy: that visioning for alternative programs is an effective way to gain functions. Such visioning was seen in the application of the Rural Beaches Strategy and CURB program prior to 1990. This lesson was again demonstrated after the Walkerton Tragedy by all conservation authorities with their applications to source water protection activities in the province and their being delegated key roles in Source Water Protection Committees. A second lesson of vision provided in this chapter is that mutually beneficial partnerships are an effective visioning activity to retain management functions

after revolutionary changes. Partnerships in which resources were shared to gain capacity include the GRCA partnership with the Region of Waterloo, and others, to initiate the RWQP program, and the GaRCA partnership with TCC members that helped to retain a number of programs related to source water.

This chapter also demonstrated that the process of creating a vision is more successful when written in consideration of current and changing institutional arrangements. Both the GRCA and GaRCA were effective at recognizing source water protection as the focus of provincial planning after 2000, and implemented the proper adaptations to direct their visions to gain functions from that change. The GRCA participated in the Walkerton Inquiry, but the GaRCA did not have the expertise to do so and directed its visioning to related functions such as the GMN.

A capacity building lesson provided by the GRCA and GaRCA through their experience with source water protection is that the sharing of resources and expertise through mutually beneficial partnerships is an effective capacity building adaptation. This lesson is demonstrated through the RWQP and the TCC. While the RWQP builds capacity by combining the expertise of the GRCA with the political influence and financial support of the Region of Waterloo, the TCC was able to undertake the GMN when CURB funding was eliminated.

Promotional activities were also demonstrated as an effective means of capacity building. The GRCA demonstrated promotion in an invitation to Justice O'Connor to tour its facilities and with its application for alternative funding sources such as the Healthy Futures program. Promotional activities at the GaRCA were demonstrated after 2000 with a symposium at Trent University to educate those in the watershed about their

groundwater monitoring activities. While not involved in the Walkerton Inquiry, the GaRCA demonstrates that capacity building through promotion can be accomplished by focusing on internal strengths and programs that are local but related to larger institutional realities.

Capacity related to flexibility was discussed, and it was shown that flexibility adaptations are not limited to individual organizations and should be employed by capacity building partnerships. Specifically, the GRCA and CVCA provided the MOE with useful information gained from their GMN for alternative functions related to groundwater. At the GaRCA, partnerships enhancing capacity and permitted as a result of organizational flexibility, include the GMN agreement with MOE and the TCC, whose boundaries eventually became a source water protection region.

A lesson related to monitoring and learning in this chapter indicates that the timely review of external institutional arrangements better addresses new institutional realities so that the organization can refocus its vision and determine future functions that may require increased capacity. Both the GRCA and GaRCA were able to recognize changing realities in Ontario's planning environment and to adapt their organizations to undertake new functions related to source water, including participation in GMNs and source water protection committees shortly after 2000. The second lesson of monitoring and learning seen in this chapter is that reviewing institutional arrangements will allow an organization to recognize where political will and public opinion exist so that organizational capacity can be built through external resources. Such monitoring was the reason that alternative funds were secured to carry out source water protection functions through the RWQP and the TCC, even though these functions were not mandated.

Examining how adaptive capacity was demonstrated in response to an environmental disaster has provided lessons about the interrelationships of the elements of adaptive capacity and how adaptive capacity can be implemented. In summary, these lessons are:

1. That visioning for alternative programs allows an organization to gain functions and is easier to obtain if the capacity to undertake those functions exists;
2. That mutually beneficial partnerships are a visioning activity used to retain management functions after revolutionary changes;
3. That vision statements are more effective when written with consideration to current and changing institutional arrangements;
4. That sharing of resources and expertise as a capacity building adaptation can be done through mutually beneficial partnerships;
5. That promotional activities are effective capacity building adaptations;
6. That flexibility is not limited to individual organizations and can be employed through capacity building partnerships;
7. That an organization's ability to refocus its vision and determine future functions for which it wants to build capacity in time to address changing institutional realities is related to the consistency with which it monitors those arrangements, and;
8. That monitoring institutional arrangements provides a means to recognize where political will and public opinion exist so that organizational capacity can be built.

The final chapter provides the conclusions of this research, including the practical and academic contributions it has made.

CHAPTER SEVEN

CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

Occurrences of revolutionary changes to institutional arrangements have increased in the contemporary world and adaptive capacity refers to an organization's ability to continually adjust to those changes and retain and enhance management functions (Fulmer 2000; Adger and Vincent 2005; Smit and Wandel 2006). Adaptive capacity represents a combination of existing and new management practices that decrease an organization's vulnerability to change. Currently, there is a lack of empirical examples that apply frameworks of adaptive capacity to organizations that have experienced revolutionary changes.

The aim of this research was to develop a framework of adaptive capacity and to apply that framework to organizations that, as reflected in this thesis, have survived revolutionary changes to discover the lessons they provide about adaptive capacity and its constituent parts. To complete this research, a comparative case study was carried out with two conservation authorities, the GRCA and GaRCA.

Revolutionary changes to institutional arrangements affecting the conservation authorities were largely initiated with the 1995 Provincial Economic Statement. This statement resulted in a 70% decrease in provincial funding to the conservation authorities over two years and weakened legislative support for their management functions (Winfield and Jenish 1995; Cooper 1996; Shrubsole *et al.* 1997; O'Connor 2002b). The Provincial Economic Statement also introduced Bill 20 and Bill 26, which removed legal

support for the conservation authorities and removed their abilities to carry out management functions under legislation such as the *Planning Act*.

In response to the Walkerton Tragedy, revolutionary changes further affected the conservation authorities after 2000 and clarified the effects of previous revolutionary changes on water management in Ontario, if not across the country. The framework developed in Chapter Two assists in understanding the conservation authorities' responses.

To apply the framework of adaptive capacity to describe the experience of the conservation authorities, a four-stage research process was undertaken. This process initially involved the development of a framework for adaptive capacity. A methodological map was then created to guide research. Finally, the framework was applied with an examination of the conservation authorities' management activities between 1988 and 2004 using document and interview-based reviews. To complete the examination, NVivo software was applied to the document reviews to provide a content analysis of indications of elements of adaptive capacity related to specific functions or processes. Interviews were conducted to confirm findings of the document review. The following remarks are lessons about adaptive capacity based on an empirical examination using the framework created for this research. These findings add to the literature by providing lessons based on a specific combination of one guiding component and three underlying elements of adaptive capacity.

7.2 Research Findings

7.2.1 Adaptive Capacity and Lessons from the Conservation Authorities

This research has been used to create a framework for investigating adaptive capacity in the context of revolutionary change. Being able to describe how the GRCA and GaRCA survived revolutionary change has confirmed it as an appropriate framework. An examination of the experience of the GRCA and GaRCA provides specific considerations to researchers wishing to examine adaptive capacity and to organizations wishing to implement adaptive capacity in the context of revolutionary changes (see Table 7.1). An explanation of how these specific lessons were arrived at is provided below.

7.2.1.1 Lessons about the Guiding Vision Element of Adaptive Capacity

Strategic planning and specifically the vision statement are considered fundamental and guiding components of the framework that can be used by employees to guide decisions in the context of revolutionary change. Providing specific procedures to reduce an organization's vulnerability by recognizing mitigation measures and adaptations available, strategic planning enables organizations to carry out an ambitious strategy (Gordon 1993; Hunt *et al.* 1997). The vision statement guides employees as to which actions and adaptations are appropriate (Ayers 1996; Miller 1998). Adaptive capacity can not be gained without an understanding of the functions the organization desires as found in the vision statement.

Table 7.1: Considerations for implementing elements of adaptive capacity

| Recommendation for implementing adaptive capacity | Reason for recommendation as found in the examination of the GRCA/GaRCA |
|---|---|
| An understanding of capacity available to the organization can benefit those involved with visioning | Staff, financial and other capacity were required to undertake various visioning activities |
| Having capacity (financial, technical etc.) prior to revolutionary changes will facilitate capacity building adaptations after those changes | Capacity building prior to change clarified where capacity existed and could be revisited after change |
| Lacking capacity will influence the need to implement visioning adaptations | When capacity was lacking, vulnerability to change increased and a focused vision was required to gain that capacity |
| Types of flexibility (organizational, individual) implemented are related to the organization's amount of capacity | The GRCA and GaRCA demonstrated that types of flexibility may be related either to capacity or lack of capacity in various ways |
| Visions are to be written in a manner that gives those in the organization a sense of ownership | When ownership was lacking, visions were not effective |
| Visioning adaptations within partnerships are benefited by having all partners provide input | Partners not involved in visioning also did not have ownership |
| Ensuring monitoring and learning adaptations are transparent can help ensure that changes are realized by stakeholders | Without transparency, vulnerability to change was not realized by stakeholders |
| Visioning adaptations can be an effective way to gain functions | Both organizations gained functions for source water protection after revolutionary change with visioning |
| The extent to which visioning and capacity building adaptations are facilitated by partnerships is related to how beneficial members determine those partnerships to be | Functions and resources were gained through mutually beneficial partnerships and lost through ineffective partnerships |
| Resource sharing partnerships are a capacity building option for organizations with the flexibility to enter such partnerships | This was seen particularly with the GaRCA and the TCC |
| Promotional activities are effective capacity building adaptations | Both conservation authorities promoted their organizations after revolutionary change |
| Revolutionary change may force flexibility | Both organizations lost staff, but neither functions, by providing flexibility |
| Results of constant monitoring is more available to stakeholders when it is documented | When not documented, as in CHR, partners considered program complete |
| Outsiders to the organization can aid monitoring as they provide fresh perspectives | Consultants forced staff to consider possibilities such as total loss of funding |
| The ability to refocus vision in time to address changing institutional realities is related to the consistency with which those arrangements are monitored | Conservation authorities demonstrate this with their quick application of functions related to source water after 2000 |

A lesson that emerged several times in this research was that the creation of a vision statement is heavily influenced by the extent of resources, or capacity, available to that organization. Adaptive capacity has specifically been called “a vector of resources and assets that represent the asset base from which adaptation actions and investments can be made” (Adger and Vincent 2005, 400). With relatively more staff, technical and financial resources (see Table 3.1 and Figure 5.1), the GRCA confirmed this lesson when it was able to start visioning activities for the CHR as early as the late 1980s. The smaller GaRCA did not have the same capacity to start visioning activities until guidance was provided by the ACAO and its initial *Conservation Strategy* (ACAO 1992a). In this research, it was also observed that after revolutionary changes, having capacity is a determining factor in being able to resume visioning adaptations. While the GRCA was able to initiate visioning only three years after revolutionary changes (see Figure 4.1), the smaller GaRCA was more vulnerable to change and unable to implement visioning again until institutional arrangements supported the conservation authorities after the Walkerton Inquiry (see Figure 4.2).

A second lesson of visioning that relates to capacity is that the extent that visioning adaptations are implemented in response to revolutionary changes is directly related to how vulnerable the organization is to those changes. The importance of this lesson is stressed here, as it is a relatively common lesson in the adaptive capacity literature (Alberim *et al.* 2006; Wall and Marzall 2006). In Chapter Five, this lesson was demonstrated when the GRCA, which had greater financial resources than the GaRCA (see Figure 5.1), was able to mitigate external financial changes through existing resources such as reserves (GRCA Financial Statements). The GaRCA, which was more

vulnerable to financial changes, had to cut 50% of its staff and decrease municipal levies to retain the support of municipalities. Both lessons regarding the interrelationship between visioning and capacity building are based on the fact that those with less capacity are more vulnerable to change.

The next two related lessons of adaptive capacity pertain to those involved in the visioning processes. This research revealed that the vision statement was given greater consideration when it was written in a manner that bestows those within the organization with a feeling of ownership of that vision. Again, this is not a new concept to strategic planning literature. Ayers (1996, 21) explains how strategic visioning provides ownership to all employees as "differences between various interests give way to a single community vision." However, it is the importance of this ownership as a means to gain adaptive capacity in the future that is novel to this research. When the GRCA lost ownership of the CHR vision, by assigning its development to the Heritage Resource Centre at the University of Waterloo, it referred to it less frequently shortly afterwards (see Figure 4.1). Ironically, the smaller GaRCA, which did not have the capacity to carry out its own visioning, hired a consultant in 1991 and references to visioning increased as staff remained involved with final decisions (see Figure 4.2).

Not only does a feeling of ownership increase reference to vision within an organization, but the GRCA and GaRCA experiences also illustrate that the writing of visions for partnership arrangements also benefited from the input of all partners. The GRCA's Board, representing the municipal partners, was not involved in the decision-making process regarding levy decreases and approved a cut of 15%, largely because board members were not aware of how vulnerable that cut would make the organization.

Taking a different approach, the GaRCA had long discussions with its municipal partners and was able to retain its levy with the Region of Durham, even after offering a 25% decrease.

A lesson exhibited by the GRCA and GaRCA during evolutionary and revolutionary changes is that visioning for alternative programs or functions, such as was done with the application of the Rural Beaches Strategy and CURB program prior to 1990 at the GRCA, is an effective way to gain functions. Using visions to determine where alternative functions may be gained is a consideration in strategic planning literature (Hunt *et al.* 1997; Miller 1998). However, if applying for new functions, the GRCA and GaRCA's experience suggests that organizations might benefit by considering the above lesson that visioning adaptations are somewhat determined by existing capacity. An organization would be ineffective at undertaking new functions without the capacity to do so, if one considers capacity to represent:

the overall ability of the individual or group to actually perform the responsibilities. It depends not only on the capabilities of the people but also on the overall size of the tasks, the resources which are needed to perform them and the framework within which they are discharged (Franks 1999, 52).

The GaRCA provides an example of how the above lessons interrelate when it was able to retain the TCC partnership by not applying to any significant programs after revolutionary changes until it had the institutional support, and therefore capacity, to carry out additional functions such as those for source water protection. Both conservation authorities recognized a changing planning environment in Ontario after the Walkerton Tragedy and were successful in gaining functions by applying their visions, or creating new visions, for source water protection.

A final lesson regarding visioning again relates to capacity building, that partnerships considered beneficial by all members are an effective visioning activity to retain management functions after revolutionary changes. Partnerships have been promoted in the literature on capacity building for over ten years (Biswas 1996; Litke and Day 1998) and adaptive capacity for some time (Staber and Sydow 2002). The novel element found in this research is that it is the retention of functions in the long term, even if a short-term loss of capacity is necessary, that represents capacity building necessary for adaptive capacity. After financial cuts in the mid-1990s, both conservation authorities undertook visioning activities and determined that it was advantageous to retain positive partnerships with the municipalities while cutting their own funding from those partners (see Figure 5.3 and Figure 5.4). A reactionary response that the conservation authorities could have initiated to retain financial sustainability but lose supportive partnerships would have been to increase the municipal levy. However, by retaining supportive partnerships throughout revolutionary changes, both the GRCA and GaRCA have realized support from the municipalities for functions such as source water protection and were able to increase their levies by 1999/2000 and each year since without conflict (see Figure 5.3 and Figure 5.4).

From this research, vision can be identified as a significant element of adaptive capacity, since it is the guiding element and references to it begin in the early planning stages, prior to any work occurring. Second to vision is the fundamental element of capacity building.

7.2.1.2 *Lessons from the Foundational Element of Capacity Building*

This research has confirmed that capacity building remains the fundamental element necessary for achieving adaptive capacity. Without capacity, adaptive capacity can not exist. Capacity building refers to the methods used by an organization to retain or increase its abilities to undertake desired functions (Lockie *et al.* 2002; Adger and Vincent 2005). Desired functions refer to those that are mandated or encompassed within an organization's vision. Evidence of capacity building was provided by an organization retaining the ability to carry out desired management functions during and after changes to institutional arrangements.

In all of the chapters that examined the conservation authorities, a lesson of capacity building was that partnerships are an effective means of capacity building in response to revolutionary change if they are considered beneficial by all partners. Partnerships can decrease vulnerability to changing institutional arrangements by combining and sharing capacity building resources such as staff expertise (Jacobs 2004). The visions of both the GRCA and GaRCA focused on such partnerships after revolutionary change, as seen in Chapter Four, in the *Joint Work Plan* of the GRCA (GRCA 1997) and the *Business Plan* of the GaRCA (GaRCA 1996). It was further shown in Chapter Five, that even in the context of drastic financial cuts, the GRCA and GaRCA actually decreased municipal levies and their own financial capacity, to maintain positive discourse within these partnerships and ensure long-range capacity through partnership support.

Though both conservation authorities in the above example surrendered short-term capacity to retain partnerships, strategic planning literature recognizes that the

vision should be broad and focused on long-range goals (Gordon 1993; Ayers 1996). As the long-range goals of both conservation authorities included partnerships, these actions remained as capacity building adaptations based on visioning and the future. Millar (1998, 40-41) explains how a vision "describes aspirations for the future, without specifying the means that will be used to achieve those desired ends." Eventually, reference to capacity building did increase in 2001 (see Figure 5.9 and Figure 5.10). These increases occurred when the GRCA Board, made up of municipal representatives, recommended higher levy increases than the 9% suggested by staff, and the GaRCA Board approved an 18.9% levy increase.

Partnerships that were considered beneficial by all members were also used by both conservation authorities as effective capacity building adaptations after the Walkerton Tragedy. In Chapter Six, it was described how both the GRCA and GaRCA gained financial resources from municipal and provincial partners for functions related to source water after 2000 through the RWQP and TCC, respectively. Eventually, all conservation authorities in southwestern Ontario would become involved in Source Water Protection Committees based on their watershed boundaries, their capacity to undertake water quality functions and their strong working relationships within the province (O'Connor 2002b). The members of the TCC were even able to convince the MOE to alter original boundaries to make their partnership region a Source Water Protection Region.

Related to the above lesson, this research reveals that the effectiveness of partnerships is related to how beneficial partners find agreements for their own organizations. Even in literature that promotes partnerships as a means of building

capacity, authors have warned that partnerships can be counterproductive. Whyatt (2004, 350), explains how "the ideal set of partnership relationships requires a sharing of decision-making and a balance of power, between the stakeholder groups." Both the GRCA and GaRCA created what appeared to be mutually beneficial partnerships with the Heritage Working Group and Citizens Writing Committee, respectively, after revolutionary changes. In both instances however, the conservation authorities had delegated a lot of decision-making authority to external stakeholders. As a result, the GRCA and GaRCA's vulnerability increased when decisions were made that were not in their best interests.

Partnerships were not the only means of capacity building reviewed in this research. Within a larger institutional context, a lesson displayed by the GRCA and GaRCA is that undertaking promotional activities can be an effective capacity building adaptation in response to changes by increasing awareness of the organization. Promotional activities have traditionally been considered an important element of capacity building (Grindle and Hilderbrand 1995; Biswas 1996). What was surprising in this research was that the size and capacity of the organization did not appear to have a significant effect on the ability of the organization to demonstrate reference to capacity building adaptations through promotion. This is not to say that the size and capacity of the organization did not affect the type of promotional activity, but to say that promotional activities are available regardless of resources. For example, while the GRCA was able to invite Justice O'Connor for a tour of the organization, which led to its involvement in the Walkerton Inquiry, the smaller GaRCA was able to organize a symposium at Trent University to educate those in the watershed about the GaRCA's

groundwater monitoring activities. In both cases, references to capacity building increased as stakeholders were made aware of the organization's functions.

It was also determined through this research that having capacity not only facilitates visioning adaptations after revolutionary change, but also assists capacity building after those changes. While a lesson very similar to this is provided in the visioning section, it is reiterated here through water management fees. While the GRCA had the staff and technical resources and therefore capacity to provide quality comments to municipalities for planning applications, the GaRCA did not have the high level of development in its watershed to justify these resources. When funds for these non-core functions were removed, the GaRCA did not have the technological or staff capacity to carry out commenting functions sufficient to justify increases in fees and resulting financial capacity. It is not a new idea that having capacity makes an organization less vulnerable to change and requires less capacity building (Smit and Wandel 2006). However, if vision determines the functions for which capacity is required, and the amount of capacity an organization has prior to revolutionary changes determines its ability to implement visioning and capacity building adaptations after revolutionary changes, then it must be reiterated that capacity building remains the fundamental element of adaptive capacity. In all chapters of this research that examined the conservation authorities, when references to capacity building declined, references to other elements of adaptive capacity often also declined (see Figure 4.1, Figure 4.2, Figure 5.9, Figure 5.10, Figure 6.1 and Figure 6.2).

Capacity building is not new to water management, but with the advent of increasing revolutionary changes, flexibility, and monitoring and learning as a proxy indicator of resilience are also considered necessary elements of adaptive capacity.

7.2.1.3 Lessons of Flexibility

Flexibility, as found in flexible management, is the second underlying element of adaptive capacity and is defined as the ability of a system or organization to effectively cope with change by accepting and embracing it (Hatun and Pettigrew 2004; Young *et al.* 2006). Strategic flexibility allows individuals within an organization, or organizations within a partnership, to make decisions in a timely manner and without formal approval during times of revolutionary changes in order to decrease vulnerability to those changes (Volberda 1996; Hatun and Pettigrew 2004). This element of adaptive capacity is the most difficult to examine or implement since it is rarely specifically applied to planning processes, it does not involve formal approval, and often there is no documentation of its use.

A significant lesson learned about flexibility in this research is that the type of flexibility to be implemented is intrinsically tied to the amount of capacity an organization has. Literature to date has most often focused on the extent of change experienced by an organization or society as the determining factor of flexibility (Volberda 1996; Volberda 1997; Hatun and Pettigrew 2004). It is argued in this research that the amount of capacity an organization has, either high or low, is as important a factor in determining what type of flexibility is implemented. In Chapter Four, the GRCA demonstrated organizational flexibility through its application as a CHR in the

late 1980s since it had the technical expertise, staff resources and financial capacity to undertake administrative actions for planning functions not mandated. The smaller GaRCA did not provide significant evidence of flexibility until revolutionary changes made it necessary for individual flexibility to allow staff to make decisions when their numbers were cut by 50% (see Figure 4.2). Having capacity allowed the GRCA to implement organizational flexibility towards alternative functions, but it was the removal of financial and staff capacity that forced the GaRCA to allow individual flexibility.

While the type of flexibility that should be implemented is intrinsically tied to the amount of capacity an organization has, the GaRCA example above also demonstrates that revolutionary changes can force an organization to provide flexibility to individuals. Forced flexibility was experienced at both conservation authorities. One example of this flexibility at both organizations occurred when some commenting functions were no longer brought to the board of directors for approval after some managers had been released. At the GaRCA, funding cuts in 1995 required that it let 50% of its staff go, forcing remaining staff to undertake numerous functions (L. Laliberte, interview, July 16, 2007). In the GRCA, the removal of an entire level of administrative directors essentially leveled the organizational structure, though the percentage of employees terminated was far lower than at the GaRCA (R. Beaumont, interview, July 20, 2007). At the GRCA, advisory boards were also removed, the assistant general manager position was discontinued, and other director positions were eliminated. As a result of the above actions, flexibility provided to individuals increased out of necessity at both the GRCA and GaRCA (see Figure 4.1 and Figure 4.2). At both the GRCA and GaRCA, while

numerous employees were let go, the allowance of flexible decision making meant that no functions mandated or found in visions were lost at either organization.

It was also revealed in this research that organizations without the capacity to adapt to change, but with organizational flexibility, are able to enter innovative partnerships to share resources and gain capacity. The GaRCA demonstrated this organizational flexibility during revolutionary changes with the TCC. Through this partnership, allowable under the conservation authority's flexible mandate, TCC members were able to demonstrate that they had the combined resources to be involved with non-core programs, including the CURB program and the GMN, and eventually became a Source Water Protection Region. This lesson was also apparent at the GRCA. Both the TCC and CHR provide references to strategic flexibility by allowing partners to make management decisions, within the partnership, without formal approval by a central board or committee. While such actions demonstrate flexibility, they also illustrate why flexibility is difficult to examine since decisions that do not require approval may not be documented.

An example related to the interrelationship of flexibility and capacity building reveals how supportive partnerships can facilitate flexible decisions, which increase capacity. After revolutionary changes, a Memorandum of Agreement was entered into between the GaRCA and the Region of Durham. This innovative agreement maintained the Region of Durham's municipal levy, rather than decreasing it by 25%, and placed those funds in a reserve to be used exclusively within the Region. In this case, it was the broad mandate of the conservation authorities that allowed the GaRCA to enter into, without centralized approval, a financial capacity building arrangement with its

municipal partner. Without a mandate that provided the flexibility to make this decision, the GaRCA may have lost a further \$36,235 in 1996 while attempting to gain official approval.

Throughout this research, flexibility has been the element most difficult to examine since decisions made as a result of flexibility are often not documented. Although flexibility is difficult to examine, it remains a necessary element in the context of revolutionary changes to allow decisions to be made in a timely manner so that they may quickly decrease an organization's vulnerability to change. The final element of adaptive capacity is the process of monitoring and learning as a proxy indicator of resilience.

7.2.1.4 Lessons of Monitoring and Learning

Resilience refers to the ability of a system or organization to absorb change and still persist (Holling 1973; Holling 1978; Folke 2006; Janssen *et al.* 2006). A key element of resilience is the process of monitoring and learning about external institutional arrangements to ensure that actions to mitigate change occur in a timely manner so that the organization is able to persist (Holling 1986; Gunderson and Holling 2002; Redman and Kenzig 2003; Redman 2005; Gallopín 2006). Unlike flexibility, references to monitoring and learning in the document review were more significant as reviews often require documented reports.

While not new, it is worth reiterating the lesson common to much resilience literature that monitoring must be documented (Cumming *et al.* 2005). While constant monitoring may be undertaken informally by those within an organization, lessons

learned from that monitoring will be available to stakeholders only if the monitoring is documented and communicated. Such documentation, even if in the form of simple updates, supports organizational identity with the transmission of new information to stakeholders. Describing the resilience of human societies, Redman and Kenzig (2005, 22) explain how the “transmission of information about society or its environment is an excellent medium for communicating an ideology or viewpoint about the phenomena in question that embodies both an “objective” reality and a reality “constructed” by the sender.” In other words, if organizations want stakeholders to understand how institutional arrangements are changing, how they are affecting the organization and how they may affect goals and visioning activities, then access to reviews are the means by which that information is provided.

The GRCA's *Grand Strategy* is an example of the regular communication of information not being done effectively. It is ironic that reviews carried out under the *Grand Strategy* were not communicated, because it was written as a “living document,” to be updated regularly so that “as the process develops, new editions [would] be produced at critical stages determined by participants” (GRCA 1994, viii). As a “living document,” monitoring and learning were to occur constantly among stakeholders. However, with no formal reviews mandated, the *Grand Strategy* was not formally revisited for ten years, when a review was required to retain the CHR designation.

Initial vulnerability to changing institutional arrangements also plays a role in monitoring and learning. Unlike the GRCA, which had much greater financial, technical and staff capacity (see Table 3.1 and Figure 5.2), the GaRCA was more vulnerable to change, and as such, ensured that its *Conservation Strategy* contained traditional five-

year reviews to guarantee that changes were recognized. However, being vulnerable to even slight changes in institutional arrangements, the GaRCA continually discussed its *Conservation Strategy* in relation to external realities. As a result, there are more references to monitoring and learning by addressing change in relation to planning at the GaRCA (see Figure 4.2) than at the GRCA (see Figure 4.1) during the early 1990s.

The GRCA and GaRCA experience also demonstrates that monitoring efforts, even when documented, are more appreciated by stakeholders when they are transparent. The best comparative example of how transparency in monitoring activities relates to stakeholder understanding is provided by the GRCA and GaRCA reviews of budget forecasts with their municipal partners after revolutionary change. To maintain positive relationships with municipalities, both the GRCA and GaRCA began to decrease general municipal levies after revolutionary change (see Figure 5.3 and Figure 5.4). Through visioning exercises, the GRCA determined the effects of decreasing general municipal levies by an additional 5% and 15% after revolutionary changes (GRCA, February 13, 1996). Members of the GRCA Board, mostly municipal representatives, were not included in these visioning processes and preceded with the 15%, or \$3,444,000 levy, reduction. Since board members were not included in or updated on reviews regarding the changing financial arrangements, they did not appreciate the effects of such a cut. Since the 15% option was presented, the board understood that it was a viable option for the GRCA and one that made the most sense for the municipalities.

Unlike the GRCA, the GaRCA carried out budget forecasts that made municipalities aware of how vulnerable it was to changing financial arrangements. The GaRCA even met with the Region of Durham to discuss how the Region of Durham was

going to decrease levies by 25%. The Region of Durham, realizing the effect that this reduction would have on the GaRCA's ability to operate, agreed to only freeze the levy amount, providing that the additional funds were spent in the Region. While this example of an agreement was provided in reference to flexibility in Chapter Five, it also demonstrates the benefits of making available monitoring and learning adaptations, such as financial reviews, available and transparent to stakeholders.

A lesson related to who should be involved in monitoring and learning adaptations is illustrated with the GRCA in Chapter Five and involves the benefits of including people external to the organization who bring suggestions or inspiration without the bias of being an employee of the organization. This is not to say that radical and inspirational ideas do not come from effective leaders within the organization, but to say that there are times when external opinion can be constructive. The GRCA demonstrated this lesson with the hiring of Mr. Alan Foster as a consultant to review strategic planning and institutional arrangements. Mr. Foster's effectiveness as a consultant was described as such:

because he thought he knew what we needed to do, he just teased it out of us. And, basically said to [the General Manager] that these guys have jobs to do, and this is what they're going to do, and your job is to clear the path for them, so there was a significant amount of empowerment (G. Sousa, interview, July 10, 2007).

Mr. Foster forced those at the GRCA to imagine how they would manage if all provincial funding ceased. At the time, staff at the GRCA had not considered such a drastic financial change since until that point, the conservation authorities had experienced supportive institutional arrangements in Ontario (Hale 1988; Mitchell and Shrubsole 1992) (see Table 2.1, Table 4.1 and Figure 2.4). Revolutionary changes would

soon remove 70% of the GRCA's funding in two years, a contingency that the staff of the GRCA had recently prepared for as a result of Mr. Foster's advice.

The above lessons of monitoring and learning focus on reviewing current functions or planning practices in relation to changing institutional arrangements. A final lesson presented in this research is that the ability to refocus vision in time to address changing institutional realities is related to the consistency with which those arrangements are monitored. This lesson is very similar to the visioning lesson – that visioning for alternative programs is a beneficial way to gain functions. Even if this lesson is similar, it is worth repeating since it demonstrates the interrelationship between monitoring and learning, and visioning. Monitoring can affect visioning because it allows an organization to recognize changing institutional arrangements and raises the question of whether the organization's "identity can be maintained through times of flux" (Cummings *et al.* 2003, 978). Chapter Six demonstrates how timely monitoring was done by the conservation authorities that quickly recognized that source water protection was to become the focus of Ontario's planning environment.

Recognizing this change, both the GRCA and GaRCA refocused their planning activities to those source water functions that were becoming dominant in political will and public opinion. Clearly, visioning must occur not only in respect to an organization's existing capacity, but also in the context of new realities.

Both the GRCA and GaRCA have implemented monitoring and learning adaptations. While not more important than flexibility adaptations, references of resiliency adaptations were much easier to examine as a result of their documentation.

The next section of this chapter provides a brief review of the scholarly and practical contributions of this research.

7.3 Research Contributions and Opportunities

7.3.1 Scholarly Contributions and Opportunities

The most significant scholarly contribution of this research is the creation of a framework of adaptive capacity targeted at organizations experiencing revolutionary change to their institutional arrangements. To date, the majority of adaptive capacity literature in resource management has focused on climate change and the ability of specific populations to respond. Few frameworks have considered revolutionary changes to institutional arrangements and no frameworks have been based on the elements of vision, capacity building, flexibility, and monitoring and learning as a proxy indicator of resilience. Having created a framework of adaptive capacity based on underlying elements, this research was then used to test that framework by describing how two organizations with unique situations, the GRCA and GaRCA, survived revolutionary changes. As more than 85% of the references to change found over a 17 year period were associated with one of the underlying elements, the framework is determined to be representative of adaptive capacity.

This research has also advanced the literature on strategic planning, capacity building, flexibility, monitoring and learning, and adaptive capacity. More specifically, this thesis contributes to an understanding of how aspects of these concepts interrelate (see Table 7.1) Understanding these interrelationships is becoming increasingly relevant as change continues to occur at escalating rates and magnitudes. In a special edition of

Global Environmental Change organized by the International Human Dimensions

Programme on Global Environmental Change in 2006 it was concluded that many these terms are used interchangeably and that they must be identified and considered in a multi-dimensional manner that will facilitate an understanding of various changes, across scales and among complex social and natural dimensions. The framework created for this thesis addresses these concerns and identifies how concepts that are often confused are separate, and adds to the literature by explaining how those same concepts may be applied to investigate adaptive capacity.

A number of scholarly opportunities have also arisen from this research. For example, there is an opportunity to apply the framework to describe various organizations facing a range of revolutionary changes. Future investigations could apply the framework to organizations outside of resource management, such as health care in Ontario, or to those experiencing the effects of a variety of revolutionary changes including drastic changes in political power (e.g. the fall of communism or sudden change in power as a result of a military coup), social effects of a tragic event (e.g. terrorist attacks) or the creation of alternative political bodies (e.g. the European Union).

A final scholarly opportunity that arose while completing the writing of this thesis is the potential to use the framework to describe the experience of organizations that did not survive revolutionary changes. This would address concerns mentioned in Chapter Three that the research was based on circular logic. Such an investigation could be used to reveal if the framework remains applicable to explain why an organization did not survive and/or provide suggestions on how changes could have been better addressed.

7.3.2 Practical Contributions and Opportunities

Findings in this research also provide practical contributions and opportunities to those in the planning environment. This thesis represents the first time a review of the conservation authorities' experiences has been undertaken to demonstrate the lessons they provide about the interrelationships of the elements of adaptive capacity and how others organizations can manage revolutionary change. By describing the experiences of the GRCA and GaRCA, as illustrative of the continuum of statistics that exists among all conservation authorities, other conservation authorities may be able to apply the lessons learned to better prepare for revolutionary change.

Not only does this research provide lessons about how adaptive capacity can be realized, but it also provides examples of how those lessons have been utilized. It is hoped that this framework aids other organizations from a range of fields and facing a variety of revolutionary changes. However, and as mentioned above, future research may be required prior to determining the framework as applicable to certain circumstances.

7.4 Chapter Summary

Undertaking this research has established that revolutionary changes are increasingly common in contemporary contexts and that adaptive capacity is a beneficial management strategy to consider in relation to the planning environment. No specific formula exists for adaptive capacity as organizations exist in different political, legal, financial and socio-cultural arrangements. Such a lack of consistency suggests the benefits of relating studies and applications of adaptive capacity to specific theoretical concepts. Based on the study carried out on the conservation authorities, it is determined

in this research that capacity building, flexibility, and monitoring and learning as a proxy indicator of resilience are adequate concepts, when guided by vision, to represent adaptive capacity. Further study is required to ensure that such a framework of adaptive capacity is sufficient. Organizations attempting to increase their adaptive capacity may then apply the framework.

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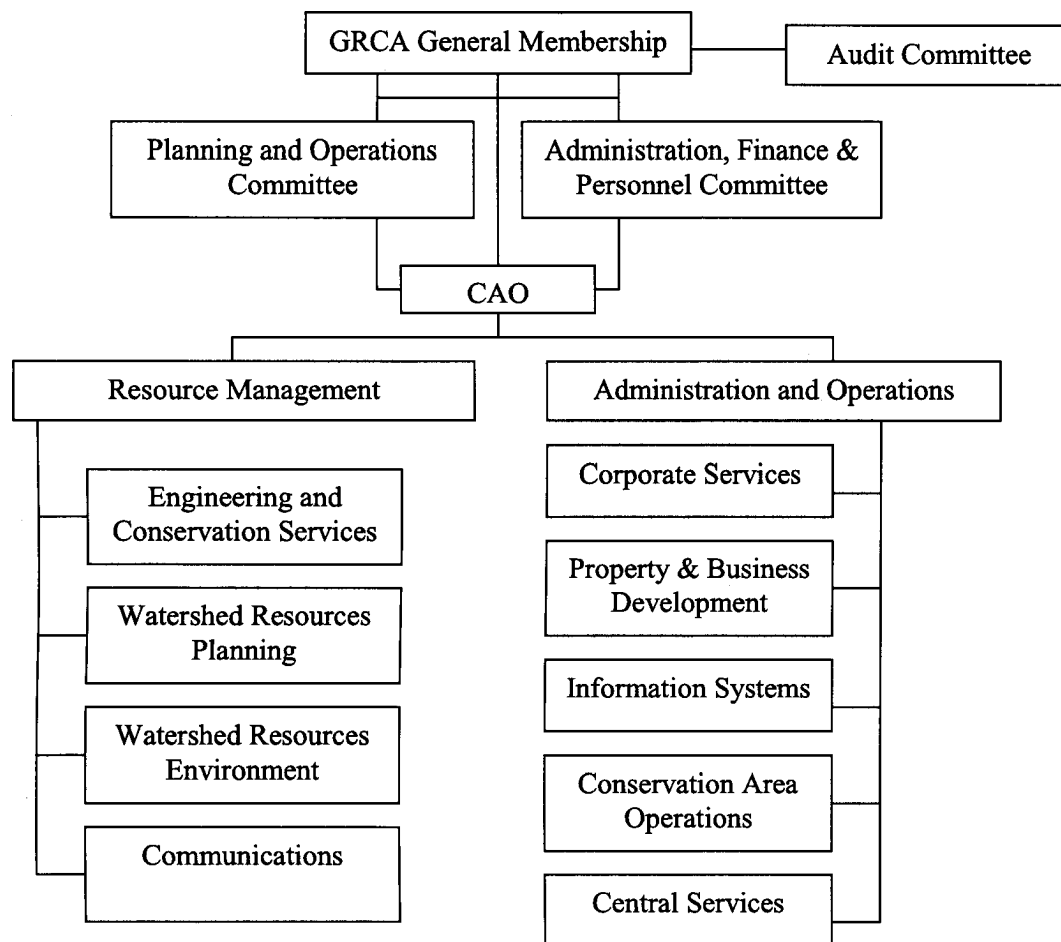
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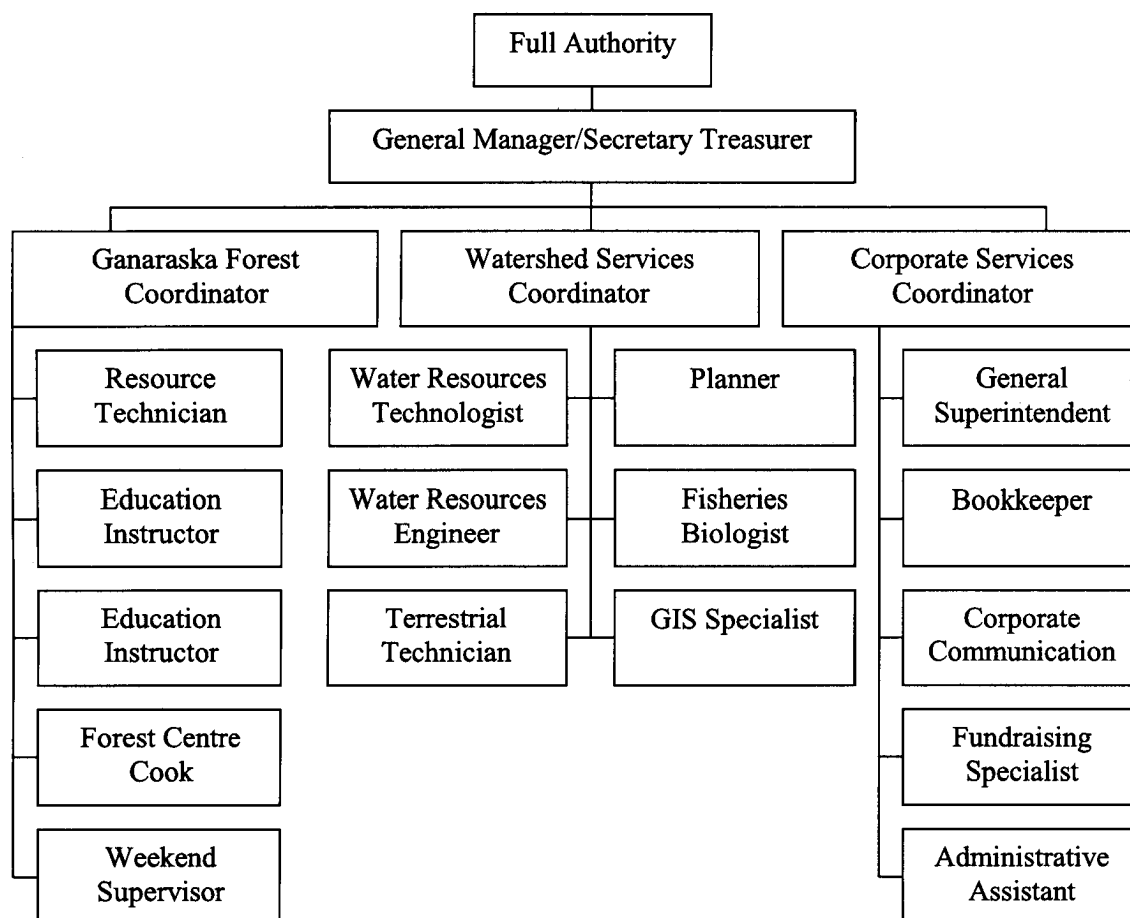
Appendix 1: Organizational Structures of the GRCA and GaRCA in 2000

GRCA Organizational Structure



Source: Adapted from Grand River Conservation Foundation 2000, 8

GaRCA Organizational Structure



Source: Adapted from Ganaraska Region Conservation Authority 1999, 13

Appendix 2: Examples of Second Tier Nodes Representative of Primary Nodes

| Primary Node | Actions Representative of Primary Nodes (Second Tier Nodes) |
|-------------------------|---|
| Vision | Discussions at board meetings related to the roles and functions that should be considered core to the organization |
| | Reports that discuss what the organization should be doing to address future realities |
| | Public information sessions (such as open houses) aimed at gathering information of what stakeholders believe the organization should be doing |
| | Any form of survey that addresses opinions of how/what the organization does/should do |
| | Other activities that help create vision statements or clarifies the roles and functions the organization has determined fundamental to their operation |
| Capacity Building | Discussion or reports based on promoting and/or marketing the organization or their activities |
| | Discussions or reports which address partnerships which allow for the sharing of resources |
| | Structural reorganization done to address changing institutional arrangements |
| | Decisions made to increase resources (financial, technical, staff etc.) |
| | Other activities that help determine what actions will help the organization successfully address their roles and functions |
| Monitoring and Learning | Formal review processes such as five year monitoring reports of strategic plans or financial statements |
| | Discussion of changing institutional arrangements that describes the need to address such changes |
| | Written reviews that provide responses to changing institutional arrangements |
| | Discussion or reports that discuss actions taken by the organization in response to change, and how those decisions could be improved |
| | Other activities involved with the review of, and learning from, changing institutional arrangements |
| Flexibility | Decisions made to address change without formal approval |
| | Recognition of employees at board meetings for decisions made to address change |
| | Organizational or individual application to funding/programs that are outside those traditional provided or mandated |
| | References to discussions regarding alternative programs/partnerships/resources sharing made with those outside the organization |
| | Other activities that increase the ability of those within an organization to effectively cope with change by accepting and adapting to it |

Appendix 3: Introductory Interview Questions

Ralph Beaumont: Manager of Communications

Topic: Overall Management and Marketing

Introduction:

For your interview questions will be general, involving the overall management of the conservation authorities, especially in the mid 1990s as you were heavily involved at that time. However, please feel free to add detail or even topics as we proceed.

1. What was the level of financial, political, legal, even social support prior to the early 1990s, say in the late 1980s?
2. How were the conservation authorities' planning processes different prior to the 1990s then they are today? Again, say in the late 1980s
3. How did the authority review and monitor planning activities prior to the 1990s when compared to contemporary situations?
4. How much flexibility for members to make decisions was there prior to the early 1990s when compared to today? For example, what freedom do board members have to make decisions compared to more centralized organizations, and has this been effective?
5. Were there warnings that the severe legal and political changes that occurred in 1995 with the new Conservative Government going to happen? For example the Burgar and Ballinger Reports or the MNR Expenditure Control Plan.
6. This next question is a very large context question, more of a discussion. In Ontario in the Mid 1990s, what political, financial, legal even social changes had the greatest effect on the conservation authorities' ability to undertake their primary functions? I'm primarily thinking around 1995. The Conservatives took office, MNR finances for the authorities were cut 70%, levies were limited, municipal restructuring occurred, and Bills such as Savings and Restructuring Act and the land Use Protection Act.
7. To what extent were these changes, for example the financial cuts and political changes, beyond that expected by the conservation authority, and how were management practices adapted to retain functions successfully? For example, were these changes unprecedented in scale compared to the years prior to the 1990s?
8. To what extent did being one of the larger authorities, in terms of population, finances, even river, help mitigate those changes?

9. In the mid 1990s there was some staff reduction to manage financial decreases, how did this affect the capacity of the authority to undertake management functions?
10. Was there ever any fear in the mid 1990s that the conservation authorities would be, or there were attempts to, be eliminated?
11. Since events such as Walkerton, or consideration of such things as ORM and the Greenway, has the conservation authority considered their vision as based more on a provincial scale, more than perhaps the watershed scale, or is this a separate consideration?

Paul Emerson: Chief Administrative Officer

Topic: Overall Management and Marketing

Introduction:

Questions I have for you involve general management issues. However, please feel free to add detail or even topics as we proceed.

1. This first question is a very large context question, more of a discussion. In Ontario in the Mid 1990s, what political, financial, legal even social changes had the greatest effect on the conservation authorities' ability to undertake their primary functions? I'm primarily thinking around 1995. The Conservatives took office, MNR finances for the authorities were cut 70%, levies were limited, municipal restructuring occurred, and Bills such as Savings and Restructuring Act and the land Use Protection Act.
2. To what extent were these changes, such as the financial cuts and political changes, beyond that expected by the conservation authority? For example, were these changes unprecedented in scale compared to the years prior to the 1990s?
3. In particular, how did municipal restructuring moves in the mid 1990s affect the ability of the conservation authorities to undertake management activities? Thinking here of such things as the Sewell Report, the Commission and the Planning and Development Reform etc.
4. Were changes such as the funding cuts and municipal restructuring in the mid 1990s manageable by the conservation authority?
5. How did the conservation authority adapt management practices to regain the capacity to undertake management functions following such drastic changes?
6. To what extent did being one of the larger authorities, in terms of population, finances, even watershed size, help mitigate those changes?

7. In the mid 1990s staff reduction occurred after funding cuts etc. How did this affect the capacity of the authority to undertake management functions?
8. Was there ever any fear in the mid 1990s that there would be attempts to eliminate the conservation authorities?
9. How, and to what extent, are individual conservation authority members able to make management decisions? For example, when they are needed quickly, or prior to a conservation authority meeting.
10. How are planning and management activities, in general, reviewed and monitored for the need to change? For example, how often, and what is the process?
11. Given recent issues, such as Walkerton, or the ORM, has the vision of the of the conservation authority been focused more provincially, that is, beyond the watershed.
12. What was the level of financial, political, legal, even social support prior to the early 1990s? E.g. a few years before the Conservatives took power?
13. How were the conservation authorities planning processes different prior to the 1990s then they are today?
14. How were authority plans monitored and reviewed prior to the early 1990s?
15. How much flexibility did members have to make decisions prior to the early 1990s?
16. Were there warnings that such severe legal and political changes that occurred in the early to mid 90's going to happen prior to, say, 1992? For example the Bugar and Ballinger Reports or the MNR Expenditure Control Plan.

Lorrie Minshall: Source Protection Programming Director

Topic: Source Water Protection

Introduction:

For your interview questions will generally involve Source Water Protection. However, please feel free to add detail or even topics as we proceed.

1. In hindsight, should the 1989 NDMA issue in Elmira provide the province a possible warning regarding the need to protect source water protection, and was much done at that time? Considering here in the few years immediately following it, say before 1995 when the conservatives came to power.

2. How effective was the Clean Up Rural Beaches, or other related water quality programs such as the Rural Water Quality Program, at preparing the conservation authorities for source water protection measures? For example, with monitoring issues, or with flexible actions that could be taken in the face of problems?
3. What were the political, legal, financial, and social considerations for source water protection in Ontario prior to the Walkerton Tragedy? For example, was there consideration for source water protection in particular, or was source water protection considered under differing terms?
4. What actions were taken by the conservation authority immediately following the Walkerton Tragedy before the O'Connor Inquiry was called etc.?
5. How did the GRCA become involved with the O'Connor Inquiry, even though the Walkerton Tragedy occurred outside of the watershed, and what facilitated their receiving separate standing?
6. The O'Connor Reports and subsequent MOE Waters Shed Based Source Protection Advisory Committees strongly promoted the conservation authorities for source water protection activities. How did the conservation authorities promote themselves to these bodies, officially or unofficially, to gain such recognition? For example, how effective was the GRCA's separate standing for the conservation authorities overall?
7. Do you believe that praise for the conservation authorities from the Walkerton Inquiry and MOE reports had much to do with the fact that the authorities had demonstrated their ability to adapt to political and financial changes? Thinking here of how the conservation authorities by 2000 had recovered from the 1995 changes including a 70% cut in MNR funds in two years, numerous municipal restructuring actions, downloading of legal abilities etc.
8. What process was undertaken to form the partnership involved with creation of the source water protection region?
9. How are source water protection plans, e.g. amongst source protection planning regions, monitored and reviewed?
10. How much flexibility is there between the authorities of the source water protection region to initiate source water protection activities without approval of the whole committee?
11. How were planning activities, such as groundwater and water quality plans, amalgamated and adapted to source water protection plans?

12. What led to, or facilitated, the 2003 Memorandum of Understanding for Drinking Water Source Protection Planning Agreement?
13. What is involved with the planning process for that MOU? For example how is it reviewed and monitored, and how flexible is the program?
14. What is your opinion regarding the current development being considered on the Waterloo Moraine in the Clair Hills area?

Keith Murch: Assistant Chief Administrative Officer, Secretary Treasurer
Topic: Financial Responses of the GRCA

Introduction:

For your interview questions will primarily involve financial issues, especially after the mid 1990s as you were heavily involved at that time. However, please feel free to add detail or even topics as we proceed.

1. How was the conservation authorities funding prior to the early 1990s, for example, in the late 1980s?
2. What were the financial effects to the authorities' functions, when funding was reclassified into core and non-core functions in the early 1990s?
3. After 1995 the conservation authorities had their funding re-evaluated from core and non-core, to really only Structural Flood Control and taxes on Environmentally Significant Lands. Again, what were the effects of this, and how did the authorities mitigate that?
4. How drastic was the financial effects of the 1995 provincial economic statement which cut the authorities budgets by 70% in 2 years and introduced Bills 20 and 26, which were the Bills that gave the municipalities the rights to greater effect levies, or even disband the authority?
5. Since financial changes in 1995 have the finances of the authority been planned for with the consideration that such drastic changes may occur again in the future and is that planned for?
6. After the 1995 changes the conservation authority actually lowered the municipal levy, in fact, you lowered it by 15% in 1996. What led to this decision, were there legal issues, or was there a multitude of reasons that led to this decision?
7. What were the financial effects of the loss of capital grants by 1997, and how did the conservation authority mitigate that change?

8. How has alternate source of funding been solicited, or costs cut since the mid 1990s, and what freedoms have been given to staff to effect these actions?
9. Was there ever any fear that the MNR funding to the conservation authorities would eventually be completely removed, or that the authority could face bankruptcy?
10. How was the decision arrived at to again raise the municipal levy, and by what amount, in 1999 after 3 years of it being frozen, and was this considered a risky move?
11. What led to the application of 5 year budget plans, and how flexible are those to allow for change between years?
12. Between 1997 and 2002 the GRCA overcame a \$1million deficit; to what do you primarily attribute this too?
13. What led to the introduction of fees for such things as planning application, was there confrontation with those, and how are they reviewed?
14. In 2004 Conservation Ontario Released the Re-Investment in Ontario's Conservation Authorities. Were you involved with the financial aspects of that document, and what are the key ones? For example, elucidates MNR cuts, demonstrates loss of levy payments that should have been, and looks for Consumer Price Index.

Keith Murch: Coordinator – Policy Planning & Partnerships
Topic: Canadian Heritage River System

Introduction:

For your interview questions will primarily involving the Canadian Heritage River System. However, please feel free to add detail or even topics as we proceed. I am aware that the Canadian Heritage River System may not have played a huge role in management activities, however, it is a unique designation that requires some investigation.

1. What political, financial, legal, or even social issues prompted the initial planning process for application as a CHR?
2. What was involved in that initial planning process?
3. What was the process, and how difficult was it, to amalgamate the numerous management plans involved in the CHR application?

4. What role did the CHR play in developing, or increasing, strategic planning methods with the conservation authority?
5. Did the political, legal and financial changes of the early to mid 1990s have any major effects on the activities involved with the CHR designation? For example, were there funded projects that ended?
6. On the other hand of that, had the strategic planning involved with the CHR process help to mitigate those changes? Basically, do you believe that the application process for the CHR designation helped develop planning practices needed to adapt to the changes that occurred? For example by increasing tourism funds etc.
7. How did the Grand Strategy effect the management and promotion of the GRCA overall? For example, for other management activities carried out by the authority.
8. How is the CHR designation monitored and reviewed both within the conservation authority, and throughout the watershed?
9. What have been the major changes, or findings, with the subsequent review documents, such as the State of the Grand River Watershed, the Joint Work Plan, and especially the Ten Year Review?
10. What is the support by government, private organizations, municipalities, and the public regarding the CHR designation, and has this changed since the late 1980s?
11. The CHR designation is considered a flexible designation in that it is not legislated. How is that flexibility applied to members of the authority? In other words, what freedom do members of the conservation authority have to carry out functions under the CHR label, without formal, or full board, approval?
12. Has the Walkerton Tragedy affected any management aspects of the CHR designation, either in a positive or a negative manner?

Linda Laliberte: CAO/Secretary Treasurer

Topic: Overall Management

Introduction:

For your interview questions will be general, involving the overall management of the authorities especially in the mid 1990s as you were heavily involved at that time. However, please feel free to add detail or even topics as we proceed. Also, some questions I can only ask of members that were here when you were, so there are a number of general topics covered.

1. This first question is a very large context question, more of a discussion. In Ontario in the Mid 1990s, what political, financial, legal even social changes had the greatest effect on the conservation authorities' ability to undertake their primary functions? I'm primarily thinking around 1995. The Conservatives took office, MNR finances for the authorities were cut 70%, levies were limited, municipal restructuring occurred, and Bills such as Savings and Restructuring Act and the land Use Protection Act.
2. To what extent were these changes, for example the financial cuts and political changes, beyond that expected by the conservation authority? For example, were these changes unprecedented in scale compared to the years prior to the 1990s?
3. In particular, how did municipal restructuring moves in the mid 1990s affect the ability of the conservation authorities to undertake management activities? Thinking here of such things as the Sewell Report, the Commission and the Planning and Development Reform, Either in general, or with specific changes.
4. To what extent did being one of the smaller authorities, in terms of population, finances, even river, hinder mitigating those changes?

If I could I now have some questions focusing specifically on funding issues and the conservation authority? Again, these questions are being asked of you because you were involved at this time.

5. What were the effects of funding changes when authorities' were classified as core and non-core in the early 1990s?
6. After 1995 the conservation authorities had their funding re-evaluated from core and non-core, to really only Structural Flood Control and taxes on Environmentally Significant Lands. Again, what were the effects of this, and how did the authorities mitigate that?
7. After the 1995 changes the conservation authority actually lowered the municipal levy, instead of attempting to raise it. What decision process led to this? Were there legal issues, or was there a multitude of reasons that led to this decision?
8. After you had cut the municipal levy in 1996, even with the MNR cuts in funding, what was the feeling when some municipalities asked for even further levy cuts, and what was your response to that?
9. With the financial cuts that occurred in 1995 and shortly after, the conservation authority had to cut 50% of staff, and remove advisory boards. How was the ability of the conservation authority to undertake management functions affected by this, and how was that change mitigated by the authority?

10. What were the financial effects of the loss of capital grants by 1997, and how did the conservation authority mitigate that change?
11. How has alternate source of funding been solicited, or costs cut since the mid 1990s, and what freedoms have been given to staff to effect these actions?
12. Was there ever any fear that the MNR funding to the conservation authorities would eventually be completely removed, or that the authority could face bankruptcy?
13. How was the decision arrived at to raise the municipal levy in 2000, and by what amount, and was this considered a risky move?
14. What led to the application of 5 year budget plans, and how flexible are those to allow for change between years?
15. What led to the introduction of fees for such things as planning application and how are those reviewed?

Person: Pam Lancaster - Stewardship Technician

Topic: Source Water Protection

Introduction:

For your interview questions will generally involve Source Water Protection. However, please feel free to add detail or even topics as we proceed.

1. How effective was the Clean Up Rural Beaches, or other related water quality programs such as the Rural Water Quality Program, at preparing the conservation authorities for source water protection measures? For example, with monitoring issues, or with flexible actions that could be taken in the face of problems?
2. What were the political, legal, financial, and social considerations for source water protection in Ontario prior to the Walkerton Tragedy? For example, was there consideration for source water protection in particular, or was source water protection considered under differing terms?
3. What actions were taken by the conservation authority immediately following the Walkerton Tragedy before the O'Connor Inquiry was called etc.?
4. The O'Connor Reports and subsequent MOE Watershed Based Source Protection Advisory Committees strongly promoted the conservation authorities for source water protection activities. How did the conservation authorities promote themselves to these bodies, officially or unofficially, to gain such recognition?

5. Do you believe that praise for the conservation authorities from the Walkerton Inquiry and MOE reports had much to do with the fact that the authorities had demonstrated their ability to adapt to political and financial changes? Thinking here of how the conservation authorities by 2000 had recovered from the 1995 changes including a 70% cut in MNR funds in two years, numerous municipal restructuring actions, downloading of legal abilities etc.
6. What political, financial, legal, or even social contexts brought about the creation of the Trent Conservation Coalition?
7. How was the vision of the TCC developed amongst those authorities involved?
8. Did previous work by the TCC in issues such as the CURB program and groundwater monitoring facilitate their being delegated source water protection functions?
9. What was the process of applying for the TCC to become the Source Water Protection Region, rather than the original region suggested by the MOE?
10. How are source water protection plans amongst source protection planning regions, monitored and reviewed?
11. How much flexibility is there between the authorities of the source water protection region to initiate source water protection activities without approval of the whole committee, for example?
12. How were planning activities, such as groundwater and water quality plans, amalgamated and adapted to source water protection?

Person: Mark Peacock - Director of Watershed Services

Topic: Overall Management

Introduction:

For your interview questions will be general, involving the overall management of the authorities as you have been involved in numerous aspects. However, please feel free to add detail or even topics as we proceed. Also, some questions I can only ask of members that were here when you were, for example regarding the ORM, so there are a number of general topics covered.

1. What was the level of financial, political, legal, even social support prior to the early 1990s, say in the late 1980s?

2. How were the conservation authorities' planning processes different prior to the 1990s then they are today? Again, say in the late 1980s
3. How did the authority review and monitor planning activities prior to the 1990s when compared to contemporary situations?
4. How much flexibility for members to make decisions was there prior to the early 1990s when compared to today? For example, what freedom do board members have to make decisions compared to more centralized organizations, and has this been effective?
5. Were there warnings that the severe legal and political changes that occurred in 1995 with the new Conservative Government going to happen? For example the Bugar and Ballinger Reports or the MNR Expenditure Control Plan.
6. What contexts led to a provincial focus on the ORM?
7. With many of the initial actions regarding the ORM occurring in the GTA, what process led to the Ganaraska Region considering the ORM as an important management focus? For example, was the GTA concentration an opportunity, even if not in the region?
8. The Ganaraska Region Natural Heritage Study of the ORM was done in 1992, before provincial concentration or funding was available for this region. In fact, provincial funding was denied. What facilitated, and was their debate, about whether to undertake that study?
9. How did the financial, political, and legal changes in the mid 1990s, especially after the Conservative government was elected and municipal restructuring, affect the ability of the conservation authority to effect strategic planning on the ORM?
10. Thinking here of MNR cuts, municipal restructuring, Bill 20 and 26
11. Since events such as Walkerton, or consideration of such things as ORM and the Greenway, has the conservation authority considered their vision as based more on a provincial scale, more than perhaps the watershed scale, or is this a separate consideration?
12. Was there ever any fear in the mid 1990s that the conservation authorities would be, or there were attempts to, be eliminated?

Person: George Sousa - Manager of Resource Science, Infrastructure and Policy
Topic: Strategic Planning Responses

Introduction

For your interview questions will primarily involve strategic planning, especially since the mid 1990s. However, please feel free to add detail or even topics as we proceed.

1. Were there conscious moves towards Strategic Planning with the conservation authorities in the 1990s? Thinking specifically here after 1995 and were planning practices adapted as a result of the political, financial, legal changes that occurred at that time such as the MNR cuts and municipal restructuring.
2. What were the contexts that led to the conservation authority adopting vision and mission statements, and what is the process used to develop vision statements to new strategic plans?
3. Do vision statements provide members of the authority the flexibility to act on management decisions when formal authority is not available? In other words, does a common vision facilitate freedom of actions that may not exist in more formal organizations?
4. What was the goal of the Blueprint for Success, and do you believe that was a beneficial document for the conservation authorities?
5. To what did Conservation Ontario's, then the ACAO's, 1994 Strategic Management Plan effect the management or planning of this conservation authority if at all? For example, did this effect strategic planning and the conservation authority?
6. To what extent did Conservation Ontario's Re-Investment in Ontario Conservation Authorities effect the management or planning of this conservation authority, and how was the GRCA involved in it creation?
7. With issues such as Walkerton and the ORM occurring, has strategic planning with the conservation authority begun to focus on perhaps a larger scale, beyond the traditional watershed?
8. How are strategic plans, such as such things as perhaps source water protection plans, or strategic management plans, monitored and reviewed by the conservation authority?
9. Since the changes that did occur in the mid 1990s, how have planning methods and the conservation authority changed? For example, has planning processes

applied more flexibility in plans, or vigorous monitoring methods of external political and financial realities?

10. Same question regarding how planning has changed since the Walkerton Tragedy?
11. What has the conservation authority done to incorporate the Clean Water Act into their planning activities, and how has that Act changed the political and financial environment under which you manage? I realize this Act is very new.

Person: Greg Wells - Manager Planning and Regulations

Topic: Oak Ridges Moraine Issues

Introduction

For your interview questions will generally involve the ORM. However, please feel free to add detail or even topics as we proceed. Also, you have mentioned to me that you have only been involved in the GRCA since 2000, so context questions regarding the Oak Ridges Moraine are being asked of other members.

1. What led to, or facilitated, the creation of the Conservation Authorities Moraine Coalition in 2000?
2. How does that Coalition operate? For example, how are CAMC plans reviewed and how much flexibility does each authority have to operate under the CAMC label without formal Coalition approval?
3. How did the Walkerton Tragedy, and subsequent provincial focus on source water protection, effect authority management activities on the ORM?
4. Did the CAMC adopt source water protection into their strategic planning, if so, what facilitated this and how was it done?
5. How did the ORM Protection Act effect planning and management regarding the ORM or the Ganaraska Region?
6. What political, financial, legal, even social processes led to the Share the Vision document?
7. Why was the title of this document chosen? For example, was there a concerted effort for the Vision aspect to be included?
8. How did the ORM Conservation Plan effect planning and management regarding the ORM and the Ganaraska Region?

9. This plan has a clear vision of "the continuous band of green rolling hills etc." What process and how much consideration was given to creating this vision? For example, what political or social aspects were considered in developing this vision?
10. How has the ORM Conservation Act, Protection Act, or Share the Vision Document, been integrated into the GRCA or CAMC planning activities?
11. Without Walkerton do you believe that there would have been such a focus by the Province, the public, even the conservation authority, on the ORM?

Person: Magdi Widaatalla - Manager Watershed Services

Topic: Strategic Planning Responses

Introduction:

For your interview questions will primarily involve strategic planning, especially since the mid 1990s. However, please feel free to add detail or even topics as we proceed.

1. Were there conscious moves towards Strategic Planning with the conservation authorities in the 1990s? Thinking specifically here after 1995 and were planning practices adapted as a result of the political, financial, legal changes that occurred at that time such as the MNR cuts and municipal restructuring.
2. What led to the creation of the 1991 Ganaraska Region Conservation Strategy? For example, what political, legal, financial, even social issues.
3. What led to the creation of the 1994 Watershed Management Plan Ganaraska Region Conservation Strategy? For example, what political, legal, financial, even social issues.
4. During the process of writing the 1994 Watershed Plan, the Citizens Writing Team seemed to delay the process by requiring such things as an education program. Do you believe that they perhaps had too much input or involvement in the process?
5. What were the contexts that led to the conservation authority adopting vision and mission statements, either in general or to specific plans, and what is the process used to develop vision statements to new strategic plans?
6. Do vision statements provide members of the authority the flexibility to act on management decisions when formal authority is not available? In other words, does a common vision facilitate freedom of actions by board members greater than may be found in more centralized organizations?

7. To what extent did Conservation Ontario's, or the ACAO's then, 1992 Conservation Strategy (To Take Care of Tomorrow), or 1994 Strategic Management Plan effect the management or planning of this conservation authority?
8. What was the goal of the Blueprint for Success, and do you believe that was a beneficial document for the conservation authorities?
9. To what did Conservation Ontario's Re-Investment in Ontario Conservation Authorities effect the management or planning of this conservation authority, and how was the GRCA involved in its creation?
10. Why was the Integrated Water Management model begun in 2002? Did events, and or available resources as a result of, both Walkerton and on the ORM, have a major influence?
11. Speaking of Walkerton and the ORM, has strategic planning with the conservation authority begun to focus on perhaps a larger scale, beyond the traditional watershed?
12. Since the changes that did occur in the mid 1990s, how have planning methods and the conservation authority changed? For example, has planning processes applied more flexibility in plans, or vigorous monitoring methods of external political and financial realities?
13. Same question regarding how planning has changed since the Walkerton Tragedy?
14. What has the conservation authority done to incorporate the Clean Water Act into their planning activities, and how has that Act changed the political and financial environment under which you manage? I realize this Act is very new.