DEVELOPING A STRATEGY FOR BUILDING SOCIAL CAPITAL AND SUCCESSFUL WATERSHED PLANNING: A CASE STUDY OF THE COQUITLAM RIVER WATERSHED

by

Lisa Zosiak

B.A. (Geography) Simon Fraser University, 1999

RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF RESOURCE MANAGEMENT

In the School of Resource and Environmental Management

Report No. 333

SIMON FRASER UNIVERSITY

June 2003

APPROVAL PAGE

ABSTRACT

Watershed planning is becoming a popular land use approach, largely in the United States, but also in Canada. Many watershed planning practitioners recommend that a representative cross-section of stakeholders be included throughout the planning process. However, getting broad stakeholder support to engage in a process can be challenging, especially when the social capital among stakeholders is low. High levels of participation, communication, cooperation, and trust characterize strong social capital among stakeholders. The Coquitlam River Watershed Society (CRWS), a key stakeholder in the Coquitlam River Watershed (CRW) located in the Cities of Coquitlam and Port Coquitlam, British Columbia, wishes to generate stakeholder support for a watershed planning process.

The main focus of this research involves developing a framework for creating successful watershed partnerships. The framework provides a process for evaluating social capital among key stakeholders and identifying barriers to its growth; working with stakeholders to eliminate the barriers; evaluating precondition criteria of successful watershed planning; and preparing a strategy to advance watershed planning.

This case study reveals that social capital is low and that CRW lacks most of the precondition criteria for successful watershed planning. There appears to be a connection between low social capital and a lack of stakeholder support for a watershed planning process in the basin. These outcomes are incorporated into a recommended strategy for advancing watershed planning in the CRW, which involves using five guiding principles

to plan short, medium, and long-term watershed projects. Further research is needed into the importance of social capital in watershed planning to learn more effective ways to evaluate the potential of a watershed-based planning approach.

To my parents, Alice and Peter Zosiak

Change is inevitable, but it does not have to come at the expense of what citizens and communities value. We can either be victims of change or we can plan for it, shape it and emerge stronger from it. The choice is ours.

Jim Howe, Nature Conservancy

ACKNOWLEDGEMENTS

The journey has been long, but the experience a rewarding one thanks to the many people who helped me along the way. For everyone who has been involved, I am truly thankful.

First, I would like to thank my advisors, Chad Day and Don Alexander for their thoughtful guidance throughout this process. A special thank you goes to Larry Wolfe, my unofficial advisor, for his helpful comments and encouraging words on my work. It has been a pleasure working with all of you.

Next, I would like to thank the CRWS Board for offering this research opportunity to me. Thank you to Mike McPhee and Finbarr Donnelly, the two CRWS Board members who were responsible for overseeing the project. Your combined experience in environmental issues was invaluable and your ideas inspiring. This project was made possible through funding from the Urban Salmon Habitat Program

I am especially appreciative to the people who spared the time for an interview: Don and Norma Gillespie, Rob Knight, Elaine Golds, Mike Nihls, Eunice Hodge, Ian McArthur, Quirien Mulder ten Kate, Maurice Coulter-Boisvert, and Lori Girvan. Your collective insights produced an interesting account of stakeholder relations in the CRW. I would also like to acknowledge the participants in the watershed workshop. Many issues were raised that day and I hope these will inspire more people to act on them.

I would like to make a very special thank you to my parents for their enduring support throughout this entire process. Without your support, I could not have achieved this goal. Henley, my patient furry friend, was also a wonderful comfort to me during long days and nights spent in front of my computer.

Finally, I would like to thank my partner, Dave Palidwor, for his patience and encouragement during the final trying days of this process. Your infectious good nature helped make this time bearable and your insightful comments were a valuable contribution to my work.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

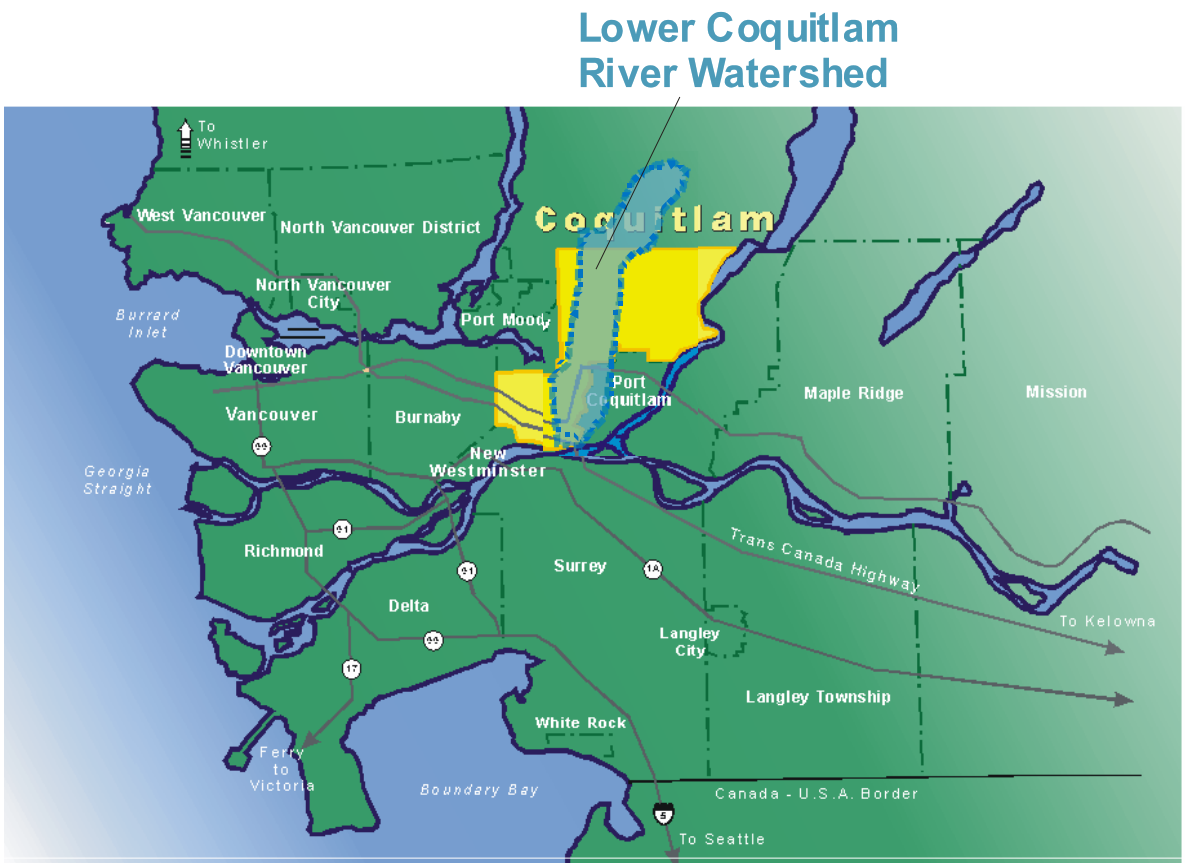
INTRODUCTION

This research has two purposes. It begins by developing a framework for evaluating social capital, which can be used to help create successful watershed partnerships, and to help determine whether precondition criteria for a successful watershed planning process are secured in a given watershed. The second purpose is to test the framework through a case study of stakeholders in the Coquitlam River Watershed (CRW) of British Columbia. Finally, this case study concludes with a strategy for stakeholders in the CRW to work together on building social capital and advancing towards a watershed planning process.

Social capital is generally described as the stock of good relations that a group possesses, and draws upon, to further a common goal or cause (Putnam 1993). It is characterized by high levels of stakeholder participation, communication, cooperation, and trust. These conditions encourage and foster partnership formation as strong partnerships are the foundation of a successful watershed planning process.

The research was conducted through a literature review and a case study of stakeholders in the CRW, utilizing interviews and observation of stakeholders during meetings and a workshop setting. The CRW is an urban watershed located in the northeast sector of the Greater Vancouver Regional District (GVRD) (fig. 1-1).

Figure 1-1 Location Map of Coquitlam River Watershed



Source: (Esovoloff 2002). Used by permission of Mike Esolvoloff, City of Coquitlam

1.1 Overview of Coquitlam River Watershed

The CRW traverses the cities of Coquitlam and Port Coquitlam in its lower reach and discharges into the Fraser River. Numerous human activities benefit from this valuable resource, which places significant pressure on the health of the ecosystem. The watershed is urbanized and has been negatively impacted within the urbanized area by land development and gravel extraction industries. Both Coquitlam and Port Coquitlam continue to face high urban growth rates, potentially leading to further degradation of watershed health.

The Coquitlam River Watershed Society (CRWS) is a key stakeholder in the CRW. The society's primary goal is to work with other CRW stakeholders to identify, protect, and restore natural values in the watershed. Many watershed remediation and protection initiatives are completed, or are underway, but most projects occur in isolation from others. CRWS believes that watershed planning is essential and the benefits of adopting this approach are essential to the long-term sustainability of the ecosystem. Watersheds provide a holistic and effective planning boundary because they expose cause and effect relationships of human activities on ecosystems.

1.2 Outline

This research adopts a variety of metrics in an effort to develop a framework for evaluating the level of social capital resources among stakeholders and creating successful watershed-based planning partnerships. In chapter 2 the underpinnings of the study are established by conducting a literature review of social capital and watershed planning. This review establishes that successful watershed planning depends on strong partnerships, which are achieved through building social capital, and that there are essential criteria that can determine whether a watershed planning process will be a success.

A history of developments in the CRW and its stakeholders is discussed at the beginning of chapter 3 followed by a review of qualitative approaches to research. The principles of the qualitative approach and the findings in the literature review are then used to develop a framework for creating successful watershed partnerships. This framework is tested using a case study of stakeholders with a long-standing interest in the CRW. These

stakeholders are interviewed to determine whether the degree of social capital that exists among them is weak or strong. Chapter 4 presents the results of the interviews through application of the framework developed in chapter 3. Barriers to watershed partnerships are also identified and discussed. In the next chapter a first step toward removing the barriers to watershed partnerships is made through a CRW community workshop. Its purpose is to encourage social capital building and help CRW stakeholders set a course for future partnerships initiatives. The workshop planning, organization, and outcomes are discussed.

A checklist of important preliminary elements for a successful watershed planning process are analysed in chapter 6 to determine if all six have been fulfilled by stakeholders in this case study. In the following chapter, a strategy for securing unfulfilled preliminary elements is presented for the CRW case study. This strategy is designed to help build social capital among CRW stakeholders while advancing them towards a watershed planning process. Key outcomes, strengths, and limitations of the framework components are discussed in the final chapter, 8, along with conclusions on the current state of partnership development in the CRW and recommendations for further research.

CHAPTER 2

LITERATURE REVIEW

2.1 What is Social Capital?

Social capital is generally described as the stock of good relations that a group possesses and draws upon to further a common goal or cause. A group can be people in a corporation, bridge club, government agency, nonprofit organization, or a community (Putnam 1993). The term "capital" is commonly used in the discipline of economics to describe physical assets and the accumulation of more assets, or monetary wealth (Coleman 1990: 304). The concept of social capital "is based on the time and energy spent by individuals in establishing regularized patterns of relationships with others" (Ostrom and Ahn 2001: 11). In western industrialized nations, much attention is devoted to the benefits of accumulating physical capital such as factories and office equipment, which help make profits for company owners and keep the working portion of society employed. However, creating opportunities purely for economic growth does little to nurture a strong social fabric.

Ostrom and Ahn (2001: 14) point out that although social capital is not tangible or quantifiable, its value increases with use and decreases with disuse:

> A group that has learned to work effectively together in one task can take on other similar tasks at a cost in time and effort that is far less than bringing an entirely new group together who must learn everything from scratch.

In a study of Italy's regional governments, Putnam (1993) found that the more prosperous and politically stable regions also had a tradition of high civic involvement. Cooperative

efforts were commonplace in these regions and established norms of reciprocity helped citizens "address new problems of collective action".

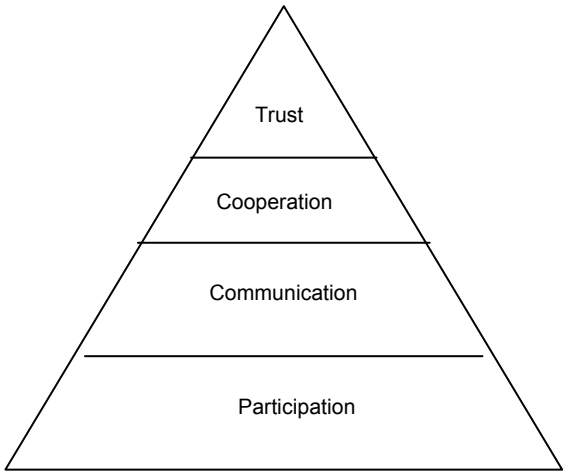
2.1.1 Defining Social Capital

The value of social capital is emphasized in the following two definitions:

> the stock of active connections among people: the trust, mutual understanding, and shared values and behaviors that bind the members of human networks and communities and make cooperative action possible (Svendsen et al. no date: 21); and
>
> high levels of trust, robust personal networks and vibrant communities, shared understandings, and a sense of equitable participation in a joint enterprise—all things that draw individuals together into a group (Cohen and Prusak 2001: 4).

Trust is the most defining characteristic of social capital (Cohen and Prusak 2001: 29). As the above definitions imply, the development of trust within a group or community requires people to become active and participate, communicate, and cooperate. Communities that are successful in solving collective problems tend to have high levels of civic participation, effective communication, and cooperation that contribute to an increase in trust and "future collaborative efforts in new areas" (The World Bank Group 2002). Social capital is built within a group, or between groups, using a pyramid structure (fig. 2-1).

Figure 2-1 The Pyramid of Social Capital



The pyramid of social capital is supported by four essential building blocks: Participation, communication, cooperation, and trust. Each component is distinct, but complementary, and each level builds on the previous one. The base or primary support of the pyramid is participation, which means people interacting on a regular basis within a group, association, organization, or community. Communication is the secondary support component and is most effective when it can be achieved face-to-face. Telephone, e-mail, and memos do not create the same depth of understanding that occurs through personal interaction (Cohen and Prusak 2001: 108). From good communication comes the third level—cooperation, which helps solidify the relationships being formed. As the participants continue to communicate and cooperate with each other, trust is developed among these people, at the summit of the pyramid. The fuelling of trust, through the other three building blocks, leads to an accumulation of social capital that eventually fills the pyramid. There is no limit to the accumulation of social capital, so a pyramid will increase in size before being filled to the top.

Groups with fairly full and large pyramids have a rich stock of social capital, whereas groups with fairly empty pyramids do not have much social capital stock to draw upon. Additionally, the pyramid of social capital is somewhat fragile and can diminish in size. Absence of, or a drop in participation, poor or insufficient communication, a lack of cooperation, or a dishonest or secretive action can reduce trust between group members, thereby draining the social capital that was accumulated (Cohen and Prusak 2001: 43; Svendsen et al. no date: 23).

Knowing who people are, what they are doing, and appreciating opposing perspectives builds relationships and trust in the same way that secrecy and a lack of understanding create suspicion and rivalry. Building the pyramid of social capital takes time and effort and requires continued nurturing. Social capital can never be taken for granted.

2.1.2 Benefits of Social Capital

Social capital can exist within and among a range of organizations, including neighborhoods, volunteer groups, social clubs, corporations, and bureaucracies. The types of social networks may vary significantly, but the benefits are the same:

> Social capital makes an organization, or any cooperative group, more than a collection of individuals intent on achieving their own private purposes. Social capital bridges the space between people . . . .This kind of commitment supports collaboration, commitment, ready access to knowledge and talent, and coherent organizational behaviour (Cohen and Prusak 2001: 4).

Social capital is a valuable asset that can be accumulated without monetary investment. Many communities with low levels of education, health care, and income, but high social capital have created opportunities for greater education, improved health care, and financing for infrastructure by working together for the public good (The World Bank

Group 2002). Groups, organizations, and communities with high levels of social capital tend to value, rather than fear, interdependence and understand that the common benefits achieved by working together lead to personal benefits as well. Such benefits may include greater social networks as people work together and establish relationships, reduced workload as tasks are shared, an increased knowledge base with the exchange of information, and less stress as people see the progress of their collective efforts. Social capital is a "crucial factor for all social scientists and policymakers in their effort to understand and promote more effective ways of solving collective-action problems in all facets of economic and political life" (Ostrom and Ahn 2001: 11).

2.2 What is Watershed-Based Planning?

Watershed-based planning is fundamentally sensitive to the health of the watershed ecosystem during development. This is because the whole watershed and the impacts from development are considered during the planning process. Conventional planning occurs within the political boundaries of regions, municipalities, and neighborhood areas and ignores ecosystem boundaries. Because planning uses artificial boundaries, planners may not be sensitized to the impacts of development on natural systems and resources. On the other hand, the watershed approach is intended to make negative impacts of development on natural systems more evident, leading to greater understanding of cause and effect relationships between urban and natural areas. Improved awareness of negative impacts will encourage more environmentally sensitive planning that includes exploration of alternative forms of development and ultimately healthier watersheds (Ontario Ministry of Environment and Energy and Ontario Ministry of Natural Resources 1993: 3-4; Slocombe 1993: 289-90).

2.2.1 What is a Watershed?

A watershed is an area of land that drains into an ocean or common lake or river system. Each watershed is a drainage area "defined by ridges that form drainage divides, that is, the ridges are the dividing lines that control into which basin precipitation drains" (Christopherson 1997: 422).

Watersheds vary in size, between 16 km^2 and 160 km^2, and may be contained within a larger sub-basin or basin system. A sub-basin is very large, between 160 km^2 and 1,600 km^2, and often encompasses many jurisdictional boundaries. The largest drainage areas range in size from 1,600 km^2 and 16,000 km^2 and are simply called basins. Because basins cover such extensive area, they typically span more than one province or state and frequently more than one nation (Schueler 2000: 135; Schueler 1995: 41).

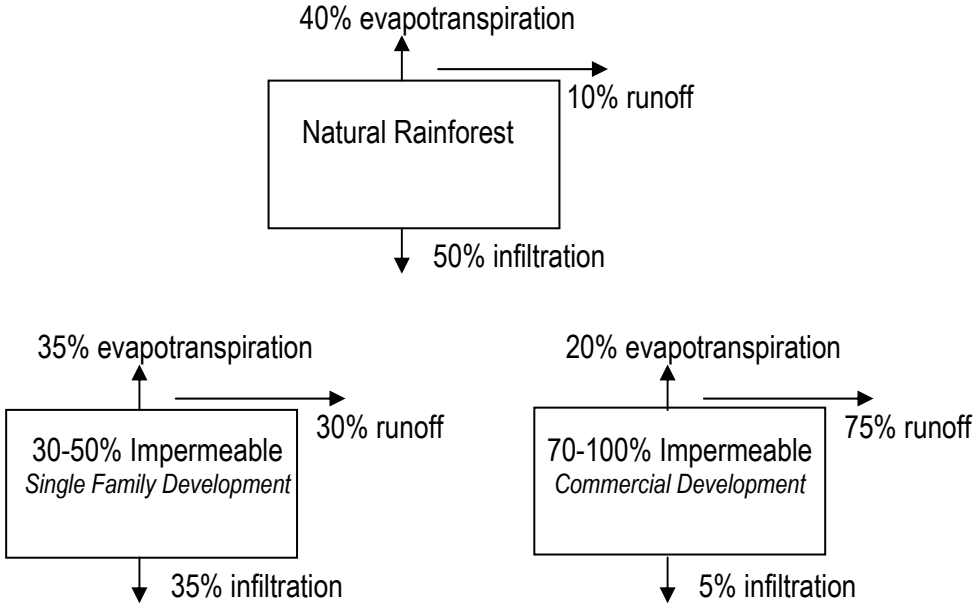
2.2.2 How Does Urbanization Impact Natural Systems?

Natural watershed function is connected to the hydrological cycle. Precipitation falls and is dispersed through infiltration and groundwater recharge, storage in lakes or wetlands, run-off into nearby streams, and interception by vegetation[1] (Christopherson 1997: 242-3; Stephens, Graham, and Reid 2002:1-1). In a pristine watershed, dispersal is balanced among these components and this contributes to optimum ecosystem function. With

1. Evapotranspiration is a term that combines the concepts of evaporation and transpiration. Evaporation occurs when water molecules change from the liquid form into vapor. Transpiration is a cooling process whereby plants release water, through evaporation, out of small openings in their leaves (Christopherson 1997: 243).

urbanization, the natural water balance is disrupted and ecosystem health begins to decline (Schueler 2000: 137-8; Stephens, Graham, and Reid 2002: 1-2). Water dispersal in a pristine watershed is compared with that in a moderately urbanized watershed (fig. 2-2).

Figure 2-2 Comparison of Water Dispersal in Pristine and Urbanized Watersheds



Source: (Stephens, Graham, and Reid 2002: 1-2)

In the pristine watershed, almost half of the water dispersal is divided between evapotranspiration and infiltration, at 40% and 50% respectively. Only 10% of water flows into nearby streams or other watersheds. Once urbanization begins to occur and natural vegetation is removed for impermeable surfaces, such as buildings and roadways, the percentages of infiltration and evapotranspiration begin to decrease to 35% and runoff begins to increase to approximately 30%. This increase in impervious cover reduces the

ability of water to infiltrate into the ground, and increases runoff over land and into streams (Schueler 2000: 137; Stephens, Graham, and Reid 2002: 1-2).

Measuring the percentage of impervious surfaces in an urbanized watershed is a key indicator of watershed health. Once imperviousness increases beyond 10%, noticeable changes occur in riparian integrity, stream bank stability, fish populations and species, and insect populations and species. When habitat changes occur near and inside a stream, fish and insect species that are sensitive to pollutants and stream temperature may become stressed and intolerant to the changed conditions, resulting in partial or complete population decline. Other, less-desirable, aquatic species that are more tolerant of degraded conditions become dominant. The presence or absence of insect species that are tolerant or intolerant of the impacts of urbanization is another important indicator of watershed health. The direct correlation between measures of impervious surfaces, and types and numbers of aquatic species, provides significant insight into watershed health and the negative impacts of urbanization (Schueler 2000: 143-44; Stephens, Graham, and Reid 2002: 1-2).

It is unrealistic to suggest that human lifestyles can be completely altered to have no negative impacts on watershed health. However, if communities are planned using a watershed-based approach, people will gain greater understanding of how human activity impacts watershed ecosystems and will likely be more open to adopting more environmentally sustainable forms of development.

2.2.3 The History of Watershed-Based Planning

The concept of watershed-based planning began more than 100 years ago, but the practice has only become an accepted approach within the last 10 to 20 years (McGinnis, Woolley, and Gamman 1999: 1; Johnson and Campbell 1999:502-3; Webler and Tuler 1999: 530). In 1970, the U.S created the Environmental Protection Agency to combine the responsibilities of water, land, and air protection under one department (U.S. Environmental Protection Agency 1970). Today, this federal agency has a mandate to support state agencies in watershed planning and management (McGinnis, Woolley, and Gamman 1999: 1-2) through grants, programs, and support services. The Ontario government has been a proponent of watershed planning, initiating 86 planning processes in the 1990s (Ontario Watershed Planning Implementation Project Management Committee (PMC) 1997: 5-7). The number of watershed plans developed in British Columbia has also increased within the last five years. More recently, B.C. adopted two laws that encourage a watershed approach to land use planning: The *Streamside Protection Regulation (2001)* and the *Waste Management Act (1999)*.

Watershed-based organizations and community watershed initiatives continue to multiply in the U.S. and Canada (McGinnis 1999: 498; Romaine and Christiansen 1997: 4-5). Clearly the concept of watershed planning is catching the attention of governments and citizens and encouraging people to question the status quo of traditional planning and management practices (Schueler 2000: 152). However, while watershed planning is undoubtedly becoming a popular model for demonstrating how development should be planned and managed, it is still a long way from becoming common practice (Brenner et al. 1999: 331).

2.2.4 Benefits of Watershed-Based Planning

Watershed-based planning is based on an integrated approach to environmental protection and achieving societal needs and values. The watershed concept is holistic and involves the public in the planning process: "a watershed is first and foremost a social construct" (McGinnis, Woolley, and Gamman 1999). This integrated approach leads to both environmental and social benefits for urban watersheds. Such benefits include:

- Evaluating a whole ecosystem, its interconnections, and identifying specific problems
- Promoting coordination among watershed initiatives and government agencies to limit overlapping duties and increase efficiency
- Improving cooperation and capabilities for addressing complex environmental issues that cross political boundaries and agency jurisdictions
- Coordinating monitoring and data collection and standardizing to similar methods for better aggregate information and improved decision making
- Creating opportunities for data sharing through improved communication and cooperation between stream stewardship groups, academic institutions, and government agencies
- Enhancing public knowledge on the interconnections within a watershed ecosystem and the ability for input into decision making
- Encouraging social interaction and understanding as stakeholders in a watershed are brought together to discuss solutions (Palidwor 2002: 19).

The concept of watershed-based planning continues to gain popularity as an approach to address the negative impacts of urban development, as well as conflicts that arise over dwindling natural resources. Communities facing these situations, and those who want to avoid them, must make tough choices between environmental values and community needs and wants.

2.2.5 Watershed-Based Planning and the Importance of Process

Watershed planning comprises two very distinct components: the process and the product. The concept of social capital is the essence of the process in that it is essentially about building relationships, forming partnerships, and working together towards common goals. If the stock of social capital is large, the process will likely lead to a successful product: a plan. Schueler (2000: 152) observed that watershed plans which are created behind closed doors often end up sitting on a shelf and are eventually forgotten because the plan, or product, did not receive stakeholder input or support. When a planning process is not inclusive, there is no sense of ownership among watershed stakeholders and thus little, if any, commitment to achieve a plan's goals. Plans that are developed through an inclusive and meaningful stakeholder process contain the perspectives and commitments from a broad range of people and backgrounds. Inclusive watershed-based planning processes will likely result in relationship building among stakeholders, learning from different perspectives, and broad ownership in a long-term vision of a watershed. Social capital, with its emphasis on community networks of communication, co-operation, and mutual trust, is clearly a key component of watershed-based planning.

The outcome of a watershed planning process typically depends on the type of model that is used to carry a process from start to finish. There are three common models in watershed planning (Schueler 2000: 639-42):

1. Government Driven Model: a process initiated by government and involves mostly government agencies and few if any members of the public.
2. Citizen Driven Model: a process initiated by citizens and involves mostly volunteer groups and other citizens and few if any government representatives.
3. Hybrid Model: a process initiated by government, citizens, or both, and involves as many stakeholders as possible.

A comparison of the three management models shows that a hybrid of government and citizen involvement results in a greater likelihood that all key stakeholders will have input into the plan. This model also encourages social capital building between government and citizen groups, which may lead to long-term partnerships between government and nongovernment stakeholders. "Watershed partnerships provide citizens and governments the opportunity to pool their financial and technical resources, gather scientific and social data, chart a course for watershed conservation and restoration, and implement protection and restoration actions" (Genskow and Kenney 2000: 4). The downside of a hybrid management model is the expense and time commitment required. However, when government drives a process and does not include all watershed interests as partners in developing a plan, community learning and relationship building become lost opportunities. Alternatively, when a community takes the initiative and drives a process, it often results in citizens feeling that their input into planning is valuable and

they have a role to play in their community's future. The primary problem with a community-driven model is that, without some government authority behind a planning process, a plan is not likely to have much effect on government policy (Schueler 2000: 640-41).

Watershed planning research supports the hybrid model as the most effective way to achieve successful watershed plans. Duram and Brown (1999: 465) surveyed 126 people involved in watershed initiatives in the U.S. Based on 64 responses received, they concluded that an inclusive and collaborative planning process, like the hybrid above, was more likely to result in a successful watershed plan. In a study on community watershed planning, McGinnis et al. (1999: 10) concluded that successful watershed planning involves governments and communities working together, because "government alone cannot restore a watershed. The burden of restoration rests on the members of a community". The value and effectiveness of using the hybrid model in watershed planning highlights the importance of building social capital. Such a process is not without its challenges, but the extra time and money spent is a worthwhile investment towards a successful watershed plan and future watershed initiatives.

The hybrid management structure is the approach recommended by watershed practitioners, because it has the broadest format for stakeholder input, and is the most likely to build trust and consensus among all stakeholders. As stated above, however, achieving a successful watershed planning process is a challenge. Table 2-1 below lists critical success factors of watershed planning and provides a description of each.

Table 2-1 Elements of a Successful Watershed Planning Process

Element	*Description*
Phase 1: Preliminary Elements	
Clearly defined purpose	People need a reason to participate in a process. Defining a purpose clarifies the issues and set parameters for the process, so that stakeholders can understand and focus on key issues.
Inclusive	All stakeholders impacted by an outcome should be involved in the process from the beginning. A process without broad support can create animosity between stakeholders and opposition to the final plan. This may lead to a plan being defeated.
Leadership	Leaders have the ability to bring about change and make their vision a reality. These people are necessary for generating the support and momentum of watershed stakeholders. Good leaders foster respect and trust, leading to group cohesion.
Watershed Coordinator	This person helps maintain communication between stakeholders and coordinates a process to meet deadlines and keep the process on track.
Funding resources	Sufficient funding is necessary to ensure the feasibility of process costs. It is important to realistic about the amount of funding required to support a process. Additional funding will also be required for plan implementation.
Political will	If key decision makers support a shared decision making process, there is a greater likelihood the plan will have regulatory meaning and outcomes will receive the necessary resources for implementation.

Element	*Description*
Phase 2: WMP Process Design & Structure	
Participants design the process	It is important for participants to have some control over the process. If all participants feel ownership of a process and plan, they will be more likely to remain committed and supportive. Elements of a process structure include development of a clear vision, goals, and action items, along with ground rules for a process. Some flexibility should also be incorporated into the process.
Timelines	Planning processes can be time consuming and complex. Therefore, realistic deadlines are necessary to keep a process on track.
Respect for diverse interests	Acceptance of the diverse values, interests, and knowledge of the parties involved in a consensus process is essential.
Accountability	Participants are accountable to both their constituencies and to a process that they have agreed to establish.
Phase 3: Plan Implementation	
Implementation committee	Key participants in WMP process remain active in implementation of plan outcomes.
Monitor, measure, and evaluate a plan	Once plan outcomes are implemented, a plan must be evaluated and updated for its effectiveness each 5-7 years.
Regular reporting	Regular reporting through open houses, publications, websites to larger public helps people learn about watershed issues and maintaining community support for a WMP.
Ongoing monetary support	Funding will be required to implement a plan outcomes and support the monitoring, measuring, evaluation, and reporting on an ongoing basis. Funding provisions can be shared between stakeholder partners and may include monetary and in-kind services from government, education institutions, and local businesses, and foundation grants awarded to stewardship groups.

Sources: (Ontario Ministry of Environment and Energy and Ontario Ministry of Natural Resources 1993: 18-20; Conservation Technology Information Centre 2000, 2000; Cormick et al. 1996: 6-11; Frame, Day, and Gunton 2002: 97-99; U.S. Environmental Protection Agency's Office of Wetlands; Zandbergen et al. 2000; Schueler 2000: 153-54)

A watershed planning process is broken down into three distinct phases: 1) Preconditions for a WMP process; 2) WMP process design and structure; 3) Plan implementation.

Phase 1 is the preplanning process, which lists and describes the elements that determine

the potential success of commencing the process. These are the basic support mechanisms required to maintain a smooth process. Having all of these elements in place before a process begins is a strong indicator that conditions are favorable for obtaining stakeholder support and participation. Phase 2 involves the parts of the planning process. Creating conditions where participants can take ownership and feel in control of a process, while working towards consensus within the group, will most likely result in a plan that is supported by all key stakeholders. Phase 3 lists and defines the elements necessary for ensuring that a plan is implemented, monitored for effectiveness, and evaluated for continued learning and plan updating.

One essential component not listed above, because it belongs in each phase of watershed planning, and that is to celebrate and build on small successes. The importance of this element is that small successes fuel future larger ones. Therefore, any success should be celebrated to reward those who are involved, and also to draw attention to the kinds of activities happening in a watershed. Bringing positive attention to small successes can help generate momentum among stakeholders, leading to bigger and more ambitious projects (U.S. Environmental Protection Agency's Office of Wetlands ; Zandbergen et al. 2000). This component is useful before, during, and after a watershed planning process.

Incorporating these success elements into a planning process is not always easy. Uncontrollable conditions such as a lack of political will, a pervasive public attitude of apathy, or significant time and funding constraints, can stall a planning process before it begins. The limiting consequences of each condition are described below.

1. Political will: Some people find change easy to accept, but others are apprehensive and resistant to adopting a new paradigm. If these people are key stakeholders in a watershed, such as government decision makers, it will likely be a challenge to gain their support for a planning process (Nixon 1993: 8). Additionally, some decision-makers are reluctant to empower a community due to the perception that in doing so, they will lose their own power. "The best ideas in the world go nowhere if the timing is wrong or one key legislator doesn't like it." (Ambs 2000: 10).
2. Public apathy: Another challenge related to inertia, is apathy. "The lack of a sense of community may be the single most important barrier to successful long-term watershed planning" (McGinnis, Woolley, and Gamman 1999: 9). Only a small percentage of citizens ever become actively involved in their community.
3. Time commitment: A watershed planning process is time-consuming and requires commitment from participants. However, people today have busy lives and do not always have extra time or energy to commit to volunteer activities (Simrell King, Feltey, and Susel 1998: 322). Additionally, senior government agencies in the midst of downsizing are handing local governments a larger workload. This means fewer staff in all levels of government to take on new planning initiatives.
4. Funding constraints: Watershed-based planning can be expensive, considering there are often numerous watersheds in a single municipality. As governments increasingly face budget constraints, the financial support for watershed planning may be perceived as a luxury they cannot afford, unless Cities find a dedicated source, such as a drainage development cost charge levy (Palidwor 2003). Fundraising for

watershed stewardship groups is also a challenge as they try to survive on limited budgets (Brenner et al. 1999: 337).

Overcoming these challenges is difficult and stakeholders involved in urban watersheds must deal with at least one of them. However, challenges are often opportunities for change. By working through challenges and finding solutions, communities can learn, grow in spirit, and become better prepared to deal with future challenges. Learning is a valuable by-product of relationship building and, therefore, can be characterized as the currency of social capital (Kingma and Falk 2001: 233). Smith (2000: 22) understood the interpretation of challenge as opportunity:

> The logic of the watershed focus is compelling and not going to go away. But the challenge of making it work, from the governance standpoint and from the agency/citizen perspective, is going to demand some of our best thinking, ingenuity, and innovation – along with a great deal of patience. The most significant advances in watershed management will not arise full blown from agency planning meetings, from town meetings, nor from conferences . . . . They will in my judgment, come from on-the-ground experiences where new things have been tried and lessons have been learned.

2.2.5 Developing a Watershed Management Plan – The Product

Every watershed has a unique blend of physical, social, environmental, and political challenges and opportunities. This means that watershed management plans may vary significantly from community to community. Together, stakeholders identify and prioritize issues in their watershed. These often include:

> pollution control, flood-risk reduction, erosion control, storm water management, ecological restoration, fish and wildlife habitat enhancement and protection, increasing recreation opportunities, water-supply development and conservation, navigation improvement, groundwater protection and recharge, and agricultural productivity" (Riley 1998: 50).

There is an important learning component here, where stakeholders work with similar and opposing perspectives to find common solutions to complex problems. Stakeholders work through the social capital components of participation, communication, and cooperation, while they explore and resolve opposing perspectives, new ideas, compromise, and change. However, watershed partnerships are not always easy to form and disparate perspectives on facts, values, and priorities, as well as organizational obstacles, can cause frustration or inaction (Genskow and Kenney 2000: 7). Before partnerships can build, relationships need to be developed as a first step towards future cooperative efforts.

2.3 The Importance of Partnerships in Watershed-Based Planning: Building Social Capital

Partnerships are a key ingredient in developing successful watershed management plans. Successful partnerships are built on a foundation containing the four elements of social capital: participation, communication, cooperation, and trust. Indeed, "trust is the most defining characteristic of social capital" (Cohen and Prusak 2001: 29). As exemplified in the Pyramid of Social Capital (fig. 2-1), trust is developed within a group or between groups through regular participation, communication, and cooperation. Leach and Pelkey (2001: 383) consider trust as an essential ingredient in effective watershed partnerships and suggest that groups should be assessed for this quality so that any deficiencies can be addressed as early as possible. Romaine and Christiansen (1997: 7-8; 2000: 9-11) developed an assessment tool that helps evaluate stakeholders' state of readiness for collaborative decision making. It focuses on the challenges of communication and cooperation among watershed stakeholders who have different perspectives. The

assessment tool is based on a set of stages that assess the social structure of stakeholders within a community and their ability to develop watershed partnerships. Each stage is defined below:

Stage 1 **Confrontation** – The community of interest is fragmented into separate individuals and groups, each acting in its own self-interest, or on its own definition of what is in the community interest. These separate actions have impacts considered undesirable by others that initiate counter measures. The result is often escalating confrontation and alienation.

Stage 2 **Conception** – Some individual or group in a community conceives of an innovative, more sustainable approach to community life and discusses this idea with other individuals and groups.

Stage 3 **Cooperation** – Some members of a community come together and begin to cooperatively design and implement a more sustainable approach to development.

Stage 4 **Connection** – A more sustainable approach is introduced to other members of a community and a broader understanding and appreciation of an approach begins building.

Stage 5 **Contagion** –Cooperation and commitment toward sustainable living in a community grow to the point where they spread rapidly, seemingly on their own.

Stage 6 **Commitment** – Community members feel ownership of their watershed and perceive their collective role in watershed well being as the new standard in planning for the future.

Romaine and Christiansen are not clear about whether stakeholders tend to start at stage one or whether stakeholder partnerships may start at the conception stage. However, the above stages suggest that watershed partnerships are unlikely to develop without social capital and that they take time to evolve into a highly productive state. A group of stakeholders successful in building social capital will be more likely to achieve the higher stages of cooperation, connection, contagion, and commitment.

Through his assessment tool, Romaine and Christiansen demonstrated that building stakeholder relationships is fundamental to achieving successful watershed partnerships. The literature on social capital espouses the same theory. However, little is written on how to build social capital among stakeholders, leading to successful partnerships. The research conducted for this paper focuses on developing a method for social capital assessment, by identifying barriers to social capital formation, and determining whether watershed stakeholders have fulfilled the minimum criteria for successful watershed partnerships.

CHAPTER 3

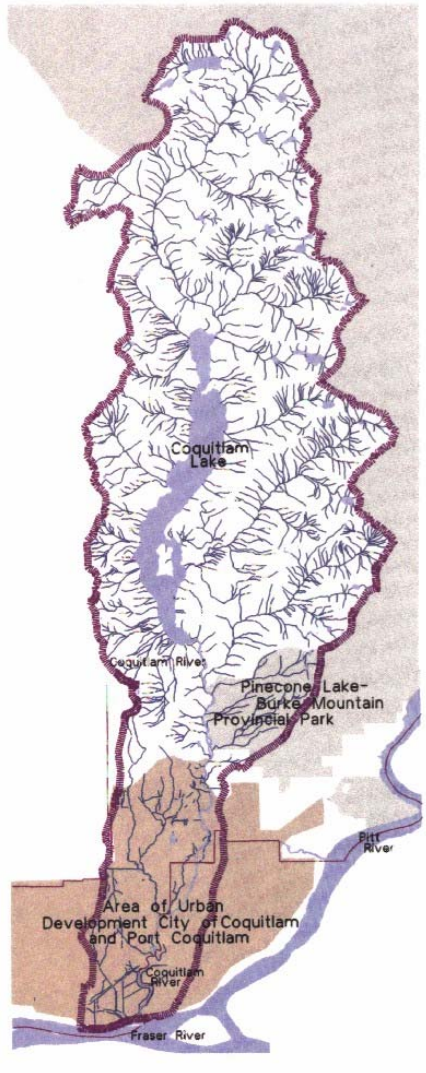
CASE STUDY: BUILDING PARTNERSHIPS IN THE COQUITLAM RIVER WATERSHED

This chapter introduces the watershed that was the focus of this case study, outlines the framework used for evaluating social capital among stakeholders in the Coquitlam River Watershed, and describes the methods used for data collection and analysis.

3.1 Historical and Geographical Background

The CRW is a highly urbanized watershed in the northeast sector of the Greater Vancouver Regional District (GVRD) (fig. 1-1). The Cities of Coquitlam and Port Coquitlam share municipal jurisdiction of the watershed, with Coquitlam retaining the larger portion. The 261 km^2 watershed (McPhee 2003: 2) extends from its headwaters at Disappointment Lake down through Coquitlam Lake Reservoir and the Coquitlam River main stem into the Fraser River (Zosiak 1999: 3) (fig. 3-1).

Figure 3-1 Boundaries of the Coquitlam River Watershed



Source: (Esovoloff 1996). Used by permission of Mike Esovoloff, City of Coquitlam.

Until the early to mid-1800's, aboriginals were the only CRW inhabitants. In 1808 Simon Fraser and his exploration team traveled down the Fraser River past the mouth of the Coquitlam River. Post-contact settlement began in the mid-1800's (Monk and Stewart 1967).

In 1887, the Coquitlam Water Works Company secured water rights for Coquitlam Lake to provide drinking water to New Westminster and the surrounding area. The City of New Westminster bought the company in 1889 to supply water to Coquitlam, Port Coquitlam, and parts of Maple Ridge, which was known at that time as New Westminster Junction (Caron et al. 1988; Monk and Stewart 1967).

In 1902, construction began on a tunnel from Buntzen Lake, known then as Beautiful Lake, to Coquitlam Lake for hydroelectric power generation. Dam construction began in 1904 at the lower end of Coquitlam Lake and was completed by 1905 (Koop 2002). Construction on a larger dam started in 1911 and was completed in 1914. The 1914 dam was rehabilitated in 1985 and is still in use today as a power source for B.C. Hydro (Bridge-Coastal Fish and Wildlife Restoration Program 2002). Coquitlam Lake Reservoir also remains an important source of water for many Lower Mainland municipalities.

The dam restricted fish access to Coquitlam Lake and reduced the natural river flows, resulting in significantly diminished fish populations (Koop 2002). The upper reach of the watershed is protected from development because it is a valuable drinking water source. However, it was heavily logged between 1972 and 1992 and very little old growth forest remains. The GVRD has jurisdiction in the upper watershed and has maintained a moratorium on logging since 1994.

Development continued throughout the early 1900s and began to cover the lower reaches of the watershed. Wetlands and floodplains were diked and developed, which displaced many wildlife species and altered the function of the river system. Sand and gravel mining began in the middle reach of the Coquitlam River in 1955 and today three pits remain active (Zosiak 1999: 39). These operations significantly reduced fish populations in the early days and continue as a threat today.

Few areas in CRW have been left untouched by development. Community concern for watershed health is increasing along with human demand on its natural resources. The natural integrity of the CRW has been extensively compromised and many believe it cannot sustain much more human activity. Indeed, the BC Outdoor Recreation Council rated the Coquitlam River in the top 10 endangered BC rivers and as number four for the year 2002 (Angelo 2002).

Various stewardship groups emerged in the CRW over the last several years and many volunteers dedicate their time to restoration and protection of local streams, wetlands, and wildlife habitats. These groups have been strong advocates for environmental protection with local city councils and they also hold events and produce publications for public education on watershed issues.

3.1.1 1996 CRW Public Forum

A public forum, the CRW Community Initiative, was sponsored by the City of Coquitlam in 1996 to bring together CRW stakeholders to find ways to work together on long-term

watershed health issues. The objectives of the forum were to:

1. Provide the means whereby the community can meet to establish stewardship priorities for the CRW and discuss how to address them
2. Provide a way for the many community groups and government agencies working in the watershed to network, and
3. Raise awareness in the wider community of the major ecological features and issues in the CRW (Smailes 1977: 2).

Many watershed issues and needs identified by forum participants can be summarized in five categories:

1. Stream and river water quality: Concerns include sediment discharge from gravel extraction industries and nonpoint source pollution from other human activities.
2. Water flow: Increases in impervious surface areas negatively impact the natural flow of Coquitlam River.
3. Stream and river habitat: There is an immediate need to improve the health of salmonids, riparian areas, and in-stream habitat.
4. Environmental awareness and education: A need exists to increase awareness, appreciation, understanding, and positive participation of the community in watershed stewardship.
5. Neighborhoods and commerce in the watershed: Social and economic factors of sustainability must be strengthened, including in relation to transportation, green industries, and the community role in human and ecological stewardship (Smailes 1977: 5-7).

In a workshop held as part of the forum, community members decided that a watershed-based entity should be developed to work towards watershed restoration and protection. A watershed planning process was identified as a long-term community goal. Instead of one entity, however, two separate stewardship groups emerged out of the workshop to focus on the above issues. One—the Coquitlam River Watershed Society (CRWS)—formed with a primary mandate to develop a watershed planning process. The other group focused on producing surveys of river conditions as members walked along various reaches of the Coquitlam River recording their visual observations.

By 1999, it was apparent to CRWS members that the watershed community was no closer to starting a watershed planning process than it had been in 1996. Since watershed planning is the primary CRWS mandate, the group wanted to move forward towards a watershed planning process. The group also realized that there had been animosity between CRWS and other stewardship groups soon after their formation and they wanted to put an end to any lingering ill will by bringing key stakeholders together to work towards a healthier watershed.

3.2 Research Methodology for Evaluating the Stock of CRW Social Capital

3.2.1 Establishing a Qualitative Analytical Approach

Social capital is a valuable asset for any group or community, but is also an intangible concept that is subjective and not easily quantified. Therefore, a qualitative research methodology was chosen to gain insight into: (1) the role of social capital in building partnerships and (2) whether the preplanning criteria for successful watershed planning

are in place in the CRW. This study incorporated the following characteristics of qualitative research:

1. Process as the primary concern: For example, a qualitative researcher is interested in questions such as: How do certain things happen? What is the natural history of an activity or event under study? What happens with the passage of time?
2. Meaning: How do people make sense of their lives, experiences, and their intellectual constructs to understand the world?
3. The researcher as the primary instrument for data collection and analysis: Data are mediated through this human instrument, rather than through inventories, questionnaires, or machines.
4. Descriptive, rather than quantitative, results.
5. An inductive process, whereby a researcher builds abstractions, concepts, hypotheses, and theories from details and data in a study (Merriam 1988: 19-20; Cresswell 1994: 145).

The specific form of qualitative research that was used here was the case study. A case study is defined by Yin (1984: 23) as an empirical inquiry that is used when the boundaries between phenomenon and context are not clearly evident. It:

- investigates a contemporary phenomenon within its real-life context
- uses multiple sources of evidence.

Evaluating the level of social capital in the CRW, and understanding the evolution of how social capital develops between members within a group or between groups, are the

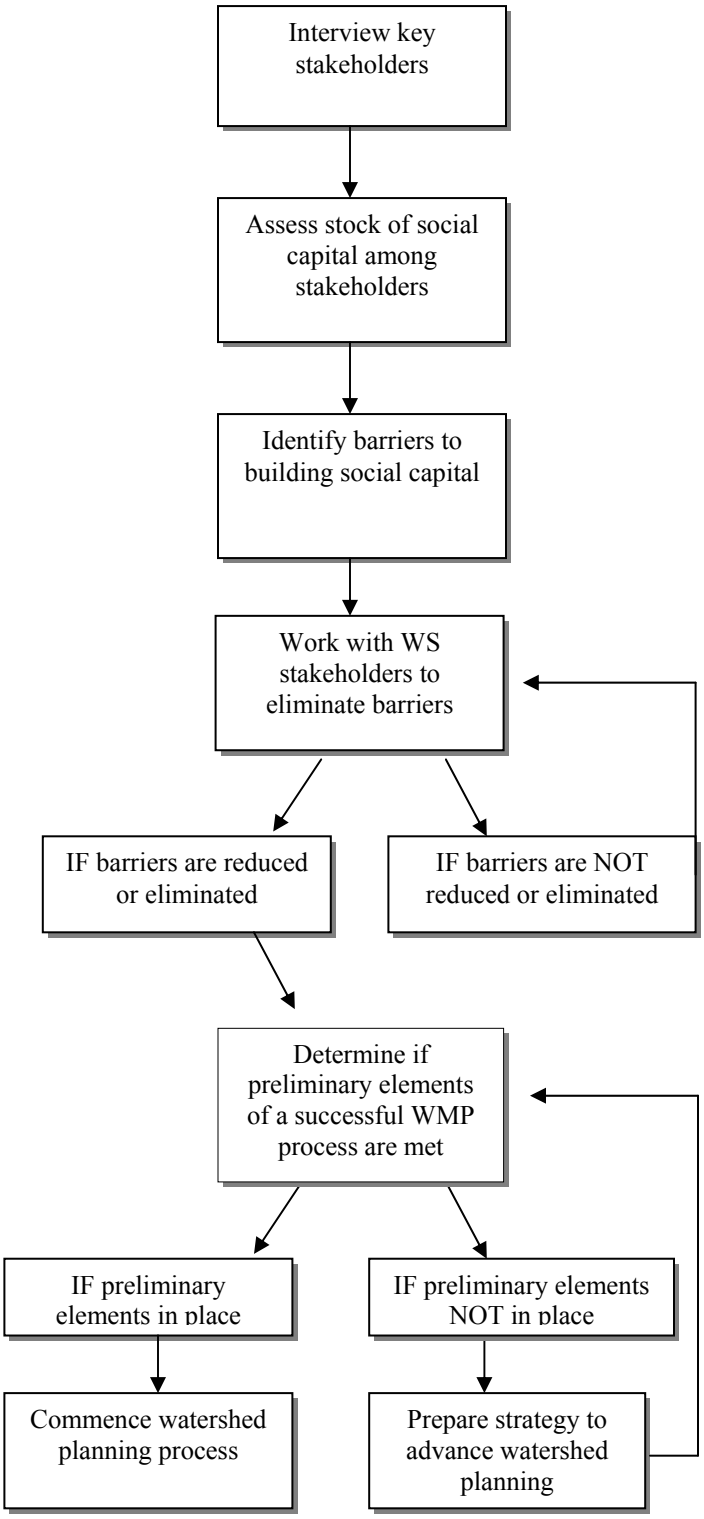
primary concerns of this case study of CRW stakeholders. The research question this study addresses is: *How can evaluating social capital among watershed stakeholders contribute to developing a strategy for a successful watershed planning process?*

The model of social capital used in this study suggests that building stocks of social capital that can be drawn upon to work towards common goals requires participation, communication, cooperation, and trust (fig. 2-1). Gaining insight into stakeholders' perceptions of the occurrence and quality of these social capital components helps the social researcher determine the 'stock' of social capital—either high, medium, or low—and identify barriers to building meaningful watershed partnerships.

3.2.2 Framework for Creating Successful Watershed Partnerships

The research design of this case study is based on the *Social Capital Model* (fig. 2-1) and the Preliminary Elements of a Successful Watershed Planning Process (table 2-1). These instruments are incorporated into *A Framework for Creating Successful Watershed Partnerships* (fig. 3-2). Following are brief descriptions of each framework component.

Figure 3-2 A Framework for Creating Successful Watershed Partnerships



Key Stakeholder Interviews

Watershed stakeholders are people who represent one of the various CRW stakeholder groups, who also participated in the 1996 CRW forum, and remain active in the watershed community. The rationale for limiting watershed stakeholders to only the people who participated in the forum is that these people have an established history of being watershed stakeholders and likely have insight into past and current issues. Based on these criteria, fifteen people were selected as key stakeholders for this case study.

Assessing the Stock of Social Capital

Interview questions were prepared for the key stakeholders. There were a total of 26 questions relating to participation, communication, cooperation, and trust between watershed stakeholders (appendix 1). The questions were designed to gain insight into each stakeholder's perception of relations between CRW stakeholders. Gathering this information involved analyzing transcripts for words or phrases that indicate positive or negative comments on participation, communication, cooperation, and trust. An interviewee matrix (table 3-1) was used for totaling results and evaluating the level of social capital between CRW stakeholders.

Table 3-1 Interviewee Matrix for Evaluating the Stock of Social Capital in CRW

	Positive Responses on Social Capital Components				**Negative Responses on Social Capital Components**			
Interviewee	Participation	Communication	Cooperation	Trust	Lack of Participation	Lack of Communication	Lack of Cooperation	Lack of Trust
1								
2								
3								
4								
TOTAL								

Analyzing the transcripts requires a definition of each social capital element. The definitions are as follows:

1. Participation – since the key stakeholders being interviewed are already active in the watershed, the level of participation is determined by interviewee comments on whether they feel there are enough people actively engaged in watershed activities, or whether they feel overwhelmed by too much work and too few people.
2. Communication – relates to the quantity and quality of dialogue between watershed stakeholders.
3. Cooperation – is determined from comments by interviewees on situations where they think stakeholders are working together on watershed issues, or common goals, as well as situations where they think this is lacking.
4. Trust – relates to positive or negative comments from interviewees on how they perceive the actions or intentions of other stakeholders.

The greater the degree of difference between positive and negative grand totals, the greater the likelihood that a definitive conclusion can be made about the magnitude of a high or low stock of social capital between CRW stakeholders. If the grand totals do not show a clear-cut positive or negative result, because the totals are close to being equal, this indicates a medium stock of social capital between the stakeholders. Such a result implies that social capital is not weak, but there are some issues that need to be addressed in order to build a stronger stock of social capital.

Identify and Eliminate Barriers to Building Partnerships

Barriers exist where critical components of social capital are lacking. For example, if there are few positive remarks on communication and cooperation, but many negative ones, then it is likely there are some barriers in this area. Identifying possible barriers will require further analysis of the transcripts for comments on what components of social capital are weak and why they are perceived to be weak.

Once barriers are identified, reducing and eliminating them will take persistence and patience. This is a difficult, but critical step in the process. The important issue here is to find a way to incrementally move forward. Finding the best way to eliminate one or more barriers can be challenging and it may take a few tries before achieving success. However, if barriers to partnerships cannot be reduced or eliminated, it is unlikely that a collaborative watershed planning process could be successfully undertaken at this time.

Determine if Preliminary Elements for a Successful Watershed Planning Process are in Place (Phase I Only)

In chapter 2, preliminary elements for a successful watershed planning process are presented in table 2-1 for the three phases of a watershed planning process. The phase 1 portion of this table can be used as a checklist to determine if all the success criteria are in place before attempting to move forward into a watershed planning process.

Table 3-2 Checklist for Preliminary Elements of a Successful Watershed Planning Process

Phase 1: Preliminary Elements	Check for Each Element in Place
Leadership	
Clearly defined purpose	
Inclusiveness	
Political will	
Funding resources	
Watershed Coordinator	

To ensure a successful beginning to a watershed planning process, each component listed above must first be in place. If each element has been met, stakeholders are ready for a watershed planning process. However, if this is not the case, some work will be required to achieve the ones that are missing.

Strategy for Fulfilling Missing Criteria

The research results from the sections outlined above are used to implement a strategy that builds on small successes. If any criteria are missing from the checklist in table 3-2, then smaller watershed projects are created to build social capital and generate momentum among stakeholders to meet all of the preliminary elements of success. Each smaller project should be designed to foster stakeholder participation, communication, cooperation, and trust. By continuing to build social capital, stakeholders will eventually achieve more as they learn to work together and maximize on the skills and resources of the collective. As efficiency improves, effectiveness will follow and contribute to success in larger and more complex watershed projects.

CHAPTER 4

OUTCOME OF STAKEHOLDER INTERVIEWS AND ASSESSMENT OF SOCIAL CAPITAL AMONG CRW STAKEHOLDERS

This chapter reports on the findings that emerged from interviews with 13 CRW stakeholders. It begins with a list of the interviewees and then provides a report on the study results as they relate to assessing the stock of social capital among CRW stakeholders as well as barriers to the development of social capital and watershed partnerships. The chapter concludes with a discussion of the next steps involved in eliminating the barriers.

4.1 Interview Key Watershed Stakeholders

A list of 15 key CRW stakeholders was developed and each person contacted for an interview. The people on this list were selected because they are key stakeholders who have been involved in the CRW watershed since the 1996 CRW Community Initiative. These individuals represent senior and local governments, education institutions, and environmental/stewardship groups in the CRW (table 4-1). Thirteen stakeholders agreed to be interviewed. The representative from the City of Port Coquitlam and a local businessman chose not to participate in the study.

Table 4-1 Key Stakeholders

	Personal Information	Stakeholder Group	Interviewed
1	Retiree	CRWS member	Yes
2	Researcher	Rivershed Society of BC and CRWS Member	Yes
3	Fisheries Biologist	Fisheries & Oceans Canada	Yes
4	Park Planner	City of Coquitlam	Yes
5	Parks & Environment Manager	City of Coquitlam	Yes
6	Environmental advocate	Burke Mountain Naturalists	Yes
7	Environmental Planner	Douglas College Instructor and CRWS member	Yes
8	Retiree	Riverview Horticultural Society	Yes
9	Laborer	R.A.C.E. (Responsibility, Awareness, Community, Environment)	Yes
10	Fisheries Biologist	B.C. Ministry of Environment	Yes
11	Businessman	Gravel Pit Operator	No
12	Engineering Technologist	City of Port Coquitlam	No
13	Schoolteacher/Homemaker	Hoy Creek Streamkeepers	Yes
14	Schoolteacher	Glen Eagle Middle School and Hoy Creek Streamkeepers	Yes
15	Retiree	Burke Mountain Naturalists	Yes

The interviews consisted of 26 questions related to watershed management and planning (appendix 1). Interviewees were asked for their views on the 1996 watershed forum, whether it was a success, and whether they were satisfied with the current levels of participation, communication, and cooperation in the CRW. Each interview took approximately one hour and was recorded and transcribed for analysis.

4.2 Assess the Stock of Social Capital

4.2.1 Coding Responses

The first step in the evaluation process is coding the interview responses. The interviews were analyzed with a numerical coding system for tallying positive and negative comments on the four elements of social capital: participation, communication, cooperation, and trust. These are shown in table 4-2, as theme numbers 1 and 2. Codes were also devised for suggestions made by interviewees for improving relations within

the watershed as well as their perception of the 1996 forum. These are shown as theme numbers 3 and 4. The themes of the coding system and the totals are presented in table 4-2. The more detailed interview coding results matrix is presented in appendix 2.

Table 4-2 Coding System and Summary of Totals for CRW Interviews

CODE #	Theme	Total Comments	# of Interviewees
1.0	*Positive Comments on:*		
1.1	Participation	5	4
1.2	Communication	21	9
1.3	Cooperation	21	10
1.4	Trust	13	10
2.0	*Negative Comments on:*		
2.1	Participation	19	8
2.2	Communication	66	13
2.3	Cooperation	75	13
2.4	Trust	37	8
3.0	*Suggestions for Improving Relations:*		
3.1	Need an umbrella group	7	4
3.2	Regular information-sharing meetings	8	7
3.3	Common website/newsletter	3	3
3.4	Paid watershed coordinator	3	3
4.0	*Perception of Outcomes from '97 Forum:*		
4.1	A success	8	8
4.2	Not a success	2	2
4.3	Fairly successful	3	3
4.4	Helped build strong networks	4	4
4.5	New groups indicator of success	1	1
4.6	New groups led to more problems	5	5
4.7	Increased awareness of issues	7	7

4.2.2 Ranking Coded Responses

From the results presented in table 4-2, it is clear there were at least three times more negative comments on participation, communication, cooperation, and trust, than positive ones. The number of interviewees making either positive or negative comments is tallied in the bottom row of the table and shows the numbers to be less extreme. This suggests that while there are clearly some positive conditions among CRW stakeholders, there are

also a greater number of negative ones. Additionally, the high number of negative comments from individual interviewees suggests that negative issues in the CRW are a source of frustration or discouragement that interviewees felt a need to identify.

Table 4-3 – Ranking the Social Capital Elements

Rank: Highest to Lowest	Positive Comments	Negative Comments
1	Cooperation – 21 Communication – 21	Cooperation - 75
2	Trust – 13	Communication – 66
3	Participation - 5	Trust – 37
4	--	Participation – 19
Total Responses	**60**	**197**

There is a large difference in positive and negative comments on the elements of social capital, which suggests that the stock of social capital among CRW stakeholders is low (table 4-3). These results are discussed below, along with some common themes that emerged during the analysis.

Cooperation

Cooperation, between watershed stakeholders, received the greatest number of negative responses by the interviewees. Indeed, there were 3.5 times as many negative responses as positive ones revealing that the absence of cooperation among stakeholders is the major concern. However, there were 21 positive comments on cooperation among watershed interests, so there are a minor number of positive efforts as well.

Almost all interviewees agreed that stewardship and environmental groups should work together on watershed issues (12 out of 13). Many commented that groups should

continue working individually on their own projects, but come together to coordinate efforts to address larger issues. Seven (54%) of the 13 interviewees spoke of animosity between some stewardship groups that limits cooperative initiatives. However, there is general optimism among six of the interviewees that this situation will improve. One stated: "I think there are a lot of personalities involved and I don't know what it will take to overcome those personality issues from one group to another, but I think continued discussion about watersheds and watershed issues should prevail".

Seventy percent of interviewees (9 out of 13) are of the opinion that both local governments, Coquitlam and Port Coquitlam, are deficient in their efforts to support community initiatives. Seven (54%) believe that local government should involve the community in the development of policies and programs that support watershed restoration and protection. Four interviewees (31%) feel that the community should be directly involved in government decisions impacting watershed health, such as having input in development approval processes.

Table 4-4 Summary of Cooperation Results

Theme	Number of Stakeholders Commenting
Volunteer groups should work together on watershed issues	12
Animosity exists between some volunteer groups	7
Local governments are deficient in their efforts to support volunteer initiatives	9
Local government should encourage involvement of all stakeholders in the development of policies and programs that support watershed health	7
All stakeholders should be involved in government decisions impacting watershed health	4

Communication

The number of negative comments related to communication deficiencies trailed closely behind those on cooperation, indicating this issue also needs to be addressed. Most negative comments identified poor communication between government and stewardship groups, rather than between stewardship groups themselves. One interviewee believes this lack of communication is a problem that needs to be addressed by all levels of government. He stated: "I believe each level of government has provided an opportunity for dialogue and communication, but it is not pervasive and needs to be in order for the public to be satisfied that their taxes are meeting the goals that individuals have for sustainability". Another interviewee thought the communication problem went deeper: "There has to be more honest dialogue between governments and citizens about land use decisions; to date citizens are ill-informed to participate in these discussions, so they're always struggling to participate in a credible way".

There were 21 positive comments on communication among stakeholders, which shows that some people are engaging in meaningful dialogue. The positive communication comments involved improved education on, and awareness of, watershed issues. Various initiatives have been successful in creating environmental awareness over the years, including the 1996 forum. One interviewee summed up the benefits of improved awareness in the CRW:

> The fact that there is more dialogue on the impacts to the river and issues on the river in many ways could lead to the CRW becoming more sustainable. The absence of that dialogue could very well lead to a status quo and business as usual. If that were the case, it could lead to a CRW that is less sustainable.

Trust

Trust issues were identified between some stewardship groups as having surfaced after the CRW forum held in 1996. Two new environmental groups were formed out of that process: The Coquitlam River Watershed Society (CRWS) and R.A.C.E. (Responsibility, Awareness, Community, Environment). Each group had a slightly different interest area, but some animosity developed between these two groups that eventually involved other volunteer groups. Although eight interviewees (62%) thought that the forum was a success (two thought it was a failure), seven interviewees (54%) commented on problems that have occurred among some groups since the forum. One interviewee summed up the final outcome of the 1996 forum well: "Where [the forum] fell down was a division between some of the interests. The gap between these interests is still there."

Most negative comments involving trust were targeted towards all levels of government. In total, 24 negative comments were made about trust in government by six interviewees (46%). The comments focused around a lack of faith in governments' approaches towards decision making. The remarks indicate that these interviewees do not trust certain governments, or certain sectors of government, to make fair and rational decisions for watershed well being. One interviewee thought that the watershed had become less sustainable in the last decade because politicians cater to the development community and cave in to their demands. The interviewee went on to say: "It's worse than that. It's not just caving in of the city councils. So many of them make a living by selling real estate and are in the development business themselves, and they're looking out for their buddies". Another interviewee thought that the lack of government support for community initiatives was because, "[t]hey're not interested in providing sufficient

support. They are only interested in fiscal restraint, meeting the bottom line . . . they don't care".

Some interviewees believe that government decision makers can be influenced by sound arguments and strong support from the community; fewer remain convinced that decision makers are influenced by particular interest areas. The results of interviewee comments on influencing government decision making are outlined in table 4-5 below.

Table 4-5 Group Characteristics that Influence Government Decision Making

Characteristic	Number of Stakeholders Commenting
Groups that are organized, prepared, credible, knowledgeable	5
Good communicators	3
Large group membership	5
Those with money, the development community, business	4
Decision makers favor their own interests	3

Trust may appear to be less of an issue than communication and cooperation, but without trust there is very little substance on which to form partnerships. However, it is likely that trust would improve if CRW stakeholders from different interest areas were brought together to discuss a common issue and encouraged to work together to find a common solution.

Participation

The level of participation in the CRW was not regarded as a serious issue. Some comments were made that more general public involvement in volunteer activities would help address watershed issues, but this subject is not as prominent as communication,

cooperation, or trust. Three interviewees (23%) indicated that the energy of volunteers sometimes is overextended, because the same few people are always doing most of the work. One stated, "I think that one thing that is a problem is that there are a lot of community things and you have to be involved in all of them and that can really stretch the volunteers a lot".

4.3 Identifying Barriers to Watershed Partnerships

Seven barriers to creating partnerships were identified from analyzing the interview transcripts. These are summarized in table 4-6 along with the number of times a barrier was identified as an issue.

Table 4-6 Barriers to Creating Partnerships in the CRW

Indicator of Social Capital	Barriers	Number of Comments	# of Interviewees Responding
Cooperation	• Stewardship groups not coordinating efforts enough	11	6
	• Lack of support for volunteer efforts and input into decision making from government	40	11
Communication	• Communication between stewardship groups needs improvement	8	7
	• Communication between government and stewardship groups needs improvement	26	10
Trust	• Rift between some stewardship groups has not been completely resolved	9	7
	• Lack of trust in government	24	6
Participation	• More volunteers needed	19	9

These barriers constrain CRW stakeholders from building and benefiting from social capital. CRW stakeholders too often work in isolation, without identifying common issues, sharing ideas, information, and resources. Initiatives would not only be much more efficient and productive with greater collaboration, but the people involved would gain greater knowledge from learning about the perspectives of other stakeholders.

4.4 Work With Stakeholders to Eliminate Barriers

'Every cloud has a silver lining' is a popular saying often used to encourage people to find the positive aspects of a negative situation. The degree of social capital in the CRW is not high, and there is room for improvement; with more effort from stakeholders, relationships could improve.

Ten interviewees (77%) had one or more suggestions for building stronger relationships in the CRW and these are listed in table 4-7.

Table 4-7 Interviewee Suggestions for Improving Stakeholder Relations

Interviewee Suggestions	Number of Stakeholders Commenting
Create an umbrella group that supports all volunteer groups and communicates with government on behalf of these groups	4
Regular meetings among stakeholders	7
Common website/newsletter	3
Create a full-time watershed coordinator	3

Umbrella Group

Seven interviewees identified an umbrella group as a way to unite stakeholders and improve relationships among stewardship groups. Additionally, some interviewees

believe that government decision making is influenced by stewardship groups that are:

- Organized, prepared, credible, knowledgeable
- Good communicators
- Have a large group membership

An umbrella group would be an effective way to organize stewardship groups and provide one common voice. If a large membership of supporters could be created, it could communicate effectively with government to represent society in the Coquitlam watershed.

Regular Meetings

Eight interviewees thought that regular meetings, attended by representatives from stewardship groups and government, would be beneficial. Such meetings would enable stakeholders to share information, ideas, resources, and build partnerships.

Common Website/Newsletter and Full-Time Watershed Coordinator

Three interviewees commented that they would like to see a common information repository for all those involved in watershed initiatives in order to allow other stakeholders to learn about developments and issues in the watershed. Additionally, it is a useful and practical way to educate the community on watershed issues.

Hiring a full-time watershed coordinator for the CRW was identified as a need by three interviewees. One commented that there is too much work for the number of community volunteers to manage efficiently. If one person were responsible for maintaining contact between stakeholders and coordinating projects, volunteers may experience less burnout.

Essentially, watershed initiatives would run more efficiently and people would have greater opportunities to connect with other stakeholders and form partnerships for planning larger, and more complex, initiatives.

4.4.1 Working Together is the Key

It is clear from the interview results that significant challenges lay ahead for the formation of partnerships among CRW stakeholders. However, as shown in table 4-2 many interviewees made positive comments and remain hopeful of improved relationships. One interviewee summed up this positive attitude by stating: "There is a role for everybody. There has to be a concerted effort, because we all own the problem, so we need to own the solutions".

It would be difficult, perhaps impossible, to initiate all of these suggestions without the support and input of other CRW stakeholders. Soliciting input from other stakeholders may help generate more ideas for building relationships among stakeholders. In order to explore ideas, and begin working on projects in partnership, a community workshop was planned for CRW stakeholders. The primary goal of the workshop was to bring CRW stakeholders together to discuss watershed issues and generate ideas about working together on common goals for watershed health. The workshop format and outcomes are discussed in chapter 5.

CHAPTER 5

COQUITLAM RIVER WATERSHED COMMUNITY WORKSHOP

After completing the interviews and identifying the seven barriers related to stakeholder participation, communication, cooperation, and trust, a workshop was organized in May 2001 to bring CRW stakeholders together to work on eliminating the barriers to social capital. This chapter outlines the workshop goals, objectives, format, and outcomes and concludes with an evaluation of the workshop against the planning objectives.

5.1 Workshop Planning Committee

Ten representatives from various CRW stakeholder groups agreed to help plan the watershed workshop. These people formed the workshop planning committee and were tasked with identifying workshop objectives and then developing a format for the community event.

5.2 Workshop Purpose

The primary goal of the workshop was to bring CRW stakeholders together to begin breaking down relationship barriers and to work together towards common goals. Four workshop objectives were identified:

1. To hold an event that is designed to encourage networking among CRW stakeholders
2. To facilitate relationship building through increased stakeholder participation, communication, and cooperation
3. To identify priority issues in the CRW and develop action strategies that require multi-stakeholder involvement

4. To obtain a commitment from workshop participants to continue working together on common CRW issues and action strategies

Based on these objectives, the workshop was entitled: *Working Together for the Coquitlam River Watershed*.

Planning the CRW workshop was a significant community effort and demonstrated that many CRW stakeholders want to work together for a worthwhile purpose. Once the workshop format and program were developed, another group of volunteers followed through with the organization and set-up. In total, 12 people volunteered their time during the event to ensure that it ran smoothly. The City of Coquitlam offered one staff person to help organize the workshop.

5.3 Workshop Format

The workshop began with six presentations from experts on the following topics:

1. Stream stewardship
2. Education/awareness
3. Advocacy
4. Watershed management
5. Networking/cooperating
6. Funding sources

After the presentations, participants chose a breakout session in one of the first four topic areas. Participants in each session worked on strategies in their chosen topic area with a facilitator. An action plan template was developed to help facilitators in each breakout

session move the participants through issue identification and into strategy and action development.

5.4 Workshop Outcomes

The workshop was held on 26 May 2001 with 55 people registered. The participants represented a range of stakeholders including stewardship groups, interested citizens, students, businesses, First Nations, B.C. Hydro, the City of Coquitlam, and the Department of Fisheries and Oceans.

A Kwikwetlem First Nation councillor was the keynote speaker at the workshop and many considered this a highlight of the event. The councillor spoke about the history of his people and the hardships they have endured since other cultures settled the area and degraded the watershed. The talk was a sobering reminder to other stakeholders that society needs to take collective responsibility for past mistakes, ensure they are not repeated, and work together to protect and enhance what is left of the ecosystem.

5.4.1 Breakout Sessions

Each breakout session group identified issues, priority areas, and needed actions. Three groups ran out of time and were unable to complete the full list of their action items. The issues identified and prioritized, and related action items, are summarized in table 5-1:

Table 5-1 Priority Issues and Action Items Identified by Breakout Groups

Groups	Priority Issues Identified	Action Items
Group 1: Stream stewardship	Habitat protection: Need to build watershed partnerships to work together and lobby municipal, provincial, and federal government for more effective protection and enforcement.	1. Web page: Encourage stewardship groups to work together in creating a web page that provides information on each stewardship group and explains what they do. 2. Public education: Stewardship groups need to take the lead in encouraging public education. Stewardship groups should partner with municipal government and schools to educate the public through local newspapers, landowner brochures, and signage. 3. Write letters: Stewardship groups need to communicate and cooperate on watershed issues and write letters to politicians on behalf of all groups.
	Habitat enhancement: More volunteers are needed to help with stream clean-ups and riparian plantings.	
	Education and awareness: Educate public on preventing negative impacts on streams.	
	Storm water: Municipal governments need to adopt more effective best management practices for addressing storm water.	
Group 2: Education and awareness	Project reporting: Outcomes of CRW projects should be reported by project leaders to other stakeholders and the public.	CRW stakeholders should work together to: 1. Develop goals and a renewed vision for action with the assistance of the workshop participants. For example, a vision could be adopted to have the Coquitlam River removed from the Endangered Rivers List. 2. Develop a strategic plan for the CRW.
	Education targets: Should involve teaching decision makers and children – who are future decision makers – about watershed issues.	
	Capitalize on opportunities for education: Brochures and newsletters can be handed out at community events and deposited at library kiosks and community centers.	
	Watershed values: Education material should point out that a healthy watershed has both environmental and socioeconomic values.	
	Integrated storm water management: Encourage municipal governments to integrate this practice and educate the developers they deal with on a regular basis.	
	Public access to river: Increase public access points to the river to encourage appreciation and learning of the river system.	
	Learn from the past: Do not attach blame, but make decisions based on new knowledge.	

Groups	Priority Issues Identified	Action Items
Group 3: Advocacy	Gravel extraction operations: Water quality issues caused by four gravel operations next to the upper mid section of the Coquitlam River need to be addressed. These gravel operations do not comply with federal regulations and these regulations are not enforced.	Stewardship groups need to work together to: 1. Create awareness through video and media events. 2. Create a coalition of stakeholders to protest the lack of enforcement to protection against potential ecological damage from gravel operation and the proposed Riverwalk development. 3. Write letters to the editor and a letter to the federal government requesting a review of the proposed Riverwalk development under the *Canadian Environmental Assessment Act*. 4. Discuss possible legal action against gravel operators for failing to meet the B.C. *Waste Management Act* regulations and also federal *Fisheries Act* regulations for depositing deleterious materials.
	Proposed development along Coquitlam River: If the proposed Riverwalk subdivision is approved, it will be located within valuable riparian habitat that includes wetland areas.	
	Uncooperative stewardship relations: The history of poor relations between stewardship groups has been counterproductive.	
Group 4: Watershed management	Issues to be addressed through a watershed management planning process: 1. Water management: - water quality (drinking, fish, and wildlife) - flood control - flows - imperviousness - storm water management	Workshop participants need to commit to working together on the following: 1. Political action: Take workshop recommendations to all four levels of government. 2. Analyze existing watershed initiatives: To see how they might provide information to the watershed planning process. 3. Analyze local bylaws: To see where they need to be strengthened or new ones created to protect and enhance the watershed. 4. Watershed management strategy: Must be drafted and circulated to all CRW stakeholders to encourage their participation in a watershed planning process. 5. Write watershed planning primer to Municipal Government: Show local government how they can meet their own policy objectives by partnering with other watershed stakeholders in a watershed planning process.
	2. Land use: - growth management - imperviousness	
	3. Legislation: improve legislation for fish and wildlife habitat protection and enhancement	
	4. Education and stewardship: Establish funding and other resources for ongoing education and stewardship programs.	
	5. Create a resource inventory through a monitoring program. Identify indicators and collect baseline stream condition information before, during, and after plan is developed.	
	6. Define ecologically sensitive areas for protection and prioritize restoration activities.	
	7. Resources: Identify funding and other resources.	
	8. Timing: Identify the plan phases (short, medium, and long-term 20 years + goals).	

5.4.2 Workshop Topics Summary

Some common themes emerged among the breakout session topics. Each breakout group agreed that:

- CRW stakeholders must communicate with each other and work together in partnership to achieve common goals
- More education on watershed issues is needed for decision makers, school age children and teens, and the general public
- Municipal, provincial, and federal legislation needs to be improved to protect fish and wildlife habitat and also needs to be enforced.

5.5 Evaluating the CRW Workshop

5.5.1 Workshop Objectives

The CRW workshop was successful in achieving the first three out of its four objectives. The outcomes for each of the four workshop objectives are as follows:

1. **Create an event that facilitates networking among CRW stakeholders**

   There was a good cross-section of stakeholders and a large turnout of 55 participants. The breakout sessions were productive in generating lots of discussion and participants seemed to appreciate the opportunity to discuss watershed issues. Most participants spent the entire day at the workshop, even though it was held on a warm and sunny Saturday.

2. **Facilitate relationship building through increased stakeholder participation, communication, and cooperation**

The workshop began with the planning committee – a group of 10 people - working together to decide on the event format. A second committee of 12 members came together to help finalize the format and organize the event.

The workshop format was conducive to participation, communication, and cooperation. Presenters were from the Coquitlam and Port Coquitlam community, so they were able to draw on local examples and provide information that was relevant to participants. Each breakout session had a variety of stakeholders with different interests. The facilitators ensured that everyone had the opportunity to speak and that decisions were consensual. One participant from each breakout session volunteered reported back to the larger group, which helped highlight the benefits of reporting ideas and activities to other watershed stakeholders.

The workshop attracted a few new people who had never participated in any watershed activities or events. Attracting new people is important for spreading awareness of issues and recruiting more people to get involved in watershed activities.

3. **Identify priority issues in the CRW and develop action strategies that require multi stakeholder involvement**

   Each breakout group identified issues specific to its topic and prepared corresponding lists of action items for addressing the issues. Most of the recommended actions require stakeholders to communicate and cooperate on a regular basis.

4. **Obtain a commitment from workshop participants to continue working together on common CRW issues and action strategies**

   This objective was the one area of disappointment for the organizing committee. No commitments were forthcoming from the breakout sessions, or when the question was posed to participants during the wrap-up at the end of the day. Participants had many ideas and suggestions for addressing watershed issues, but no one could be persuaded to take the lead on an activity at that time.

5.5.2 Summary of Workshop Objectives

Seven barriers to partnerships in the CRW were identified (table 4.7). The workshop was intended to be a step towards eliminating these barriers and it was planned so that stakeholders from different interest areas would work together discussing and prioritizing various issues. The issues identified by the breakout groups are closely related to the barriers identified in the stakeholder interviews. These included concerns such as:

- the need to improve communication and cooperation between all stakeholders
- finding meaningful ways for public input into municipal, provincial, and federal government decision making
- motivating more people to get involved in watershed activities.

Broad participation in this workshop suggests that many CRW stakeholders want to build better relationships and work in partnership on common goals. However, stakeholders hesitate when asked to take on this task. Removing the barriers to social capital will likely require an incremental, long-term approach that involves stakeholders collaborating on a regular basis and one stakeholder, or stakeholder group, committing to take the lead.

CHAPTER 6

PRELIMINARY ELEMENTS OF SUCCESSFUL WATERSHED PLANNING

The purpose of this chapter is to evaluate whether the six preliminary elements of successful watershed planning, from the literature review in chapter 2 (table 2-1) are in place in the CRW. The evaluation was conducted through direct observation of the activities and outcomes related to each preliminary element. Since it is CRWS' goal to implement a watershed planning process, its efforts alone are evaluated.

6.1 Evaluating the Conditions in the CRW Against the Preliminary Elements

Each element listed below (table 6-1) is evaluated based on whether it is fully in place, only partially in place, or not in place at all in the CRW.

Table 6-1 Preliminary Element Evaluation

Element	In Place	Partially in Place	Not in Place
Leadership		✓	
Clearly Defined Purpose			✓
Inclusive	✓		
Political Will		✓	
Funding Resources		✓	
Watershed Coordinator			✓

6.1.1 Leadership

The leadership element is only partially fulfilled in the CRW. CRWS has a goal of working with other stakeholders to develop a watershed management plan; however, there is no one person or core group of people that has emerged as the leader who will

fulfill this goal. The CRWS Board is attempting to initiate the watershed planning process but has only been marginally successful in mobilizing the community. The two cities have not shown an interest in leading this watershed planning initiative either, so at the present time there is a leadership vacuum.

6.1.2 Clearly Defined Purpose

The society does not have a clearly defined purpose for its proposed watershed planning process in the CRW. The CRWS vision is to bring stakeholders together and work towards the preservation and enhancement of the CRW (Zosiak 1999: 43), but this vision has not been refined into why a watershed planning process is needed and what it is intended to achieve. Until CRWS is clear on the purpose, it will have a difficult time convincing other stakeholders of the need for a watershed planning process.

6.1.3 Inclusive

One of the strengths of CRWS' work to date has been the openness to all stakeholders in the watershed. CRWS meetings are well advertised in the community and membership is open to anyone. In past projects, the group has actively sought out partnership opportunities with other stewardship groups, academic institutions, First Nations, and the three levels of government. CRWS sourced the funding for this research, which included writing a project proposal that emphasized the intent to engage all stakeholders and motivate them to support a watershed planning process.

6.1.4 Political Will

Shortly after the CRW Community Workshop in May 2001, a CRWS member raised the idea of watershed planning, and the need for municipal Council support, with the City of Coquitlam's Environment Committee. The Environment Committee brought this issue forward to the September 4th, 2001 council meeting, where the following resolution was unanimously carried:

> That Council encourage City Staff to work with the Stewardship Community on the development of a Coquitlam River Watershed Management Plan and that staff report back at a future Meeting on how this could be undertaken (*Regular Council Meeting* 2001: 6).

After the Coquitlam Council resolution was made, Coquitlam staff contacted CRWS to meet and consider the next steps. The purpose of the meeting was to discuss the plans that CRWS had for a watershed planning process. However, CRWS could not articulate what the process should focus on. CRWS was forced to face the fact that it had not done enough preparatory work to lead the CRW stakeholders into a watershed planning process. Further, Coquitlam staff made it clear that they had not planned for and were currently not prepared to take the lead and commence a watershed planning process in the CRW. Both parties agreed to work together on producing an atlas of the CRW, instead of scrambling to try and organize a watershed planning process. Partnership work on the atlas commenced in December 2001.

Because CRWS managed to obtain support from one municipal government, Coquitlam City Council, it was partially successful in fulfilling the political will element.

6.1.5 Funding Resources

CRWS was successful in obtaining an Urban Salmon Habitat Program (USHP) grant for $10,000 in August 2000 to begin work on preparing for a watershed planning process, which included the stakeholder interviews and the workshop. In August 2001, USHP awarded the group with $30,000 more to continue their work on watershed planning. These funds are sufficient to begin a watershed planning process, but fall far short of what is needed to develop a plan. Funding a watershed planning process through to the plan completion stage would require approximately $100,000 (Zosiak and McPhee 2002: 28). The second grant for $30,000 was used to produce the watershed atlas in partnership with the City of Coquitlam (McPhee 2003).

6.1.6 Watershed Coordinator

The CRW does not have a watershed coordinator at the time of writing in April 2003. Three of the stakeholder interviewees believe that a watershed coordinator would be an effective way to help facilitate communication between groups, and encourage stakeholders to work together on common goals. A watershed coordinator can play an important role in a watershed by helping stakeholders build trust and partnerships, leading to increased stocks of social capital.

6.3 Summary

Only one element, inclusiveness, was fully in place at the end of the preplanning process. Three elements were partially in place and two had not experienced any action. From the analysis, it appears that without committed leadership or a purpose for a planning process, some of the other elements are more difficult to secure. When CRWS finally

managed to motivate some political will, the group found that it lacked the leadership and also realized it had not done enough preparatory planning to take advantage of the opportunity. It was at this point that the movement towards a watershed planning process stalled.

CHAPTER 7

RECOMMENDED STRATEGY FOR CRWS TO ADVANCE WATERSHED PLANNING

Currently there are a number of barriers in the CRW that are preventing CRWS from advancing watershed planning. The outcome of the interviews and social capital assessment in the early phase of this case study showed that the CRW stakeholders have a low stock of social capital. The evaluation of CRWS in relation to the precondition criteria, from the previous chapter, also revealed the need to secure other key factors such as leadership, defining a purpose for a watershed planning process, political will, funding, and a watershed coordinator. The purpose of this chapter is to outline a strategy that will help CRWS overcome the barriers and position the society for a successful watershed planning process.

7.1 Guiding Principles

The strategy for strengthening social capital between CRW stakeholders and securing the precondition criteria for success involves the creation of watershed projects that adhere to five guiding principles. These principles are intended to specifically address the barriers to social capital, partnership building, and starting a watershed planning process in the CRW. The following principles will help CRW stakeholders create conditions for learning how to work together and forming long-term partnerships:

1. Use a graduated approach
2. Identify and prioritize watershed issues
3. Undertake projects that are practical and feasible

4. Improve relationships while establishing partnerships
5. Inform the greater community on emerging issues and actions

1. Use a graduated approach

A graduated approach begins with simple projects and builds on these small successes before moving into more complex ones (U.S. Environmental Protection Agency's Office of Wetlands). It may also help stakeholders increase their skills and knowledge before moving into more comprehensive and demanding phases. The completion of each project should be marked by a celebration of the successes, by those involved, to encourage a reaffirmation of their commitment to the watershed (Ibid.)

2. Identify and prioritize watershed issues

Issues and priorities need to be kept in the forefront and on the minds of people. While certain projects may involve identifying issues, subsequent projects may focus on prioritization of issues. By encouraging stakeholders to discuss and debate watershed issues, they will learn what is important to each other. It will also help stakeholders remain focused on the issues and not on the differences between individual interests (Cormick et al. 1996: 8). When issues are identified and prioritized by the majority of stakeholders, a purpose for a watershed process that will be supported by stakeholders will likely become clear.

3. Undertake projects that are practical and feasible

Part of developing a purpose for a watershed initiative is ensuring that it is realistic. Project initiators must determine what kind of project is feasible given data availability,

available resources, time and funding constraints, and the commitment of potential partners. Realistic, well-planned projects are more likely to receive positive attention and demonstrate to reluctant stakeholders that those involved in a project are skilled, organized, and knowledgeable on watershed issues. This may help encourage reluctant stakeholders to become partners in future endeavors (U.S. Environmental Protection Agency's Office of Wetlands 1977). Successful past projects may also help convince agencies to fund future projects. Funding agencies look for evidence of credibility and past performance of a group applying for the funds (Jarvis 2001: 19).

4. Improve relationships while establishing partnerships

Watershed projects must provide opportunities for stakeholders to work together as partners. This means designing projects so that collaboration among various stakeholders is required. If some stakeholders fully participate, efforts must be made to solicit their input in a way that is convenient to them. That way all interests are more likely to share in the ownership of the final product. Learning to work together effectively will improve relationships among stakeholders and build trust. Eventually social capital will be high enough between stakeholders that the benefits become self-reinforcing (Putnam 1993: 174; Ostrom and Ahn 2001: 14).

5. Inform the greater community on emerging issues and actions

It is important to inform the larger community of watershed initiatives, so that knowledge of watershed issues becomes commonplace. Additionally, people who live in the watershed should be informed of the activities occurring there, so they feel more connected with their community. Educating the public on watershed issues and

informing them of projects is an effective way to stimulate public interest and motivate more people to participate in watershed activities (Ramage 2001: 11; U.S. Environmental Protection Agency's Office of Wetlands 1977).

7.1.2 Potential Projects for Building Social Capital, Developing Partnerships, and Moving Towards a Watershed Planning Process

The following projects are recommended to gradually position CRWS and other stakeholders for a watershed planning process. A brief description of each recommended project is provided, along with a list of benefits and constraints.

Short-Term Initiatives - 1-3 years

1. Watershed Atlas

The watershed atlas is a series of maps, utilizing geographic information system (GIS) mapping technology that is designed to educate the public on existing watershed ecosystem and management conditions. The data are mapped as specific themes or layers of information. Determining which themes will be mapped in the atlas will depend on the unique conditions of each watershed.

Theme examples range from basic maps that show watershed features - such as the location of water bodies, forested areas, or land use - to maps that contain an analysis component, such as effective impervious area (EIA). Depending on the available GIS technology available, maps can be static printed copies or interactive if made available on the Internet. Various stakeholders can work together to obtain funding, select atlas themes, help collect information to be summarized and transformed into an electronic and

possibly paper format (King County Department of Natural Resources 1999; McPhee 2003; Watershed Information Network 2003).

Benefits:

A watershed atlas:

- Simplifies large amounts of data into an easy-to-understand graphic format
- Helps to inform the public and decision makers on watershed features and issues
- Uses data that are current and available
- Provides a starting point for future trend analysis
- Creates an opportunity for various stakeholders to participate
- Provides an opportunity for stakeholders with different interests to learn about competing areas of interest.

Constraints:

Careful planning of a watershed atlas project is necessary to ensure that the five guiding principles are followed. The following are some limitations that will need to be addressed:

- Small projects often do not require the involvement of other stakeholders and, therefore, the project needs to be carefully planned so that roles for other stakeholders are established and included
- A purpose beyond public information needs to be built into this project, so that those involved see this as the first project in a series of projects
- Sophisticated GIS mapping and substantial resources are required

- If the output is a paper mapbook only, printing costs are high and it limits the number of people that can access the information.

2. Watershed Assessment

A watershed assessment is a comprehensive, science-based report on the state of a watershed. The scope can vary depending on the purpose of a report, from ecosystem health assessment to one that includes social and economic data. The purpose of a watershed assessment is to evaluate the information on current watershed conditions and to assign a rating in an effort to identify areas of concern and strategies for improvement (Watershed Professionals Network 1999; McPhee et al. 1996).

The intention of this project is to provide the public and decision makers with an indication of watershed health, so efforts can be targeted towards areas of need. Indicators of watershed health, such as water quality, fish and insect populations, and number of volunteer organizations, must be selected, assessed, and reported. The selection process, number of indicators, evaluation criteria, and data availability are important considerations. By working through the assessment process, those involved must strive to arrive at a practical, relevant, reliable, meaningful, and objective set of indicators. A watershed assessment provides a 'snapshot' of present watershed conditions. Built into the process is a requirement to monitor and update information and to review the indicator set and report annually (Palidwor 2002: 31-51).

Benefits:

A watershed assessment:

- Brings stakeholders together to focus on and prioritize the issues
- Puts the report together is a useful exercise for stakeholders to choose indicators of watershed health that are meaningful and relevant to the collective
- Building an understanding of watershed issues and direction for improvement by educating stakeholders about current watershed conditions (Ibid.).

Constraints:

The limitations of a watershed assessment project must be addressed before the project begins to ensure that it is a success.

- Science-based reports are often challenging for laypersons to understand, so it is essential that a communication component for such a project be included that involves a simplified graphic format
- Data management is time consuming and technical. Sufficient technical skills are required to research, present, and monitor the information
- Technically skilled experts must be involved in determining the assessment ratings to ensure that the project outcome is scientifically defensible.

Medium to Long-Term – 3 to 5 years

3. CRW Council

Formalizing a partnership that is made up of key watershed stakeholders is an effective way to establish networks of reciprocity and help stakeholders capitalize on the benefits. A watershed council is essentially a formalized partnership intended to create a structure

for long-term cooperative efforts and decision making. Watershed councils range in size from very large regional partnerships to more localized bodies, depending on the size of the watershed. Regardless of size, a wide variety of stakeholder interests are represented and at least one level of government plays a strong leadership role. Some cooperative efforts engaged in by a council may include developing:

- a conservation strategy or policy
- improved legislation and regulations for protecting sensitive habitat
- a river restoration program
- research and monitoring programs (Brenner et al. 1999; California Coordinated Resource Management and Planning 2002).

Once a council is established and functioning as an effective partnership, it is a short leap to evolve into a watershed planning process.

A watershed partnership requires support staff for it to function efficiently and effectively. It is strongly suggested that an initial task of a watershed council is to hire a watershed coordinator who is responsible for the organization of watershed projects and maintain communication between stakeholders (U.S. Environmental Protection Agency's Office of Wetlands 1977).

Benefits:

A CRW Council will benefit stakeholders through:

- Regular interaction between stakeholders means increased dialogue on watershed issues
- A collaborative approach to decision making on watershed management

- The establishment of a strong network that will ideally lead to a more knowledgeable, skilled, and cooperative collective of stakeholders

Constraints:

Getting stakeholders to this point will require strong social capital and leadership as well as a clearly defined purpose and mandate for the CRW council and political will. Ongoing funding and in-kind resources will be essential to ensure that the council can be effective and maintain momentum over the long term.

7.2 Summary

The watershed projects proposed for the short and medium term provide a graduated approach that could lead the CRW stakeholders toward a watershed planning process. Five guiding principles are developed to help promote projects that are responsive to the low social capital and nonsecured preliminary elements of success in a watershed process, identified in earlier chapters. Therefore, the three projects described above – a watershed atlas, a watershed assessment, and the formalization of a watershed council – incorporate the guiding principles.

The watershed atlas is a relatively simple project that can be designed to begin the process of partnership building and the end product is a useful information package of existing watershed conditions. Stakeholders will begin learning how to work together and generate goodwill by sharing in the success of such a project.

The watershed assessment follows the atlas project and is intended to build on the atlas information by developing a set of indicators that lead to future actions. The assessment is more complicated than the atlas and requires a greater degree of collaboration, thus building social capital and increasing the skills and knowledge of the stakeholders. Working through the assessment process will encourage stakeholders to reaffirm their sense of ownership and commitment to the watershed, thus creating a more supportive climate for a leader to emerge. Additionally, using the assessment of watershed conditions to inform decision makers may help generate political will for more ambitious watershed projects, such as a formal watershed council.

If key stakeholders agree that a CRW watershed coordinator is needed, this will likely be an initial purpose for establishing a watershed council. The partnership can be brought together to plan the responsibilities of the position and reporting structure and jointly oversee the responsibilities of the watershed coordinator. It is through this partnership that a purpose for a watershed planning process will be clearly defined and funding sources secured. Continued success in this graduated set of watershed projects could lead to conditions for creating a community of watershed stakeholders that embody strong leadership, inclusiveness, political will, and high levels of social capital.

CHAPTER 8

CONCLUSIONS AND RECOMMENDATIONS

There were two main goals for this research. The first was to develop a framework for evaluating social capital and determining whether precondition criteria were secured for a watershed planning process in CRW. The second goal was to use these results obtained through the framework research and case study to develop a strategy to advance CRW stakeholders towards a successful watershed planning process.

8.1 Conclusions

The Framework for Evaluating Social Capital and Creating Successful Watershed Partnerships appears to be a promising tool for evaluating social capital among stakeholders and determining whether the precondition critical success factors of a planning process are in place. This research shows that in the CRW, barriers to social capital are stifling efforts to form watershed partnerships. Social networks clearly exist, since most stakeholders are acquainted and have engaged in partnership activity in the past. However, these networks are not strong enough to motivate consistent communication and collaboration among key stakeholders.

The research results that were derived through the framework and case study indicate there is a connection between the level of social capital and the level of support for a watershed planning process. When the level of social capital is low, there is a high probability that a watershed planning process cannot be undertaken successfully. It appears that there may be a connection between the presence of strong social capital

among watershed stakeholders and securing the preliminary elements of a successful watershed planning process. The Coquitlam River Watershed Society was not able to secure the criteria in conditions of low social capital.

It is important that potential users of this framework understand its limitations. The framework cannot provide a common solution for eliminating barriers to social capital formation, nor indicate exactly how long such a process may take. Like watershed ecosystems, each social situation is unique. Because the barriers to building social capital will differ among stakeholders in each watershed, so will the strategies to eliminate them and the actions needed to fulfill the preliminary elements that increase the probability of a successful watershed planning process.

The strategy developed in chapter 7 for the CRW stakeholders is based on the research outcomes of the framework. Therefore, the strategy is unique to the situation in the CRW at the present time. The strength of this framework is that it provides watershed stakeholders with a guide for dialogue and discovery. By following this process, stakeholders can contemplate their collective weaknesses and learn the value of their strengths. This will become the blueprint for developing a unique strategy for successful watershed planning.

8.3 Recommendations for Further Research

The analysis of the precondition critical success factors revealed that certain criteria might need to be in place before others. For example, in the CRW case study, it appears that effective leadership is the key to deciding on a clearly defined purpose, obtaining

political will, and securing funding. At least one person, group, or government agency, must commit to generating support for a watershed planning process and take on the work involved in doing so. Further study is required on which preliminary elements might provide a strong foundation for stakeholders to build support for subsequent preliminary elements. These may be critical to watershed stakeholders who are interested in advancing towards a watershed planning process in their efforts to focus their efforts on key areas when preparing a strategy.

Although not as clear cut, the social capital analysis also suggests that leadership is the key to bringing stakeholders together and building relationships. It seems logical that a leader will emerge among a group of motivated watershed stakeholders who have achieved a high level of social capital. However, it is possible that leadership, based on a strong vision for stakeholder collaboration, must first be in place before social capital can grow. Further study on leadership and its link with social capital is needed to determine whether a community of watershed stakeholders lacking strong leadership can build social capital before finding a leader to guide them.

A final question that comes out of this research is the suggested link between social capital and the precondition criteria for successful watershed planning. The literature on watershed planning clearly shows that watershed practitioners recognize the importance of cooperative working relationships and the establishment of trust, but little research has been done on the type and degree of successes that can be achieved in watersheds with high levels of social capital. Such intelligence provide practitioners and others with real

examples of what social capital looks like and help stakeholders understand what they can achieve and how they can build it for themselves.

APPENDIX 1

Interview Questionnaire

Introductory Questions:

1. How long has your group/organization been active in the Coquitlam River Watershed?

2. How long have you been affiliated with your organization?

3. How successful have planning initiatives been for the Coquitlam River Watershed over the past few years?

4. What do you feel are the successes achieved and problems encountered in dealing with environmental issues in the CRW during this time?

5. Do you believe that the local ecosystem in the CRW has become more sustainable or less sustainable in the last decade?
   a) Why?

6. What do you feel governments and citizens must do to ensure a sustainable future for the CRW?

Assessment of '96 Community Initiative:

7. Were you involved with community organizations in the CRW prior to the '96 process?

8. Did you feel the '96 process was a success?
   a) Why or why not?

9. Did you feel that you were more informed about the various issues in the CRW after the '96 process?

10. Did you feel that the '96 process included all interests and everyone was encouraged to discuss his/her thoughts on watershed issues?

11. Did you feel that there was a general understanding and agreement on the issues, among individual interests, community groups, business community, First Nations, and government?

Assessment of community involvement in CRW today.

12. Do you feel that the local governments - Coquitlam & PoCo - provide enough encouragement and opportunities for individuals and community groups to become involved in watershed initiatives and activities?

13. Similarly, do you feel that other levels of government - MoELP, DFO, GVRD, & BC Hydro - encourage and provide enough opportunities for individuals and community groups to become involved in watershed initiatives and activities?

14. Do you feel that the communication lines between (local/other) government and community are open? Explain.

15. Do you feel that there are some groups that have more influence on (local/other) government decision making than others?
    a) If so, which groups are most influential?
    b) Least influential?
    c) Why do you think this is happening?

16. a) What, if anything, do you think is the role of local government in encouraging community involvement in watershed initiatives and activities? (Please rank).

    Provide more:

    _____ 1. staff involvement in community group projects/meetings
    _____ 2. education/training for community groups
    _____ 3. joint initiatives between government and community groups
    _____ 4. policies/programs that support watershed restoration and protection
    _____ 5. community involvement in government decisions impacting watershed health
    _____ 6. formal recognition of work/achievements of community groups

    b) What, if anything, do you think is the role of other government in encouraging community involvement in watershed initiatives and activities? (Please rank).

    Provide more:

    _____ 1. staff involvement in community group projects/meetings
    _____ 2. education/training for community groups
    _____ 3. joint initiatives between government and community groups
    _____ 4. policies/programs that support watershed restoration and protection
    _____ 5. community involvement in government decisions impacting watershed health
    _____ 6. formal recognition of work/achievements of community groups

17. Does your group/organization participate at community events with other groups?

18. Is there anything that community groups could do to improve communication between groups and with government?

19. Do you feel that local governments - Coquitlam & PoCo - understand the problems and opportunities in the watershed and make efforts to address these issues?

20. Do you feel that the other government jurisdictions understand the problems and opportunities in the watershed and make efforts to address these issues?

21. Do you feel that other groups within the community support/are in favor of the work/activities of your organization?

22. Do you feel that government agencies are doing their best to provide sufficient funding to support these activities?

23. Do you feel that the various environmental and stewardship groups should work together, or focus on their own work?
    a) Please explain.

24. Are there any activities that you feel are necessary to promote watershed awareness and environmental protection that are not occurring:
    a) Due to a lack of government funds or involvement?
    b) Due to a lack of community support or involvement?

25. What other things, if any, do you believe that government should be doing to help support community groups and their activities?

26. Are there any other important issues regarding community activities in the CRW that have not been covered in these questions?

APPENDIX 2

Summary of Interview Coding Results Matrix

Coding System for CRW Interviews:

CODE #	THEME
1.0	*Positive Comments on:*
1.1	Participation
1.2	Communication
1.3	Cooperation
1.4	Trust
2.0	*Negative Comments on:*
2.1	Participation
2.2	Communication
2.3	Cooperation
2.4	Trust
3.0	*Suggestions for Improving Relations:*
3.1	Need an umbrella group
3.2	Regular information-sharing meetings
3.3	Common website/newsletter
3.4	Paid watershed coordinator
4.0	*Perception of Outcomes from '97 Forum:*
4.1	A success
4.2	Not a success
4.3	Fairly successful
4.4	Helped build strong networks
4.5	Formation of new groups indicator of success
4.6	New groups led to more problems
4.7	Increased awareness of issues

Coding Results:

Interviewee	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4	4.5	4.6	4.7
1	1	1	2	1	2	3	3	2		1			1			1			1
2			2	3	3	6	5	9	3			1	1					1	
3		2	4	1		3	9		1	1	1	1			1			1	1
4		2		1	3	7	7			2	1		1						1
5	2	7	5	1		6	4			1			1						1
6			2		2	4	5	4							1	1		1	
7		3	1	1		2	5			1	1		1			1	1		1
8				1	2	4	3	1					1						
9	1	1		1		3	7		1			1	1			1			
10			1		5	8	10	6		1				1					1
11	1	3	1		1	6	4	4		1				1				1	
12		1	1	1		8	3	8					1						1
13		1	2	2	1	6	10	3	2						1			1	
TOTAL	**5**	**21**	**21**	**13**	**19**	**66**	**75**	**37**	**7**	**8**	**3**	**3**	**8**	**2**	**3**	**4**	**1**	**5**	**7**

REFERENCES

Ambs, Todd. 2000. Exploring the Watershed Approach: Critical Dimensions of State-Local Partnerships. *River Voices* 11 (2):1-24.

Angelo, Mark. 2002. *2002 Endangered Rivers Backgrounder*. Outdoor Recreation Council of BC 2002 [accessed September 22 2002]. Available from http://www.orcbc.ca.

Brenner, A.J., L.A. Brush, J.S. Martin, K.Y. Olsson, P.L. Rentschler, and J.K. Wolf. 1999. The Huron River Watershed Council: Grassroots Organization for Holistic Watershed Management. *Water Science Technology* 39 (12):331-337.

Bridge-Coastal Fish and Wildlife Restoration Program. 2001. *Strategic Plan - Coquitlam River (Buntzen Lake) Watershed* (Volume 2, Chapter 8). BC Hydro 2002 [accessed June 29 2001]. Available from http://www.bchydro.com/bcrp/strategic_plan/ch08_final.pdf.

California Coordinated Resource Management and Planning. 2003. *A Conservation Dilemma, A Cooperative Solution*. California Coordinated Resource Management and Planning, October 30 2002 [accessed February 11 2003]. Available from http://www.cacrmp.org/index.htm.

Caron, Debbie, Beth McWilliam, Dhorea Ryon, and Diane Rogers. 1988. *Port Coquitlam: City of Rivers and Mountains*. Port Coquitlam: The Corporation of the City of Port Coquitlam.

Christopherson, Robert W. 1997. *Geosystems: An Introduction to Physical Geography*. third ed. Upper Saddle River: NJ: Prentice Hall.

Cohen, Don, and Laurence Prusak. 2001. *In Good Company: How Social Capital Makes Organizations Work*. Boston: Harvard Business School Press.

Coleman, James S. 1990. *Foundations of Social Theory*. Cambridge: The Belknap Press of Harvard University Press.

Conservation Technology Information Centre. 2001. *Building Local Partnerships: A Guide for Watershed Partnerships*. National Watershed Network, October 7, 2000 2000 [accessed February 28 2001]. Available from http://ctic.purdue.edu/KYW/Brochures/BuildingLocal.html.

———. 2001. *Putting Together a Watershed Management Plan: A Guide for Watershed Partnerships*. National Watershed Network, October 7, 2000 2000 [accessed February 28 2001]. Available from http://ctic.purdue.edu/KYW/Brochures/PutTogether.html.

Cormick, Gerald, Norman Dale, Paul Emond, S. Glenn Sigurdson, and Barry D. Stuart. 1996. *Building Consensus for a Sustainable Future: Putting Principles into Practice*, *National Round Table Series on Sustainable Development*. Ottawa: National Round Table on the Environment and Economy.

Cresswell, John W. 1994. *Research Design: Qualitative & Quantitative Approaches*. Thousand Oaks: SAGE Publications.

Duram, Leslie A., and Katharin G. Brown. 1999. Assessing Public Participation in U.S. Watershed Planning Initiatives. *Society & Natural Resources* 12:455-467.

Esovoloff, Mike. 1996. Coquitlam River Watershed. Coquitlam: City of Coquitlam.
———. 2002. Lower Coquitlam River Watershed in the GVRD. Coquitlam: City of Coquitlam.

Frame, Tanis M., J.C. Day, and Thomas I. Gunton. 2002. Strategic Land Use Planning for Sustainable Resource Management: An Evaluation of the Land and Resources Management Planning Process in British Columbia. Burnaby: Simon Fraser University.

Genskow, Kenneth D., and Douglas S. Kenney. 2000. Building State-Local Watershed Partnerships. *River Voices* 11 (2):1-12.

Jarvis, Janice. 2001. Resources and Funding: As Many Approaches as There are Projects! Paper read at Working Together for the Coquitlam River Watershed, May 26 2001, at Riverview Hospital, Coquitlam.

Johnson, Bart R., and Ronald Campbell. 1999. Ecology and Participation in Landscape-Based Planning Within the Pacific Northwest. *Policy Studies Journal* 27 (3):502-529.

King County Department of Natural Resources. 2001. *King County Watershed Atlas*. King County Department of Natural Resources, January 19 1999 [accessed September 20 2001]. Available from http://dnr.metrokc.gov/wlr/basins/rnaatlas.htm.

Kingma, Onko, and Ian Falk. 2001. Learning to Manage Change in Communities: A Way Forward. In *Learning to Manage Change: Developing Regional Communities for a Local-Global Millennium*, edited by I. Falk. Kensington Park, Australia: National Centre for Vocational Education Research Ltd.

Koop, Will. 2002. *A Presentation on the History of the Coquitlam River Watershed and River from 1898 - 1914*. Alternatives.Com, April 6 2002 [accessed June 21 2002]. Available from http://www.alternatives.com/bctwa/CoqRivHist.htm.

Leach, William D., and Neil W. Pelkey. 2001. Making Watershed Partnerships Work: A Review of the Emperical Literature. *Journal of Water Resources Planning and Management* 127 (6):378-385.

McGinnis, Michael Vincent. 1999. Making the Watershed Connection. *Policy Studies Journal* 27 (3):497-501.

McGinnis, Michael Vincent, John Woolley, and John Gamman. 1999. Bioregional Conflict Resolution: Rebuilding Community in Watershed Planning and Organizing. *Environmental Management* 24 (1):1-12.

McPhee, Michael, ed. 2003. *Coquitlam River Watershed Atlas*. 1 ed. Coquitlam: Coquitlam River Watershed Society and City of Coquitlam.

McPhee, Mike, Martin Gebauer, Gary Holman, Gary Runka, and Mike Wallis. 1996. The Salmon River Watershed: An Overview of Conditions, Trends, and Issues. West Vancouver: Quadra Planning Consultants.

Merriam, Sharan B. 1988. *Case Study Research in Education: A Qualitative Approach*. San Francisco: Jossey-Bass Publishers.

Monk, H.A.J., and J. Stewart. 1967. *A History of Coquitlam and Fraser Mills*. Coquitlam.

Nixon, Bob. 1993. From Conflict to Consensus. Paper read at From Conflict to Consensus: Shared Decision-Making in British Columbia, at Simon Fraser University Harbour Centre Campus.

Ontario Ministry of Environment and Energy, and Ontario Ministry of Natural Resources. 1993. Subwatershed Planning. Toronto: Ministry of Environment and Energy and Ministry of Natural Resources.

Ontario Ministry of Environment and Energy and Ontario Ministry of Natural Resources. 1993. Watershed Management on a Watershed Basis: Implementing an Ecosystem Approach. Toronto: Ontario Ministry of Environment and Energy and Ontario Ministry of Natural Resources.

Ontario Watershed Planning Implementation Project Management Committee (PMC). 1997. An Evaluation of Watershed Management in Ontario: Final Reort. Toronto: Ontario Ministry of Environment and Energy, Ontario Ministry of Natural Resources, Ontario Ministry of Municipal Affairs and Housing, Ontario Ministry of Agriculture, Food and Rural Affairs, Association of Municipalities of Ontario, Association of Conservation Authorities of Ontario.

Ostrom, Elinor, and T.K. Ahn. 2001. A Social Science Perspective on Social Capital: Social Capital and Collective Action. Bloomington: Indiana University.

Palidwor, David Richard. 2002. Measuring Performance Related to the Streamside Protection Regulation: An Integrated Approach for Local Government. Masters Thesis, Environment and Management, Royal Roads University, Victoria.

———. 2003. Coquitlam, April 22.

Putnam, Robert D. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton: Princeton University Press.

———. 1993. The Prosperous Community: Social Capital and Public Life. *American Prospect* 4 (13).

Ramage, Diane. 2001. Exploring the Influence of Environmental Education. Paper read at Working Together for the Coquitlam River Watershed, May 26 2001, at Riverview Hospital, Coquitlam.

City of Coquitlam. 2001. City Council. *Regular Council Meeting*. September 4.

Riley, Ann L. 1998. *Restoring Streams in Cities: A Guide for Planners, Policy Makers, and Citizens*. Washington: Island Press.

Romaine, M. J. 2000. Watershed Management Planning in British Columbia and the Yukon Volume IV: A Workbook for Watershed Management and Planning. Vancouver: BC Watershed Stewardship Alliance.

Romaine, M. J., and N. Christiansen. 1997. States of Readiness for Sustainable Community Development. Sunshine Coast: Community Development Institute.

Schueler, Thomas R. 2000. Basic Concepts in Watershed Planning. In *The Practice of Watershed Protection*, edited by T. R. Schueler and H. K. Holland. Ellicott City, MD: Center for Watershed Protection.

———. 2000. Choosing the Right Watershed Management Structure. In *The Practice of Watershed Protection*, edited by T. R. Schueler and H. K. Holland. Ellicott City, MD: Center for Watershed Protection.

———. 2000. Crafting Better Urban Watershed Protection Plans. In *The Practice of Watershed Protection*, edited by T. R. Schueler and H. K. Holland. Ellicott City, MD: Center for Watershed Protection.

Schueler, Tom. 1995. *Site Planning for Urban Stream Protection*. Edited by U.S. Department of Environmental Programs and U.S. Environmental Protection Agency. 5 vols, *Environmental Land Planning Series*. Silver Spring: Metropolitan Washington Council of Governments and Center for Watershed Protection.

Simrell King, Cheryl, Kathryn M. Feltey, and Bridget O'Neill Susel. 1998. The Question of Participation: Toward Authentic Public Participation in Public Administration. *Public Administration Review* 58 (4):317-326.

Slocombe, D. Scott. 1993. Environmental Planning, Ecosystem Science, and Ecosystem Approaches for Integrating Environment and Development. *Environmental Management* 17 (3):289-303.

Smailes, Angela. 1977. Coquitlam River Watershed Community Initiative: Final Report for the Groundwork Phase. Coquitlam: City of Coquitlam.

Smith, Theodore M. 2000. Exploring the Watershed Approach: Critical Dimensions of State-Local Partnerships. *River Voices* 11 (2):1-24.

Stephens, Kim A., Patrick Graham, and David Reid. 2002. Stormwater Planning: A Guidebook for British Columbia. Victoria: British Columbia Ministry of Water, Land and Air Protection.

Svendsen, Ann C., Robert G. Boutilier, Robert M. Abbott, and David Wheeler. no date. Measuring the Business Value of Stakeholder Relationships: Part One. Vancouver: The Centre for Innovation in Management.

The World Bank Group. 2002. *Social Capital and Community*. The World Bank Group, October 10, 2002 2002 [accessed October 16 2002]. Available from http:/www.worldbank.org/poverty/scapital/sources/comm1.htm.

U.S. Environmental Protection Agency. 2003. *Reorganization Plan No. 3 of 1970*. U.S. Environmental Protection Agency, June 25 1970 [accessed April 22 2003]. Available from http://www.epa.gov/history/org/origins/reorg.htm.

U.S. Environmental Protection Agency's Office of Wetlands, Oceans & Watersheds. 2000. *Top 10 Watershed Lessons Learned*. U.S. Environmental Protection Agency, August 4 1977 [accessed April 3 2000]. Available from http://www.epa.gov/owow/lessons/appendx2.html.

Watershed Information Network. 2003. *Watershed Atlas*. U.S. Environmental Protection Agency, May 30 2003 [accessed June 1 2003]. Available from http://www.epa.gov/wateratlas/.

Watershed Professionals Network. 1999. Oregon Watershed Assessment Manual. Salem: Governor's Watershed Enhancement Board.

Webler, Thomas, and Seth Tuler. 1999. Integrating Technical Analysis With Deliberation in Regional Watershed Management Planning: Applying the National Research Council Approach. *Policy Studies Journal* 27 (3):530-543.

Yin, Robert K. 1984. *Case Study Research: Design and Methods*. Beverly Hills: SAGE Publications, Inc.

Zandbergen, Paul, Hans Schreier, Ken Hall, Regina Bestbier, Sandra Brown, and Wilson Chan. 2000. *Urban Watershed Management*. 1 ed. Vancouver: Institute for Resources and Environment, University of British Columbia.

Zosiak, Lisa, ed. 1999. *Coquitlam River Watershed Almanac*. New Westminster: Douglas College Centre for Environmental Studies and Urban Ecology.

Zosiak, Lisa, and Michael W. McPhee. 2002. Establishing an Integrated Watershed Management Planning Process for the Little Campbell River Watershed. West Vancouver: Quadra Planning.