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Polycentric Solutions for the Skagit River Water Wars?

By

Alanna Ewert

Accepted in Partial Completion
Of the Requirements for the Degree
Master of Arts

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MASTER'S THESIS

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Alanna Ewert

May 5, 2017

Polycentric Solutions for the Skagit River Water Wars?

A Thesis

Presented to

The Faculty of

Western Washington University

In Partial Fulfillment

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May 2017

Abstract

Low water levels in the Skagit River threaten three salmonid species in the Puget Sound: 1) Chinook, 2) Bull Trout, and 3) Steelhead. Consequently, the Washington State Department of Ecology (aka Ecology) developed and now enforce an instream flow, or “Low Flow” rule that effectively bans new well development in the Skagit watershed. Subsequently, lawsuits between 2002 and 2017 have pitted Skagit County versus Ecology, the Swinomish and Sauk-Suiattle Tribes against Skagit County, the Swinomish Tribe versus Ecology, and two landowners against Skagit County. Yet, in 2016, key stakeholders invested in new Skagit River watershed management and outreach solutions that potentially promise a resolution to what the media has describes as the “Skagit Water War.” A combination of interviews, surveys, and document analysis explored the following questions: What new institutional arrangements are emerging in the Skagit Water War? Are these arrangements more or less polycentric? Could these arrangements improve or worsen governance outcomes? The research utilized an exploratory case study and the theoretical framework of polycentricity; an increasingly popular scholarly perspective that examines the promise and pitfalls of collaborative watershed planning. The results of this study indicate that polycentricity exists superficially in the Skagit River watershed, there is little ecosystem level coordination, and lingering conflict and mistrust among key stakeholders probably undermines a positive governance outcome. Moreover, the Skagit also reflects the traditional fragmentation between land use and water use found in Western watershed governance.

Keywords: Polycentricity, Common Pool Resources, Governance, Watersheds, Skagit River

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Chapter 1. The Contest in the Skagit River

The Skagit River is the largest, longest and one of the most biologically significant river systems in the Puget Sound basin, with its source north of the United States border in British Columbia, Canada and its terminus near Mount Vernon, Washington, USA (Buroker, n.d.a; United States Fish and Wildlife Service [USFW], n.d.). The Skagit River spans about 160 miles and roughly 38,000 acres of watershed. It is home to five different species of salmon (Buroker, n.d.a; Dietrich, 2007; USFW, n.d.). For the purposes of this study, the research area being analyzed is located in the Lower Skagit River Watershed in Northwest Washington State (See Figure 2) and aims to identify the existence of polycentric governance arrangements of the river resource.

Adequate water levels in the Skagit River are essential for the survival of salmonid species, some of which are protected under the Endangered Species Act (ESA). If water levels become too low, due to development along the watershed or from lack of snowmelt, the result is higher river temperatures, and a harsh habitat for salmon. Three main salmonid species of are directly affected by low water levels include: 1) Chinook, 2) Bull Trout, and 3) Steelhead. In the case of warmer temperatures in the river, salmonid species are not able to survive, which can result in negative, long-term ecological and economic consequences. In particular, higher egg and embryo mortality rates have occurred because of warmer temperatures (Pflug, Connor, & Hartman, 2007). The level of streamflow also plays a critical role for salmonid survival. Salmon fishing is part of the approximate \$3.9 billion commercial fishing industry of Washington State (Radtke, 2011).

By the 2040s, the average streamflow for the Skagit River near Mount Vernon, WA was projected to be as high as approximately 24,000 cubic feet per second (cfs) at the end of the spring season, but projected to drop as low as approximately 3,500 cfs by the beginning of the fall season (Skagit Climate Science Consortium, 2015). Increased development along the Skagit River watershed, as well as low water levels and increased water temperature have exacerbated the consequences for salmon survival and reproduction. As more homes and businesses are built, more water will be extracted from the river in order for these developments to function. The lowest flow ever recorded was 9,490 cfs on June 16th, 2015; lower than the previous record low at 11,100 cfs in 2005 (Wirth & Stokes, 2015). As a result of these evolving issues, the Washington State Department of Ecology (aka Ecology) has enacted a law that prevents well digging in certain areas within the Skagit River watershed called the instream flow or “Low-Flow” rule. By banning well-digging, water levels remain higher in the river and in turn support salmon habitat. Unfortunately, this law is having a significant adverse impact on landowners and developers.

The Skagit River Basin Instream Resources Protection Program Rule (WAC 173-503), or the “Low-Flow Rule of 2001,” was enacted by Ecology in order to limit development and keep water levels at a sustainable level in the Skagit River, with a minimum of 10,000 cfs taken into account for the rule (Timmons, 2013; Ecology, 2014). This was the recommended amount found adequate to support endangered spawning salmon species, and during the warmer months the minimum may be as high as 13,000 cfs if multiple salmonid species are spawning in the same area (Ecology 2014; Pflug et al., 2007). The water level in the river is critical in order for salmon to survive, especially in the summer months when drought is likely. The average flow for the Skagit River in June is approximately 24,700 cfs (Wirth & Stokes, 2015).

While the intentions of the Low-Flow rule were to create a minimum amount of water reserves in order to protect the salmon habitat and population, it also created a backlash from those who live in the area and from those who would aim to continue development in the watershed. The rule created “water insecurity” according to some and affected nearly 500 homes and businesses as well as over 5,000 people who have relied on Skagit River reservations for their water supplies since 2001 (Buroker, n.d.b; DeMay, 2014). Others have argued that County governments in Washington State have not adequately planned and managed development in closed watersheds (Melious, 2017).

Problem

Because of the backlash, Ecology created an amendment in 2006 that allowed for a limited amount of well digging for people wishing to develop in the Skagit watershed. This exception to the rule resulted in multiple lawsuits between tribal councils, the Ecology, homeowners, developers, and Skagit County (Ahearn, 2014; DeMay, 2014). Most recently, four different lawsuits between 2002 and 2017 have pitted Skagit County versus Ecology, the Swinomish and Sauk-Suiattle Tribes against Skagit County, the Swinomish Tribe versus Ecology, and two landowners against Skagit County. The ongoing battle has left Ecology, Tribes, developers, farmers, landowners, and environmentalists arguing over whether salmon or development is more valuable. Figure 1 on the next page depicts a chronology of events regarding the evolution of the disputes over watershed rights along the Skagit River.

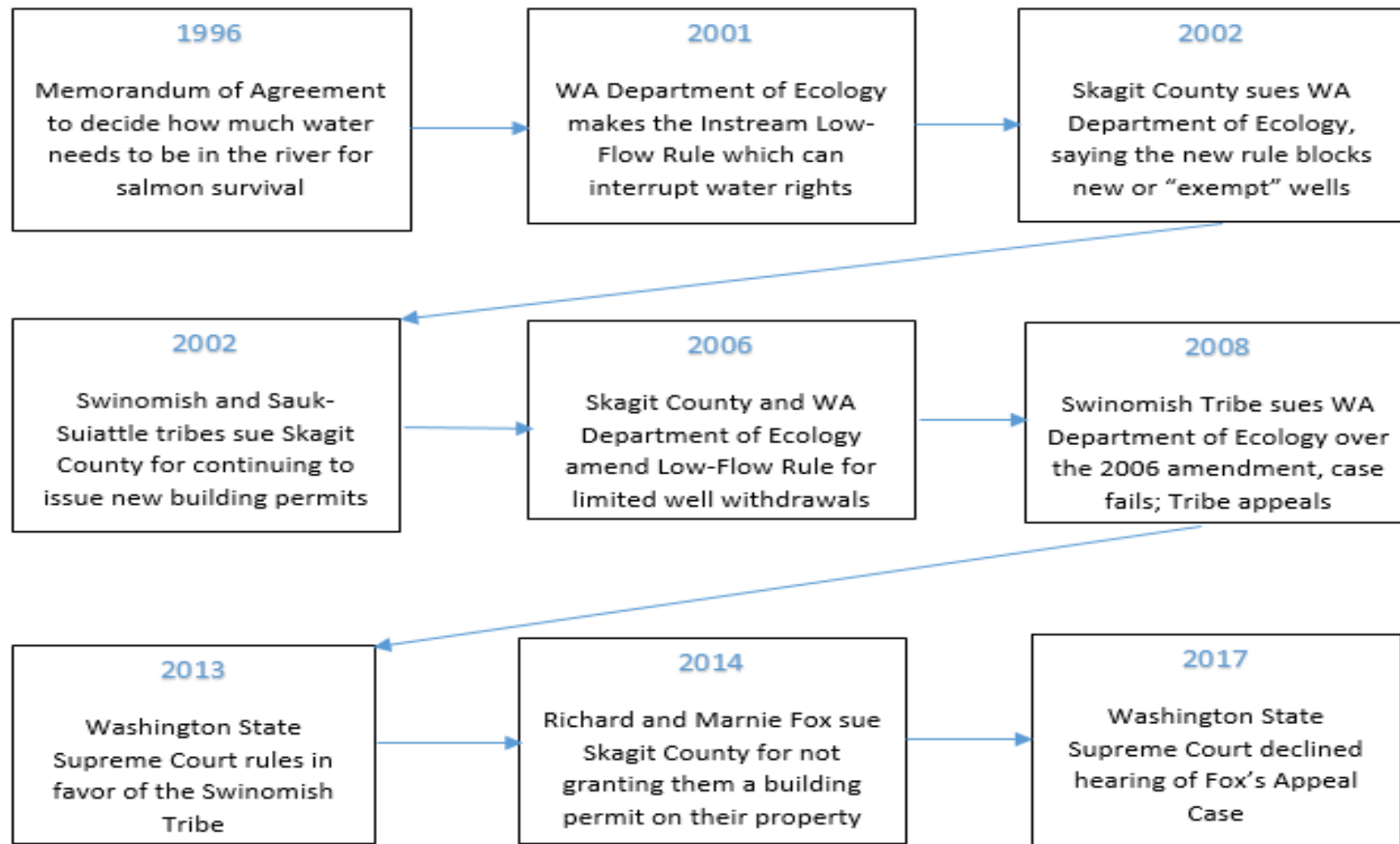


Figure 1. Skagit Water Wars Timeline. Adapted from “Ashley Ahearn’s Timeline,” *Oregon Public Broadcasting*, 2014; with an update for 2017 from Brandon Stone, *Skagit Valley Herald*, 2017.

Tribal Sovereignty versus Property Rights

Tribal sovereignty became recognized in the United States Pacific Northwest when several treaties were signed over a century ago by the tribal nations as a bargain with non-natives for peaceful settlement. Tribal nations relinquished their lands for reservations in return for the, “Right to take fish in common with ‘white settlers’ at all usual and accustomed places” (Blumm & Swift, 1998, p. 409). Unfortunately, what the tribes received for their land has resulted in litigation instead. A significant event in the history of tribal sovereignty dates back to the 1908 *Winters versus United States* when water rights for tribal nations were clearly defined. Prior to the *Winters* case, the *United States versus Winans* case in 1905 outlined the property rights of tribal nations to access fish resources even across private lands (Blumm & Swift, 1998; Cosens, 2008).

In 1975, the *United States versus Washington* case, or the Boldt decision, confirmed the status of tribal nations’ right in Washington State to half of the salmon harvest as well as co-managerial status alongside the government to habitat protection (Blumm & Swift, 1998). The language in both documents, however, implies that treaties with tribal nations are treated liberally. The courts have recognized the treaties as property rights, “Expressing the scope of the right in this fashion makes clear that the treaty *profit-à-prendre*, like most property rights, is not an absolute but a relative right, contextual in nature” (Blumm & Swift, 1998, p. 413). These Tribal rights have come into conflict with development rights and water withdrawals in the Skagit basin in particular.

One lawyer described a “bureaucratic wall”, dividing land use and water governance in Washington State. Melious (2017) noted that water and land laws were once governed at the state level, but land use governance has devolved to the local jurisdictions. “The rift is wide, with

both sides reluctant to venture beyond their usual jurisdictions and uncomprehending of the other side's goals and practices" according to Melious (2017, p. 3). However, the Supreme Court of Washington State recently ruled in the *Hirst* case that Ecology (overseer of water law in the state) and the counties (overseers of land use in the state) must work cooperatively towards a single and harmonious body of law at the intersection of land and water use (Melious, 2017). This "severance" between water and land use matters plagues most of the western states (Tarlock & Van de Wetering, 1999). Moreover, state control over water law may be changing as local communities are taking more of an interest in water issues (Tarlock & Van de Wetering, 1999).

The Skagit River watershed case is a classic example of a "common pool" resource (CPR) problem. A CPR is defined as a commons (in this case a commons provided by the natural world), such as a body of water, river, or parkland – that is a shared resource available to the public or local community, and is considered non-excludable. People cannot be excluded from using the resource unless a costly process such as privatization occurs (Hess, 2006). In addition, a CPR is considered to be "subtractable", meaning users can deplete the resource eventually rendering it exhausted. The typical problem with CPRs is when users of the resource continue to subtract from it until eventually there is not enough of the resource left for all the users. Because of the typical problem, "polycentricity" has become a popular area of study regarding how productive governance strategies can be managed for research on CPR conflicts. "Polycentric" connotes many centers of decision making that are formally independent of each other" (Ostrom, Tiebout, & Warren 1961, p. 831).

Because the Skagit River is a CPR, the typical problem currently being experienced is not enough water for everyone wishing to use the resource. In order for a commons to regenerate, those using it actually need to add resources to contribute to the commons' sustainability, or

restrict usage (Anderies & Janssen, 2013). The problem in the Skagit River watershed is that the water available cannot be used for two purposes at the same time. If groundwater is being consumed for home use, it is diverted from the Skagit’s surface waters and thus affects other aspects of the ecosystem, such as salmon habitat. This disrupts the hydraulic continuity of the Skagit River. Hydraulic continuity refers to the connection of the groundwater and surface waters. If a user wants to build and dig a well, it detracts from the river, even though the water is pumped from the ground (Melious, 2017; Osborn, 2010). This kind of continuity has resulted in a lapse of governance for land at the local level and water at the state level, and in turn conflict over who may use the resource legally (Melious, 2017). Thus a “scarcity” of water occurred and in turn the conflict between those wishing to develop in the watershed and use the resource and those who use the river for conservation.

Table 1

Types of Goods

Difficulty of Excluding Potential Beneficiaries	Subtractability of Use	
	<i>High</i>	<i>Low</i>
<i>High</i>	Common Pool Resources (CPRs)	Public Goods
<i>Low</i>	Private Goods	Toll Goods

Note. “Types of Goods” adapted from E. Ostrom, 2010.

Research Outline

For this study, polycentric governance was analyzed in part by observing nested enterprises (mixed scales), one of the eight design principles for managing CPRs (Ostrom, 1990). Other forms of polycentric governance also discussed include adaptation and change and diverse arenas. To address the impact of polycentricity as a form of resolution regarding the Skagit

Water Wars, the following research questions were examined in this study: 1) What new institutional arrangements are emerging in the Skagit Water War? 2) Are these arrangements more or less polycentric? and 3) Could these arrangements improve or worsen governance outcomes?

There are a multitude of organizations and stakeholders with interests in the Skagit River such as the Upper-Skagit Tribe, Seattle City Light, and Skagit County. However, because of divergent and conflicting interests and perspectives of the stakeholders involved regarding the “Low-Flow” rule, there has been an institutional failure at some level that is disrupting the polycentric governance system leading to conflict in the watershed. Multiple methods – such as interviews and surveys, and document analysis – were used in order to examine polycentric governance within the Skagit River watershed policy arenas.

This thesis is organized in five chapters, references, and appendices. Chapter Two, the Literature Review, outlines the extant literature used in reviewing previous knowledge of polycentric governance arrangements in the Skagit River watershed; as well as defines the terms used throughout the thesis, and provides information on relevant material such as past studies involving similar governance, methods, watersheds, rivers, and/or theories. Chapter Three outlines the methodological framework for the research process used in pursuit of the three main research questions, and includes the development of a conceptual model by identifying the definitions, constructs, measurements, and data sources identified and aggregated for the operationalization of the concepts used in this study. The Results, Chapter Four, enumerates the research collected into multiple sections based on the methods used to obtain the data, as well as reveals the general overview of data results. Chapter Five further explains, discusses, and summarizes the results of the study in terms of the theory tested, and the responses to the three

main research questions posited at the beginning of the thesis, followed by a conclusion of possible future investigation opportunities.



Figure 2. Skagit River Watershed in Washington State, USA.

Chapter 2. Polycentricity and Common Pool Resources

Based on previous discussion in Chapter 1 surrounding shared resources in, such as a river watershed, the common use of this valuable resource may often create conflicts over the resource. The resolution of these conflicts among multiple users and shared stakeholders may necessitate the creation of unique, polycentric relationships to govern its use. Watersheds have been the setting for researching polycentricity in some studies due to the complexity of government arrangements and the large size of the areas compared to other common pool resources, or CPRs (McGinnis & Ostrom, 1992; Ostrom, 2008; Schlager, 2002). To fully understand the concepts of polycentricity and polycentric governance regarding watershed areas, these terms are defined and discussed in the following section.

Polycentric Governance

According to Ostrom et al. the term polycentric – “Connotes many centers of decision making that are formally independent of each other” (1961, p. 831). A more detailed definition includes the following:

...polycentricity (tentatively defined as a social system of many decision centers having limited and autonomous prerogatives and operating under an overarching set of rules) was first envisaged by Michael Polanyi (1951) in his book *The Logic of Liberty*. From there it diffused to law studies, thanks to Lon Fuller (1978) and others (Chayes, 1976; Horowitz, 1977), to urban networks studies (Davoudi, 2002; Hague & Kirk, 2003), and, even more importantly, to governance studies, thanks to Vincent and Elinor Ostrom and the Bloomington School of Institutional Analysis (Aligica & Boettke, 2009).” (Aligica & Tarko, 2011, p. 237).

In order to provide clarity regarding the use and meaning of polycentricity in this study, a working definition of polycentricity was proffered as, “the organization of multi-level governance arrangements for a larger common pool resource system.”

Equally more important regarding watershed oversight is the concept of governance, and in particular, polycentric governance. For the purposes of this study, governance itself is defined according to Sovacool as follows:

...broadly conceived, refers to how humans make decisions and form institutions that craft rules shaping individual behavior (Sovacool, 2011, p. 3833). Likewise, the term refers to any of the myriad processes through which a group of people set and enforce the rules needed to enable that group to achieve desired outcomes (Florini & Sovacool, 2009) (Sovacool, 2011, p. 3833).

At its most abstract level, governance is about deciding who can do what, who will monitor it, and how rules are modified and changed over time (Ostrom, 2009). Governance strategies addresses the social and institutional arrangements that provide an organizing framework for the appropriate conduct of decision-making of shared resources (Connick & Innes, 2003; Emel & Roberts, 1995; Kallis, Kiparsky, & Norgaard, 2009). The interpretation is drawn from the readings in the literature, however, there is no one specified definition of the concept of good governance due to the subtlety and intangible nature of the concept.

As documented in a cross-national study of watershed governance, performance increases with more polycentricity and coordination according to evidence from past water research done on water systems and regimes (Pahl-Wostl & Knieper, 2014). Watershed governance has become a complex governance topic because water policy has developed and changed considerably over time, especially in the Skagit River watershed, making water governance there fluctuating and dynamic.

Watershed Governance and Polycentricity

As previously mentioned, research exists in the field of watershed governance has identified qualitative case studies of watersheds as a popular method for studying polycentric

governance techniques in CPR management (Blomquist, 2015; Carlsson & Berkes, 2005; da Silveira & Richards 2013; Norman & Bakker, 2005). Many of these studies have involved the Institutional Analysis and Development (IAD) Framework, a framework designed to contain the most general set of variables in a systematic way to examine institutional settings including human interaction with markets and governments; and the CPR design principles as constructs for studying the concept of polycentricity (Ostrom, 1990; Ostrom, 2005). Because of the system of local, or horizontal, relationships making decisions independently that affect the entire watershed arena, polycentricity is noted for its beneficial compatibility for all of the actors involved; as opposed to a monocentric, or vertical, system where fewer actors make all of the decisions that affect the entire arena (Marshall, Coleman, Sindel, Reeve, & Berney, 2016).

Another one of the eight design principles for CPR management developed by Elinor Ostrom are collective choice arrangements. They involve participation in the creation and modification of rules for governance and is an indication of polycentricity within institutions (Anderies & Janssen, 2013). Watershed case studies involving polycentric governance have used interviews of stakeholders as a method for analysis (Larson & Lach, 2010; Norman & Bakker, 2005). Comparative case studies have also been used for analysis of governance techniques (Huntjens et al., 2011; Mostert, 2012; Pahl-Wostl, Lebel, Knieper, & Nikitina, 2012). Previous studies have resulted in the consensus that higher institutional variety has resulted in better governing techniques. The literature illustrated that more polycentric multi-level governance systems seem to avoid the CPR deficiencies often seen when at least one or more of the design principles are implemented into the overall system design. However, some polycentric watershed systems, such as the case of the Skagit River, have struggled to experience the same success as others.

Other watersheds have been recognized as polycentric systems. However, such polycentric systems are not always functional. Da Silveira and Richards demonstrate that even though some systems may be polycentric, they may not always be successful in terms of governance (2013). China's Pearl River is an example of a dysfunctional system that is polycentric, especially compared to the Rhine River in Europe. The Pearl River's governance system involves more competition among institutions than cooperation (da Silveira & Richards, 2013). The Rhine River exudes less power struggles as well because political incentives exist at different levels of government, and not just the local levels.

Washington's Watershed Management Act

In 1998, the Washington Watershed Management Act (Chapter 90.82 RCW) was created and along with it, the Water Resource Inventory Areas (WRIAs). The act allowed local communities and local governments to develop plans related to the watershed in their specific areas ("About the Project," 2008). Out of the 62 WRIAs in Washington State, the Skagit watershed is WRIA 03/04 and covers the Lower and Upper parts of the river and each WRIA uses the instream flow rule (Chapter 173-511 WAC) to examine the flow status of that particular watershed (Ecology, n.d.). At least five species of salmon – Chum, Coho, Pink, Sockeye, and Chinook exist in the Skagit River, along with other salmonid species listed under the Endangered Species Act (ESA) for Skagit County specifically, such as Bull Trout and Steelhead (Skagit County, 2016). Because the ESA is a federal law, it must be enacted and followed by state and local government and its citizens. The instream flow rule is a response to a water "scarcity" issue, meaning there isn't enough water for the salmon and for all of the citizens of the Skagit River to drill wells. WRIAs exemplify a polycentric approach to watershed governance.

Growth Management Act and Whatcom County

The Growth Management Act (GMA) was enacted in 1990 to plan for and manage development in Washington State. It orders local and county governments in high-growth regions to create comprehensive plans in order to accommodate the growth of the area (American Planning Association, 2017). Whatcom County just north of Skagit County has seen the some of the possible unintended side-effects of the GMA, such as the *Hirst* case. The case is similar to the various plights experienced in Skagit County, with too many wells being drilled illegally, unbeknownst to landowners (Kaplan, 2017). The surfeit of wells affects endangered fish populations' habitat and therefore will eventually affect those dependent on fish as a resource.

Skagit River Case Study

The conflict in the Skagit case appears to be primarily an argument over which is more valuable – salmon or development. It seems to reveal a power struggle between developers, environmentalists, and tribes. Many of the existing power structures are forgotten in these cases of CPRs, but should be taken into account (Mansbridge, 2010). Because of the diversity of stakeholders within the Skagit watershed, there are many sides to the issue. The farmers, tribes, and restorationists all have their own tales of why the problems exist and their opinions come with mistrust, a skewed sense of space, and social consequence (Breslow, 2014). With many of the stakeholders opposing each other, it may appear that conflict and mistrust may transcend coordination within this CPR system.

My exploratory study looked at the Skagit watershed as a model of polycentric governance in terms of what has worked and what has not. Entities in the Skagit River watershed

extrapolated the possibilities of new programs and committees including citizen input. For example, one such program was the Skagit River Basin Stream Flow Enhancement/Groundwater Mitigation Program. This project was designed to reuse runoff water and redistribute the water back to the Skagit to prevent low flows (Buroker, n.d.b). The plan included the following: “1) a managed groundwater recharge project to enhance current stream flows and offset flow-related impacts from new groundwater uses in each subbasin; and 2) a fee-based mitigation program to assign “mitigation credits” to individual property owners and to recover the costs of the groundwater recharge project.” (Buroker & Kuchan, n.d.).

A grant from Ecology to the Upper-Skagit tribe allowed the examination of the technical feasibility of this endeavor. Meetings regarding the implementation of this new program took place, and the stakeholders were invited to participate. However, after a technical report stated that this program would not be feasible, lack of community interest as well as landowners not wishing to sell their property for the program’s implementation, the program became defunct.

Committees that have lately emerged at the time of this research include the Skagit Watershed Council’s Lead Entity Citizen Committee (LECC) and Community Engagement Committee (CEC). Both committees’ functions are explained in detail in the Results section (Chapter 4), but they could be the pieces towards a redeeming (or conflict-resolution mechanism) side of the Skagit River watershed conflict. These committees’ titles included the words citizen and community, and may include collective-choice arrangements through civic, or citizen input towards future decision making (Abel, Pelc, Miller, Quarre, & Mark, 2011). Citizen participation is usually done at the local level, as it integrates the understandings of the local stakeholders that are affected by the decisions made (Abel & Stephan, 2000).

The Skagit River exemplifies a subtractable and nonexcludable CPR. Aside from irrigation, more development within the basin would require more water extraction from the river, depleting the resource further. Irrigation for agriculture already subtracts about 10 cfs from the irrigation season, which extends from April through October (Ecology, 2014). When homeowners want to develop along the river, even more water must be extracted and eventually becomes problematic during the lower flows in the summer months. If the water levels become too low, not only do the salmon not survive, but also those who have wells for their homes cannot have an adequate supply of water. In a way, the instream flow rule changed this resource from a CPR to a private good because it can exclude some people, in this case developers and landowners, from using the river.

Well development, or well digging, is a negative externality because if developers use the water for wells or other development purposes, then those parties that rely on salmon will not be compensated for the loss of the salmon. Because of the Low-Flow rule however, the developers in this case are not compensated for the losses of having to either move or build elsewhere due to their proximity to the Skagit River (Ahearn, 2014).

Literature Gaps

The most common gaps in the literature regarding polycentricity and governance are the lack of consistent definitions. The dearth of concise definitions has resulted in convoluted interpretations of the design principles, especially that of nested enterprises. Some of the comparative case studies of watersheds lack empirical research or do not propose any governance system technique(s) that work, more or less, and therefore these issues could be interpreted as validity flaws (Emel & Roberts, 1995; Kallis et al., 2009; Pahl-Wostl & Knieper, 2014). Other literature regarding the Skagit River watershed has also shed light on multiple

stakeholders as being uncooperative and destructive (Krolopp Kirn, 1987; Martin, 2012). Stakeholder attitudes are investigated and discussed later in this document.

Polycentricity and Nested Enterprises (Mixed Scales)

The IAD Framework (McGinnis & Ostrom, 1992) is designed to determine the fundamentals of CPR management (Ostrom, 2008). Along with the framework, one of the eight design principles for managing CPRs, nested enterprises, was used as a construct in this study.

Nested enterprises may be interpreted in different ways. One such definition is, “the organization of multi-level governance arrangements within a larger common pool resource system” (Marshall, 2008).

Another, the one suggested by Elinor Ostrom, states, “When a common-pool resource is closely connected to a larger social-ecological system, governance activities are organized in multiple nested layers” (2009, p. 422). However, this study utilized a more specific interpretation, as follows:

The eventual result of larger, more inclusive organizational units emerging from, and then ‘nesting’ smaller, more exclusive units that manage to self-organize sooner. Smaller organizations thus become part of a more inclusive system without giving up their essential autonomy” (Marshall, 2008).

Nested enterprises, therefore, may be interpreted or defined as the arrangements of smaller organizations with essential autonomy, self-organization, and decision-making power nested into larger institutional systems. Nested enterprises can be interpreted as a representation of mixed scales of governments, hence the “nesting” of institutions (Sovacool, 2011).

Polycentricity and Diverse Arenas

Diverse actors, or as interpreted in this study, diverse arenas, are the organizations involved in the institutional framework revolving around the Skagit River conflict. Diverse arenas mean the various government regulators and stakeholders (Sovacool, 2011) that attended the Skagit Watershed Council Board of Directors meetings as well as the committee meetings such as the LECC and the CEC in this particular research. The study also looked for citizens involved in Skagit watershed affairs, as citizen presence also may enhance governance (United Nations, 2001). Research on “social capital,” a term used to describe the social ties or networks individuals or a community has that manifest trust and reciprocation of goods and interests (Aldrich, 2012; Ostrom, 2010), can result in civic virtue. Civic virtue is the idea of citizens understanding the importance of participating in community affairs, resulting in citizens urging government officials to be responsible and transparent in decision-making (Aldrich, 2012).

Polycentricity, Coordination, and Power Dynamics

In order for a CPR to be polycentric, the system must not only have multiple centers of power, but also function coherently. A polycentric governance system should have effective coordination and a set of rules between the various autonomous centers. If a system does not have coordination, management efforts may be duplicated by the organizations’ authorities and overlapping powers within the governance system (Pahl-Wostl & Knieper, 2014). If a system is experiencing a lack of coordination, it may be labelled as fragmented. More coordinated systems of governance may be better equipped to deal with disturbances like climate change as opposed to fragmented systems (Pahl-Wostl & Knieper, 2014). Coordinated systems with autonomy of organizations also have more freedom for learning and experimentation of governance methods as opposed to fragmented and centralized regimes.

Pahl-Wostl and Knieper describe an axis of power that determines the distribution of power between regimes with three distinct points: 1) Distribution of legally institutionalized functions, responsibilities, and power across levels 2) Degree of centralization of both policy development and implementation and 3) Level of decentralization in accordance with the available technical capacity and taking into account the economies of scale (2014, p. 143). The power axis is the second of the two axes in the Pahl-Wostl and Knieper typology of regimes (2014). Changes in power dynamics and distribution causes governance entities to slide backwards or forwards, depending on the context.

Figure 3 illustrates where a coordinated polycentric system is compared to fragmented or more centralized regimes. A system with more cooperation, coordination, and distributed power could be found in the “Polycentric” quadrant in the upper-right section of Figure 3. The more polycentric a system is, the farther away it is from the center of the axis.

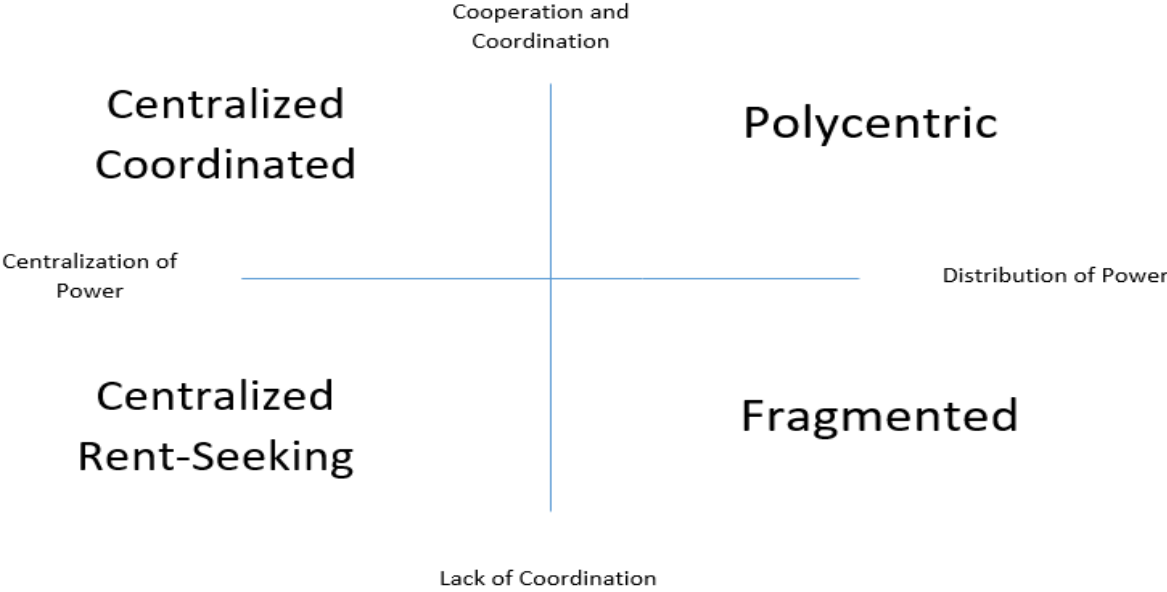


Figure 3. Axis depicting the different typologies of regimes. Adapted from Pahl-Wostl and Knieper, 2014.

The power dimensions of polycentricity is one of the contested gaps in the Bloomington School's research program. For instance, while an entire issue of *Perspectives on Politics* critiques Ostrom's seminal work, three out of the seven articles specifically discuss how power is often overlooked in CPR research. One authors, focused on the limited consideration of power dynamics in CPR dilemmas "Her [Ostrom's] work could be further enriched with increased attention to the ways in which power is relational and how relations of power are entangled with issues of trust" (Levi, 2010, p. 574). Likewise, another political scientist raised the power gap in Ostrom's work. "Her analysis, like that of mainstream economics, is silent about class, power, and a specification of capitalism and its history. Conflict barely makes its way onto her agenda" (Fine, 2010, p. 584). Mansbridge also noted that Ostrom's design principles do not require political equality. "Big landowners, corporations, and other powerful entities rarely accede to a negotiated outcome unless it preserves much of their power" (Mansbridge, 2010 p. 592). Likewise, Clement called for "politicizing" the IAD framework, in order to address power as it currently lacks in the literature. The politicization would assess how resource policy changes and impacts affect multiple levels of governance, and therefore further define the successes and failures of polycentricity (Clement, 2009).

The dynamics surrounding power within resource systems may shift and usually carry historical significance. Because coordination and cooperation amongst the actors and organizations in a watershed is imperative to its health and stability, even though at times it is a struggle for some polycentric systems. While Figure 3 illustrated the regimes based on their characteristics, power dynamics play a deeper role in governance that is sometimes overlooked. Political regimes are not as black and white as Ostrom describes, but may be the cause for some system failures despite diverse levels of government collaboration. Comprehending the social,

political, and economical histories and dynamics between the actors involved in CPRs and the linkages between government levels is often overlooked in the literature of polycentric governance; but may explain why the actors use the resource in specific ways that sustain or deplete the resource and why conflict may arise between various levels of governance (Clement, 2009).

The missing context of the dynamics of power and the relationships that stem from those dynamics may reveal why there are short comings in some systems. Past, current, and future changes in regimes, such as social movements or violent conflict, can cause shifts in regimes and the outlook of governance on certain CPRs, but are neglected in polycentric governance analysis (Baumgartner, 2010). Power dynamics are also relational and affect the way locals and local governments “trust” higher governments (Levi, 2010).

Chapter 3. Analysis of Polycentric Governance

The methods used in this exploratory study identify and define the set of principle constructs, measurements, and data sources used for polycentric governance in the Skagit River watershed. The following section discussed the methods of researching and answering the three main questions of the study: 1) What new institutional arrangements are emerging in the Skagit Water War? 2) Are these arrangements more or less polycentric? And 3) Could these arrangements improve or worsen governance outcomes? This section is divided into multiple parts describing the methods employed, followed by a table to visually depict the flow of the methods analysis.

Polycentric Constructs

This thesis relied on three measurement constructs for polycentricity: 1) nested enterprises; 2) adaptation; and 3) diverse arenas. The variable nested enterprises was determined by the types of arrangements within the multi-level system of governing entities involved in the Skagit River watershed. These types included horizontal (local and state based entities) and vertical (federal and national entities) arrangements. The study specifically looked at the types of member entities involved in the Skagit Watershed Council and the Skagit Climate Science Consortium organizations in the Skagit River area. The process for measuring nested enterprises present in these organizations was via interviews and surveys, as well as document analysis, such as board meeting minutes.

Second, adaptation and change was defined for this study as the ability for governing bodies to change and adapt to the needs of stakeholders. Third, diverse arenas are where stakeholders operate (public, private, non-profit) and what interests they represent (Dietz,

Ostrom, & Stern, 2003, Sovacool, 2011). Adaptation and change, and diverse arenas were measured by interviewing certain members within the organizations such as the Skagit Watershed Council that represent salmon interests, and the Skagit Climate Science Consortium that represents the science of the watershed.

The interviews consisted of approximately 10 questions regarding the ranking of issues and dynamics of the organizations in the Skagit watershed (see Appendix A for a full description of the Interview Questions). The Board of Directors represents the people who were interviewed for representation of the Skagit Watershed Council, and the research scientists were those representing the Skagit Climate Science Consortium. The interviews were recorded through Skype with the permission of the interviewee. The interviews provided testimony as to how effective the current and emerging governance arrangements are, and if they reflected a collaborative implementation of governance. Table 2 represents the concept, constructs, measurements, and data sources as previously described.

Table 2

Methodological Process of Document Analysis and Interviews/Surveys

Concept	Constructs	Measurements	Data Sources
<p>Polycentric Governance</p> <p>A social system of many decision centers having limited and autonomous prerogatives and operating under an overarching set of rules</p>	<p>Nested Enterprises (Mixed Scales)</p> <p>The arrangements of smaller organizations with essential autonomy, self-organization, and decision-making power nested into larger institutional systems</p>	<p>Document Analysis</p> <p>Interviews and Surveys N = 15</p> <p>Second Interview Set for the Skagit Watershed Council</p> <p>Community Engagement Committee N = 2</p>	<p>Skagit Watershed Council Board Member Meeting Minutes</p> <p>Skagit Watershed Council Board Members</p> <p>Skagit Climate Science Consortium Members</p> <p>Department of Ecology</p> <p>Skagit Watershed Council Community Engagement Committee</p> <p>Other Various Organizations</p>
	<p>Diverse Arenas</p> <p>Diverse actors/stakeholders within the action arena of the Skagit River watershed</p>		
	<p>Adaptation and Change</p> <p>Future climate adaptation strategies and/or plans</p>		

Qualitative Study

This exploratory study of polycentric governance arrangements in the Skagit River watershed was conducted as a deductive qualitative study. In order to answer the three research questions posited, an exploratory case study policy analysis was conducted focusing on interviewing the stakeholders representing the organizations involved in the Skagit watershed, and analyzing the Board of Directors meeting minutes of the Skagit Watershed Council.

The stakeholders included those that are involved with the usage of the Skagit River – including the Upper-Skagit Tribe, homeowners, developers, environmentalists, fishers, ecologists, etc. The research study proposed to investigate the debate of the water usage in the Skagit by examining the status of the current situations in the watershed, including investment of new technology to enhance low-flows, as one example. The research furthers the understanding of how the stakeholders are impacted by the Skagit low-flow rule and if tensions in the Skagit conflict are worsened or improved due to emerging programs.

Methodological Steps

The aggregate responses from the interviews and document analysis helped determine if polycentricity existed, and was effective within the Skagit River watershed. The interviews determined if horizontal arrangements exist as a reality between these stakeholders involved in the Skagit conflict. The document analysis was used to observe if variety or lack of variety of organizations exists within the meeting minutes of the Board of Directors Meetings from the Skagit Watershed Council, as well as the Skagit Watershed Council and Skagit Climate Consortium By-laws, and the Community Engagement Committee (CEC) meeting minutes. These documents provided further insight into the operations of the organizations.

Interviews and Surveys

The primary method used for this exploratory research was qualitative in nature, using semi-structured telephone interviews and on-line surveys following the Tailored Design Method (Dillman, Smyth, & Christian, 2014). The sample size from which qualified participants were identified totaled 36. Based on the results of the data analysis conducted, 12 acceptable telephone interviews were completed, and three on-line surveys were used, for a total sample size of 15

completed surveys. The interviews were recorded using Skype software and the on-line surveys were collected via Qualtrics software.

The participants were chosen from a sample frame that listed all of the current members of the Skagit Watershed Council and the Skagit Climate Science Consortium. The sample pool also included people from other organizations that are connected to Skagit River issues. Other potential participants were included based on past lawsuits and previous employment involved in the Skagit River watershed that deemed their participation valuable to the sample pool for the study. Interviews were then conducted with the representatives of various organizations but predominately from the Skagit Watershed Council and the Skagit Climate Science Consortium.

After the 12 telephone interviews and three surveys were completed, transcriptions were made of all the telephone interview recordings as well as the three surveys. The transcriptions supplied a “paper format” for ease in navigation of the data for the research investigation. The transcriptions also illustrated the “character” of the interviewees during the recorded interview, including where in the interview they laughed, etc. While the focus of the transcriptions was meant to aid in the content analysis method of the research, analyzing the details of certain statements helped in perceiving a sort of “attitude” of the interviewees and their position in the organization (this does not apply to the on-line survey respondents as the researcher did not speak with them). The details of the transcriptions are discussed later in this chapter, after a review of the interview and survey questions.

Community Engagement Interviews

A second interview session was conducted after the first interview session. The second session was created for insight into how civic engagement was being utilized in the Skagit

Watershed Council's Community Engagement Committee (CEC), as well as the prospects for the committee's future projects involving the community. The second interview session recruited participants from a total sample pool of five people. Two people participated in the second interview session. The questions asked of these individuals focused on how the committee involves local citizens for its agenda in the Skagit River watershed. These interviews were not recorded and no survey was created. A full list of the second interview questions can be viewed in Appendix B.

Interview and Survey Questions

The participants of the initial interviews were first notified about the study through an email message that inquired about their interest in the study. The first email was similar to a kind of "alert" that gave a description of the proposed study, its intended purpose, who the researchers were, and how to respond if the potential participant was interested. The second contact was a phone call, like a "reminder," that prompted a more intimate conversation to discern or inquire if the individual was interested in participating in the study. Phone contact was also used as a first contact if the previous email contact was not delivered, invalid, or if the participant did not have an email address.

The third contact with potential participants was another "alert" type of email, but this time the email was not from a private email. Instead, the third and final contact email was sent through the survey system Qualtrics. Using Qualtrics allowed the researcher to thank the people who had agreed to participate in the study, as well as urge and encourage the others who had not yet responded to participate. Qualtrics allowed the email to be sent to each individual privately with a "no-response" address, to ensure participant confidentiality and Institutional Review Board compliance. The email also included a link to the survey for the study, in the event some

individuals did not want to participate in a telephone survey. The survey questions posted were the same questions used in the telephone interviews.

The semi-structured telephone interviews consisted of ten questions, some of which had multiple parts to the question. Question 1 and Question 2 were asked of the participant before the recordings began as a way to ease into the interview.

Question 1: *“Do you have any questions about the document I sent earlier regarding your rights as a participant in this research study? Is there anything that I can clarify?”* and,

Question 2: *“Are you ready to start and may I begin recording (if applicable)?”*

After the researcher was given permission to record the interview, the recording began and the telephone interview essentially started. The third question asked, essentially the first “research” question in the survey after the recording was in progress, went as follows:

Question 3: *“How long have you worked for (did you work) for your organization/company? And, “What was your overall role?”* The purpose of first part of Question 3 was to identify how long the participant had been with their company or organization, as well as their role or position. Question 3 doesn’t ask which organization or company the interviewee worked for because the researcher already knows this information from contacting the individuals requesting participation for the interview. Asking this question helped to better understand contextually the significance of the responses throughout the remaining questions. For instance, if a participants was new to their organization, their understanding of dynamics and issues involving the Skagit may be limited compared to someone who has been employed with a certain organization for decades. However, all participants’ responses were used in this study no matter how long they have been affiliated with the company or organization.

For the second part of Question 3, “*What was your overall role?*” learning about the participants’ different roles educated the researcher to the assortment of expertise and knowledge that exists in the Skagit. Knowing and understanding the roles people play in their organizations was an “ice-breaker” that could inspire the participants to discuss their responses in depth, and therefore provide more knowledge to what is happening in the area.

The next question in the interview sequence, Question 4, consisted of three parts, and asked the interviewees about perceived important issues.

Question 4: “*What concerns about the Skagit watershed are you and others [at the Skagit Watershed Council/Skagit Climate Science Consortium/Other] occupied with the most?*” “*Why do you think these issues are so important for you and your consortium members/co-workers?*”, and, “*How would you rank these issues in terms of their importance?*” When asked about the first part of Question 4, regarding the concerns (or issues) with which the respondent and his or her co-workers/members were occupied, the respondents gave a reflection of what their organization represents and stands for. Knowing what these organizations focus on regarding the Skagit helped to better understand their role in Skagit issues for the purposes of this research. Most people responded with multiple foci (e.g., salmon, water supply, climate change), however, some of the answers were similar and others were very different.

The second question in this sequence, “*Why do you think these issues are so important for you and your consortium members/co-workers?*” asked why these issues are important to the interviewees. Asking the interviewees why these issues were important to their organization’s viewpoints allowed the researcher to better comprehend and collate the responses (from the sample pool) and why these organizations focused their resources on a particular issue or project, and not on others they may have perceived as less important.

The third part of Question 4, “*How would you rank these issues in terms of their importance?*” was intended to oblige the interviewees to rank the concerns/issues, and probe them to think about what their organization deems most important. The thought behind this question was that if a ranking exists, then the research data becomes more specified in terms of priorities in the Skagit River watershed area. When the issues were ranked that usually meant those respondents were indicating their support of some issues over others. This also may somewhat imply where resources should be allocated according to how issues were ranked in terms of their perceived importance.

The next question in the interview was a binary question, requesting an “either/or” response. If, in the aforementioned questions, the respondents said that climate adaptation was a concern for the Skagit, the researcher asked the following.

Question 5: “*What do you perceive as the most important factors influencing climate adaptation strategies and/or policy actions in the Skagit River watershed?*” Because they mentioned climate adaptation, the researcher asked this question to examine the process of climate adaptation policies. The other question that the researcher asked in lieu of the first part of Question 5 was “*Where do you think climate issues like adaptation rank among the issues for the Skagit River watershed?*” Since the previous interview questions asked the participants to explain why the issues and concerns they mentioned were important, this question brought climate adaptation into the mix to see where it ranked.

The climate adaptation question was significant to this research by acknowledging where its importance ranked within Skagit River related organizations. This question aimed to deduce which organizations mention climate adaptation at all, and where the respondent ranked it. The responses to the question led the researcher towards understanding which sides of the political

spectrum organizations lean, and therefore with which outside interest groups of certain organizations may align.

The next question in the interview was another semi-structured, three-part, open ended question with the interviewer asking the following.

Question 6: *“Do you think there are other key organizations besides yours involved in these Skagit River issues?”*, *“Can you order them by importance?”* and, *“How long have these influential organizations been involved with Skagit River watershed issues?”* The first question in the three-part sequence was designed for the interviewees to innately list the organizations they already know are involved in contributing to solutions for the Skagit River watershed. The idea was to see which organizations were mentioned the most and then indicate those particular organizations’ perceived presence and involvement.

The next question in the sequence for Question 6 asked, *“Can you order them by importance?”* meant to compel the interviewees to rank the organizations they believe were at the forefront of handling and solving Skagit River issues. The question also guided the interviewee to differentiate between organizations that are involved with the Skagit for personal-interest reasons and those involved due to professional obligations. The differentiation possibly indicated which organizations aspire to be involved with restoring the Skagit as opposed to those that must because of their position with their respective organization. The last question in the sequence, *“How long have these influential organizations been involved with Skagit River watershed issues?”* asked the interviewees to determine how long which organizations have been working on Skagit watershed related work. Organizations involved in Skagit River watershed issues for many years possibly denoted seniority or influence over other organizations that joined later.

For the seventh interview Question, the researcher asked the following.

Question 7: “*How would you characterize the dynamics between the most influential organizations?*” and, “*Are the dynamics more cooperative or contentious, and do they collaborate?*” Part one of Question 7 was asked if the respondent did not address any noteworthy dynamics between groups in earlier responses. Most did not, or did so with little detail, resulting in asking the question to every interviewee. Part 1 of the Question 7 was meant to compel the interviewee to be candid about his or her experience observing the interactions between organizations. Eyewitness reports of what went on during interactions between organizations helps conceptualize why organizational infighting may occur, and how it may have contributing (or started) the “Skagit Water Wars.”

The second part of Question 7, “*Are the dynamics more cooperative or contentious, and do they collaborate?*” was asked to validate negative or positive connections between organizations. Also, this question may have revealed with which actors or other organizations the participant’s organization interacts, and disclose if the organizations collaborate with each other despite the dynamics.

The final content related interview question asked was as follows.

Question 8: “*How would you characterize your organization’s interactions with the other key organizations or groups?*” The question allowed the interviewees to reflect on their organization’s representation in Skagit River issues, as well as what they believe their interactions are with the other organizations. Question 8 added the self-reflection needed to validate opinions of the other organizations discussed throughout the entire interview. It also added an interesting final dynamic to the flow of the interview for the interview, as well as the

research results when all of the interviews are collated. For example, did the participant representing organization X say his or her interactions' were fine when other participants representing organization Y said earlier in their interview that their experiences with organization X were poor?

For the final two interview questions, Question 9 and Question 10, the interviewer asked the following.

Question 9: *“Are there other questions I should be asking about the Skagit River watershed?”*

Question 10: *“Can you recommend others I should talk with about the Skagit River watershed?”* Question 9 invited the interviewee to once again reflect on the Skagit watershed and provide ideas that the researcher had not thought of previously. The question also brought light to any conflicts, organizations, or upcoming events that could help guide future research and further exploration. Question 10 also beseeched the interviewee to inform the researcher of others that have business in the Skagit watershed. These individuals could have been interviewed for further insight into the complexity of Skagit watershed issues. The results of Question 10 were not discussed for reasons of privacy and the protection of the subjects. The question was asked for the researcher's personal benefit and was not transcribed.

Document Analysis

The document analysis part of the research primarily involved the Skagit Watershed Council Board of Directors meeting minutes, the Skagit Climate Science Consortium did not have meeting minutes to analyze. By using the meeting minutes, the researcher was able to identify the processes of the Skagit Watershed Council monthly from 2011 to 2017. The Board

of Directors meeting minutes indicated who on the Board was present for meetings, the actions to be taken as a result of the meeting, as well as what decisions were made during the meeting. The meeting minutes deduced some of the actions of the Skagit Watershed Council and changes made throughout the years. The meeting minutes also provided insight into what topics the Council focused on the most. The document analysis gave the researcher the opportunity to search for certain topics throughout the minutes to determine which topics were brought to discussion. Aside from the meeting minutes of the Board of Directors, the document analysis also investigated the Skagit Watershed Council and Skagit Climate Consortium by-laws and the CEC meeting minutes. The additional documents allowed for further investigation into the operative functions of the organizations.

Protection of Human Subjects

This study involved human subjects for interviews, and as such, the researchers applied for a mandatory IRB training before the research began, as well as an exemption form because of the minimal risk to the subjects. See Appendix C for the certificate of training completion and Appendix D for the memorandum of approval, and Appendix E for the modification approval form. When the form was approved, the interviews proceeded. Informed consent forms sent by email provided the participants with information regarding the study before being interviewed, as well as to ensure they had a full explanation of the voluntary nature of participation, and their rights for human subjects. The consent forms illustrated what the study was about and the possible benefits and risks to the subject being interviewed, along with the confidentiality procedure for the interviewee. If the participants replied to the email, it was considered consent by the researcher and the interviewee. See Appendix F for a copy of the informed consent email.

The second set of interviews required an amendment to the original exemption form because the researcher asked different questions to different interviewees. This form was also approved and the interviews went forward. The respondents for the second interview received a different version of the informed consent form email because of the different purpose of the extended study, however the content about human rights as a participant, as well as the procedure for continuing with the interview, remained the same as the initial interview research method. See Appendix G for a complete copy of the informed consent email for second set of interviews.

Chapter 4. Cooperation, Contention, and Community

Many changes occurred from the time of the proposal to when the research actually took places. For example, the Skagit Streamflow Enhancement/Groundwater Mitigation program was halted due to a technical study showing that there would not likely be enough water for low precipitation periods. The program also became defunct due to landowners not wishing to sell their property, as well as a lack of overall community support for the project (Buroker, n.d.b). However, new projects to promote legal water supply to residents and businesses have recently been taken into consideration, based on the 2016 Engrossed Senate Bill 6589. The bill requires Ecology to, "...conduct a feasibility study on 'effectively sized storage' to recharge the Skagit Basin when flows are not met (Anderson & Inman, 2016 p. iii)." Ecology contracted Washington State University to study solutions similar to the Streamflow Enhancement/Groundwater Mitigation program, but instead include trucking, piping, and winter river flow capture for rural areas in the Skagit Basin. These possibilities were not thoroughly investigated in this study due to its recent nature at the time the research was conducted. However, further study when more information is available is strongly suggested.

Chapter 4 illustrated the outcomes of the document analysis as well as the data collected through the telephone interviews and surveys taken from the sample population queried. The first few sections of Chapter 4 expressed the findings of the document analysis through the meeting minutes of the Skagit Watershed Council Board of Directors, as well as the Skagit Watershed Council By-laws and the Community Engagement Committee (CEC) meeting minutes. The remainder of the chapter describe the findings of the interviews and surveys collected and collated.

Nested Enterprises

Nested enterprises, one of the eight design principles for productive common pool resource management, was studied for this research. Due to the definition of nested enterprises, it is notably synonymous with polycentricity, and was important to discover if the actors in the Skagit River arena were actually relatively independent autonomous figures with decision making power. The Skagit River watershed arena appeared to have many organizations working on its behalf for various reasons. These organizations and groups were also involved in some type of decision making process regarding the operations of the nested organizations.

While looking at both the Skagit Watershed Council and the Skagit Climate Science Consortium organization memberships, nested enterprises appeared present for both conglomerates. The evidence of nested enterprises was the bundled organizations that make up the council and consortium. The Skagit Watershed Council is comprised of 37 member organizations, and the Skagit Climate Science Consortium has 13 scientists from 11 different organizations. Both the council and the organization involve some kind of federal organization (usually a tribe), as well as many state and local organizations, as well as non-governmental organizations (NGOs). The diverse arenas include governmental, non-profits, utilities, universities, interest groups, and consulting firms. Both the council and consortium have By-laws that indicate how a member may join the group and how decisions are made within the organization.

The Skagit Watershed Council By-laws indicated that only those representing an organization are allowed to join, meaning no private individual can join. The organization must agree with what the Skagit Watershed Council supports and endorses, and must make an application in order to be considered. If an individual's "Membership Form" is accepted, that

individual will be the designated person to represent that group. To remain a member, the organization has to stay active either on the Board of Directors or some other type of committee. Decision making requires consensus, or general agreement, in order to move forward with new rules. If consensus is not met, the Chair of the committee the questionable member participates in may enact a voting process. The action is approved when two-thirds of the majority vote is reached. Each organization's representative is allowed one vote, and electronic voting is also acceptable. The By-laws of the council were actually updated since attentiveness to inconsistencies for quorum and decision making were found within the council at the March 6th, 2014 meeting of the Board of Directors ("Board Meeting Notes," 2017). New By-laws were enacted at the Board Members' meeting on August 7th, 2014.

The Skagit Climate Science Consortium By-laws were different. One can be a private individual and not part of an organization to join as a member. The maximum number of members allowed is 15 people. To be a member, one must conduct Skagit-focused research regarding climate or bring a new feature to add to the Skagit Climate Science Consortium. To remain in the organization, the member must attend at least a minimum of 75% of the scheduled meetings and continue conducting and publishing Skagit-related research. Membership in the organization can be revoked by resigning or by a consensus of the other members. Without a consensus, one is reached with a simple, unspecified majority of members requesting a revoked membership.

Governance Arrangements

Local Integrating Organizations

Local Integrating Organizations, or LIOs, are organizations comprised of local governments, non-profits, tribes, interest groups, and businesses to help implement the goals of the Action Agenda in Puget Sound. The Action Agenda is a shared strategy plan created by the Puget Sound Partnership for different areas of salmon habitat recovery in Puget Sound consecutively. Areas included in the plan for recovery include shellfish beds, habitat, and stormwater runoff projects (Puget Sound Partnership, 2016a). The Action Agenda is comprised of two plans, the Implementation and the Comprehensive plans. The Comprehensive plan outlines the priorities and strategies to attain Puget Sound recovery, while the Implementation plan explains the actions to be taken for the shellfish beds, habitat, and stormwater runoff projects within two years (Puget Sound Partnership, 2016a). LIOs enable the local communities to participate in the restoration of their local watersheds by implementing the priorities of the Action Agenda as well as use these actions for local investments (Puget Sound Partnership, 2016b).

The Skagit Watershed is the only watershed in Puget Sound without an LIO. In December 2011, the Skagit Watershed Council discussed partnering with Puget Sound Partnership in order to make an LIO a reality (“Board Meeting Notes,” 2017). In the June 7th, 2012 meeting minutes, plans for an LIO changed from involving Puget Sound Partnership to a unique county-tribal LIO (“Board Meeting Notes,” 2017). The county-tribal LIO would have instead been run by the tribes and Skagit County side by side. However, the idea of any LIO for the Skagit watershed eventually fizzled out entirely, according to the Skagit Watershed Council Board of Director’s September 6th, 2012 meeting minutes (“Board Meeting Notes,” 2017). The

Skagit River watershed not having an LIO indicated one less emerging institution in the watershed governance arena.

Table 3

Puget Sound Watersheds and LIO Progress Compared to the Skagit River Watershed

LIO Area	LIO Organization	LIO Profile	Ecosystem Recovery Plan (First Elements)	2-Year Implementation Plan	Ecosystem Recovery Plan (Final Draft)
Hood Canal	Hood Canal Coordinating Council (HCCC)	HCCC Profile	HCCC First Elements	HCCC 2-Year Implementation Plan	HCCC DRAFT Ecosystem Recovery Plan
San Juan	San Juan Local Integrating Organization (SJLIO)	SJLIO Profile	SJLIO First Elements	SJLIO 2-Year Implementation Plan	San Juan DRAFT Ecosystem Recovery Plan
Skagit	None	None	None	None	None
South Central	South Central Action Area Caucus Group (SCAACG)	SCAACG Profile	SCAACG First Elements	SCAACG 2-Year Implementation Plan	South Central DRAFT Ecosystem Recovery Plan
Sno-Stilly	Snohomish – Stillaguamish Local Integrating Organization (Sno-Stilly LIO)	Sno-Stilly Profile	Sno-Stilly LIO First Elements	Sno-Stilly LIO 2-Year Implementation Plan	Sno-Stilly DRAFT Ecosystem Recovery Plan
West Central	West Central Local Integrating Organization (WCLIO)	WCLIO Profile	WCLIO First Elements	WCLIO 2-Year Implementation Plan	West Central DRAFT Ecosystem Recovery Plan
Whatcom	Whatcom Local Integrating Organization (WLIO)	WLIO Profile	WLIO First Elements	WLIO 2-Year Implementation Plan	Whatcom DRAFT Ecosystem Recovery Plan

Note. “Puget Sound Watersheds and LIO Progress Compared to the Skagit River Watershed,” adapted from the “Public LIO Planning Document,” Puget Sound Partnership, 2016 (does not include all of the watersheds mentioned in the document), and “What is the Action Agenda?” Puget Sound Partnership, 2016a.

Streamflow Enhancement/Groundwater Mitigation Program

The Streamflow Enhancement/Groundwater Mitigation program introduced by the Washington State Department of Ecology and the Upper-Skagit Tribe was mentioned earlier in this study as a possibility towards a more democratic and polycentric resolution for the issues experienced in the Skagit River watershed. However, as stated earlier in this chapter, because of the lack of feasibility and community support the project became defunct in 2014. The Interagency Review Team (IRT) meetings of this program included many people from various organizations, most importantly, residents and landowners from the Skagit River watershed.

The IRT meeting minutes discussed the updates and actions on the project as well as a Q&A near the end of the meetings. The Streamflow Enhancement/Groundwater Mitigation was heavily involved in civic engagement as the representatives of this program encouraged discussion from the public and, in particular, landowners. While only three IRT meetings took place, many people from the public were noted on the minutes and many questions were asked and answered. During the first meeting on January 23rd, 2014; Joe Mentor, a representative of Mentor Law Group and one of the leaders of the streamflow project, mentioned that "...this [public involvement] is the first step in the process of developing an idea."

Lead Entity Citizen Committee and Community Engagement Committee

The Lead Entity Citizen (LECC) and the Community Engagement Committees (CEC) are committees run by the Skagit Watershed Council in order to enlarge its electorate, and to involve the locals in understanding more about watershed issues. In order to gain more public support, the two new organizations were recently created and are run by members of the Council. After many discussions about a new direction involving the community, the LECC and CEC

organizations present a way for civic engagement to become a reality in the Skagit watershed. The LECC’s “main function is to review and provide a final ranking of habitat projects proposed through the lead entity process based on their merits as measured by community and economic criteria” (Skagit Watershed Council, 2017). After initially considering the idea of an LIO, which had dissolved in 2012, the LECC was established. The LECC had its first meeting in 2016. The LECC ultimately decides which projects the Technical Review Committee (TRC), another committee with the Skagit Watershed Council, works on after restoration projects are ranked by the community and by the financial costs. According to one comment from the meeting minutes, “LIO’s are what Lead Entities were five years ago.” From this perspective, the LIOs and the LECC program involve similar processes for, hopefully, similar results. The LECC appeared to be heavily focused on community engagement, which is different from the traditional LIOs.

The CEC’s “main functions include advising the [Skagit Watershed] Council on developing, implementing, and monitoring our Community Engagement Plan and materials following shared local vision and leadership” (Skagit Watershed Council, 2017). The CEC focuses on what the community cares about, such as certain streams and ditches that the community may often see, often on their own property. The CEC also focuses on engaging all members and aspects of the Skagit community, including religious groups, businesses, recreationists, etc. Another focus of the CEC is to reach out to groups who may not likely talk about restoration of the Skagit River. The goal of the committee is to engage more members of the community, resulting in the CEC to reach out to various populations through gender-based approaches, museum and art connections, and other outreach methods that may attract new audiences to the importance of watershed health and recovery.

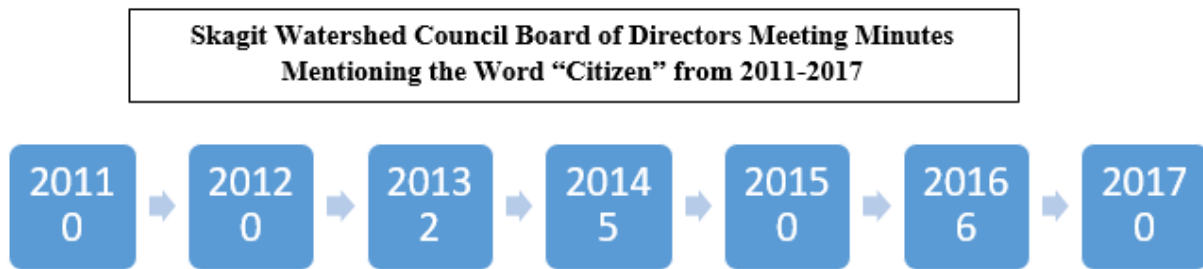


Figure 4. Timeline of the SWC meeting minutes mentioning the word citizen. “Board Meeting Notes,” 2017.

Interviews and Surveys

Interview and Survey Responses

This section reveals the results of the questions asked during the interviews. For a full list of questions refer to Appendix A. Recorded responses began with Question 3 and resulted in a mix of answers. Five people responded that they had been involved with their organizations for over 10 years; four others had been involved with their organizations for 5-10 years, and another four for less than five years. The same number of respondents had been with their organization for less than five years or 5-10 years. The majority of respondents had been with their organization for over 10 years. It was concluded that the responses to this question came from people with varying ranges of experience. Figure 5 shows a visual representation of the results of first part of Question 3.

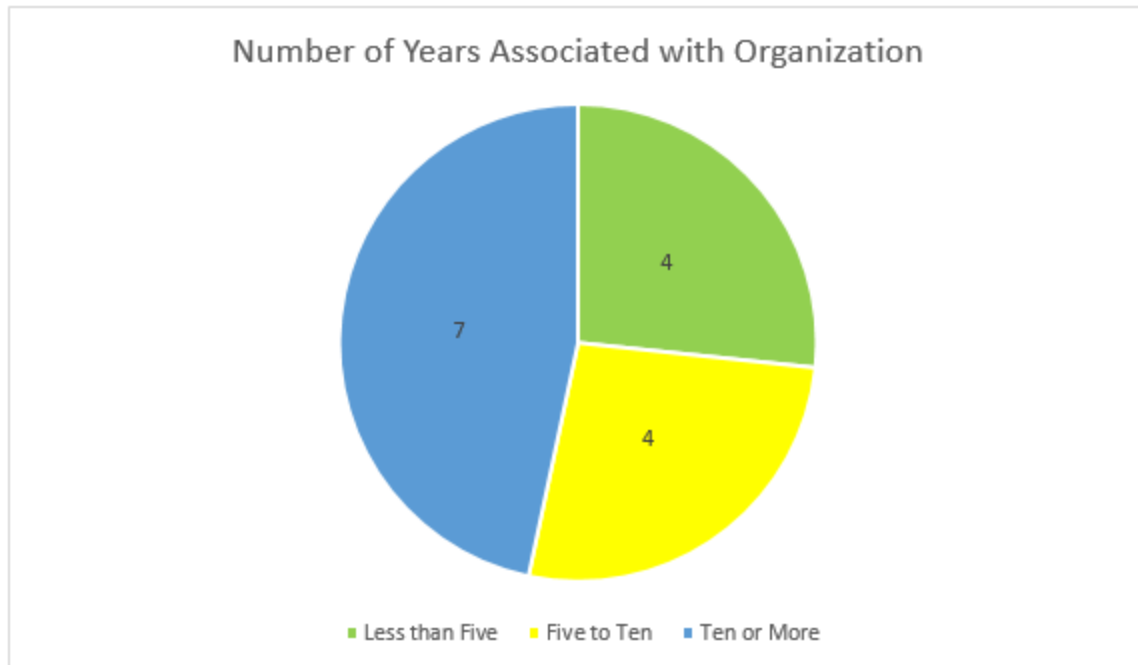


Figure 5. Results of part 1 of question 3, “How long have you worked for (did you work) for your organization/company?”

When asked what type of position or role the interviewee had in his or her organization the responses were also mixed. The positions at the participants’ organizations included the following – Management, Director, Coordinator, Treasurer, Hydrogeologist/Monitoring, Commissioner, Steward, Owner/Consultant, Vice Chair, Strategic Advisor, Scientist, and Planner. All of the positions are varied and unique, but all of the titles named indicate the respondents are in positions of power or influence in some form or another as opposed to entry level positions. Following an analysis of the interview and survey results, three main issues evolved. They were: Salmon, Water, and Climate Change. The following sections explain in more detail these three main issues indicated by the respondents.

Salmon

Per the responses from the participants regarding concerns in the watershed, an overwhelming focus was salmon. The concern for salmon wasn't surprising since many of the participants work for, and represent, salmon and salmon habitat interest groups and organizations. The following list describes the participants' responses to the issues surrounding salmon:

Recovery and Maintenance of Native Wild Salmon; Understand, Protect, and Restore Functioning Habitat to Support Sustainable Fisheries; Salmon Recovery and Reallocation of Funding, and Salmon Habitat and Viability; Implementing an Acquisition Recovery Plan for Salmon, Salmon Restoration, Recovery and Restoration of Skagit Delta and Floodplains to Recover Chinook Salmon, and Declining Population of Salmon, The Most Effective Method in Restoring Habitat on Private Lands; and How to Protect Habitat.

Salmon plays a large role in the Skagit River watershed. Because of the federal Endangered Species Act (ESA), many salmonid species are protected and therefore the fish require a certain amount of water flowing in the river at all times for a healthy spawning habitat. All of the other policies in the Skagit watershed then trickle down from the ESA federal law to the state, and then to local governments.

When the participants were asked why salmon was so significant, they described salmon as a "keystone" species that attributed to a higher quality of human life in the area; that salmon has its own intrinsic value.

Interviewee: ...It's a critical keystone species that it indicative of the health of the ecosystem, number one; and that pays into the mission of a lot of the organizations and agencies and tribal governments that are part of the watershed council, so overall ecosystem function. Um, number two, you know, salmon play an important kind of cultural role for both, um, the

local uh, Indian nations and for, um, other citizens of Skagit County; both in terms of the cultural significance of salmon and economic value for um, salmon as a resource, as a food resource and an economic resource.

The recovery of salmonids and their habitats are important due to the complex linked aspects of life in the watershed. Comments from interviews included how essential salmon was to the health of the ecosystem in the Skagit River watershed. Another aspect was cultural and community significance, especially for tribes such as the Swinomish and Upper-Skagit. Salmon impacts businesses, foresters, and working lands. Additional reasons given for why salmon health and habitat were considered important included exploitation of the salmon resource for economic purposes, as well as legal mandates such as the ESA as mentioned earlier.

Water

Another significant issue discussed by the participants was water. Because of the nature of the Skagit watershed's economy of agriculture and the instream flow rule that dictates water rights in the area, the issues of water quality and availability is of paramount importance. The issues connected to water that were mentioned by the respondents included: Legally Secure Water Supply for People; Instream Flow Rule, and Solving the Water Supply Problem; Lack of Legal Water Available in Rural Areas; and Streamflow. Many of these issues stem from the litigious events of the Skagit Water Wars. Also, some of the participants work with the Department of Ecology and represent Skagit River interests.

Water issues were important to the participants mainly because of legal mandates and state responsibilities, like those from the Washington State Department of Ecology (aka Ecology). Along with legislative mandates are also a need for legally accessible water. One

example is how the instream flow rule “delegitimized” multiple wells on existing properties, to the chagrin of property owners and residents in the area depending on them. Also, because Ecology lost in court by trying to legitimize some wells, this issue of legal water supply is an increasingly important day-to-day issue to protect and conserve the water resources available. The Skagit River is a primary source of water for the citizens of Skagit County and it is also important for agriculture – a huge source of revenue for the county (McMoran, 2012).

Climate Change and Other Issues

Lastly, Climate Change was also an important issue mentioned in the participant interviews. Some of these participants represented the Skagit Climate Science Consortium as well as other interest groups. Issues regarding Climate Change included: Climate Change and How Hydro-Electric Dams are Managed, Glaciers and Snowpack Changes/Climate Change Effects, Decreasing Snowpack, Lower Summer Flows, and Floodplain Hazards.

The phenomenon of climate change is considered important to these participants because of the multiple factors of climate change affecting the watershed, such as lack of snowmelt resulting in low streamflows. The respondents that consider climate change a significant issue said that many of the people that work in the watershed are civil servants, and that it is critical to release important information and findings from new projected climate models for future planning. Because of the variety of scientific expertise (especially from the Skagit Climate Science Consortium), these participants believe it is important to know what is current in the Skagit as well as what to expect for the future. Other organizations that control the dams on the Skagit River (e.g., Seattle City Light) believed that climate change will affect the flows, disrupting both human interests and ecological rhythms.

One other issue that was noted by one participant was floodplains. This participant considered this important as the City of Burlington is completely surrounded by floodplain hazards. Its water is obtained from the Skagit Public Utility District and there is a great deal of developed land in the city. This participant also stated that many of the watershed issues in the Skagit are not applicable to the City of Burlington even though they affect Skagit County.

Ranking of Issues

The interview question also asked the participants if they could rank the issues in order of importance. When the participants were asked to rank the issues previously mentioned, many of them could not, or they or expressed disinterest in the idea of ranking. A generalized consensus on this reasoning is believed to be that the participants regarded *all* of the issues to be equally important, and some participants also noted that they were not “*Skagit Expert[s]*”, and therefore couldn’t rank due to the lack of science and evidence available. Some participants simply did not want to “*go down that path*”. Other participants noted that ranking the problems seemed unnecessary, as many of them and the organizations are interrelated as well as work on similar projects together. However, despite participants not wanting to rank the issues, many of them did indicate the issues they felt were important, and therefore indirectly *did* rank the issues. Overall, most of the responses were mixed in terms of priority regarding salmon, water, and other issues.

The three main issues mentioned previously- “Salmon, Water, and Climate Change;” were not ranked specifically. Some that did rank the issues mentioned salmon habitat and salmon recovery as most important. It makes sense in that most of the participants of the study were connected to an organization whose primary goal and mission is the preservation of salmon. One individual did rank certain issues from highest to lowest importance as follows:

Interviewee: “Ok well, so I’ll give you my, my perspective from my position. Um, I think that the issues, they’re all very important, but um, if I was to rank them I would say, the recovery of salmon for, for you know, the use and expectation by Washington State citizens would be number one. Um, number two would be, uh I think the general environmental health and recovery and pr-preservation of that or conservation of that. Three I would say, ahem [laughs]... I would say the, yeah I now um, the preservation of the u-the, the, the um, land use that agricultural; and then four, the tribal fisheries.

Others ranked water as the highest priority. For instance, one participant stated that water supply is probably the most important issue, but other issues like protection of instream flow resources were also important, and distinguishing a clear ranking between the two was difficult. Another participant ranked water quality and availability as most important, and then food and fiber. One further example of water ranking as the most important was the rural water issue, or the lack of legal water supply, and then agricultural water rights.

Climate Change was the third ranked priority. Some participants considered climate change to be ranked the most important, while another participant ranked the issues in the following order: Getting understanding, acceptance, and support from the broader community (not just fish), how best to protect key habitats in the watershed, how to get restoration of riparian habitats on private land, declining salmonids, and finally, restoring habitat. One participant mentioned that, “*We [their organization] try to, try to work under a technical basis, but realize the reality of the communities that live here as well,*” meaning that salmon spawning habitat is important, but cultural, economic, agricultural components, and the community were more feasible to address.

The results of the ranking of issues queried were ambiguous as well as difficult to decipher in terms of what exactly is being ranked and in what order. Because the results were ambiguous, it was difficult to communicate the results via a visual figure or table. However, direct quotes better describe how the respondents actually ranked issues. The following quote, for example, offers the impression that water quality is most important and therefore was ranked higher in importance over salmon, even though the respondents clearly stated they do not see them as separate:

Researcher: *“Ok, how would you rank water quality and salmon viability in terms of their importance? Do you think that one is more important than the other?”*

Interviewee: *“Um, I think that, uh, I, I don’t see them as, as um, separate.”*

Researcher: *“Ok.”*

Interviewee: *“I mean, I, I, I think that, that you can talk about water quality related to shellfish, or water quality related to stormwater runoff, or water quality related to alkalinity in groundwater that’s being used on the plants. I mean you can talk about water quality in other arenas than salmon habitat but it for me it’s the, it’s um, it’s a way of describing what we um, uh, uh, a way of describing fish and fish habitat”*

Some believed that salmon was the most important issue, while others believed water issues was more important. Some also ranked Climate Change as the most important issue. There were some respondents that did not rank at the issues at all. The rankings demonstrate the complexity of the opinions of the actors in the Skagit watershed, and may shed light on why disagreement exists within this large ecologic and community system.

Climate Adaptation Ranking and Factors

The participants that didn't mention climate change as an issue they considered important were asked about climate adaptation and where it ranked in terms of importance in the Skagit River watershed. Some participants again experienced difficulty in ranking this one issue in the Skagit because they considered all and any issues to be equally important, or he or she simply found it unclear on how to rank the issue period. However, unlike the previous ranking of issues in the Skagit, most of the participants considered climate adaptation a critical issue, despite not ranking it specifically. Some comments about the question included concerns about snow melt and sea level rise, as well as climate change being the largest threat to salmon and habitat. One theme that stood out was the fact that some participants considered climate adaptation not as high in importance as it should be on their agendas. One participant remarked,

“Um... In the short term, it's less important. Um, you know, in the, in the long term, it's definitely much more important. Um, you know, in the, in the long term, it's definitely much more important. But how, I mean, I think it's really apples and oranges to try to rank those two things”

Some participants also remarked on how climate adaptation is a new issue and the science is just beginning to be studied.

If the participants did mention climate adaptation in responses to earlier questions about issues in the Skagit River, they were asked what they considered are the most important factors influencing climate adaptation strategies and/or policy actions in the Skagit. The responses again were mixed. Flood risk, the presence of many different groups with various interests and power structures, financial constraints, and a limited amount of water were among the factors listed that

influenced climate adaptation strategies in the Skagit watershed. One participant mentioned the following:

Researcher: *“Ok. Um, so what, what do you think those factors are then that you mentioned? I mean, why couldn’t they [the organizations] agree on a path forward?”*

Interviewee: *“Well, I mean that’s the million dollar question. Um, I think, in the Skagit in particular, you have an incredibly, um, deep divide between the tribal community and the agricultural community; and after years of trying to figure out a variety of ways to bridge that divide, I kind of feel like you need almost, almost like a truth and reconciliation process...”*

Key Organizations

When I asked the participants about what key organizations were involved in Skagit River issues, many remarked that several member organizations were under the umbrella of their bigger organization (mainly the Skagit Watershed Council and the Skagit Climate Science Consortium). Numbers ranging from 20 to 50 organizations were mentioned, and the members make up a broad representation of non-profits, governmental organizations, tribes, and other groups. The key organizations acknowledged most often were the tribes (Swinomish, Upper-Skagit, Sauk-Suiattle), Skagit County, Seattle City Light, Skagit Land Trust, and Western Washington Agriculture groups. Various other groups were also mentioned, such as the Skagit Fisheries Enhancement Group, NOAA, Skagit Watershed Council, the Nature Conservancy, and the Washington State government. One conversation mentioned:

Researcher: *“Ok. Great, and do you think there’re other key organizations besides yours involved in these Skagit River issues?”*

Interviewee: “Absolutely... Um, and, and so, I think, you know there’s been a lot of um, mistrust between those parties. They want um, very, very different things [laughs]. Um, so, the tribes, in particular the Swinomish doesn’t wanna see habitat created, when I say habitat I mean the water in the stream and I mean the riparian vegetation, um all of that. County, the county is interested in protecting habitat um, but, but I’ve not seen um, any commitment to um, to plan for something less than allowing anybody with a buildable lot to, to build on it um, from here until the end of time [laughs] so, so you have these dramatically different viewpoints on, on you know, how the land should look and, we’re, we’re kind of stuck in the middle somewhere...”

The participants were once again asked to rank the organizations by importance. As with the other ranking questions, many (more than half) of the participants chose not to rank the organizations, as they considered each of them important, equal, and unique in their own way; much like the different issues affecting the Skagit watershed. Those that *did* rank the key organizations all ranked them differently. Skagit County, the tribes, Seattle City Light, Skagit Fisheries Enhancement Group, the Washington Department of Fish and Wildlife, and the Skagit Land Trust were the most frequently mentioned. Some responses included the following:

Researcher: “Do you think there are some [organizations] that have more influence than others, maybe?”

Interviewee: “Mmm. Well, gosh, I mean, I, I don’t know if I would order them by importance, I just think that they all have very important roles to play. Um, each with a different and unique role um, as I tried to outline the um, like for instance the county, county government um, hasn’t played that big of a role yet in formal climate adaptation planning. Um, on the other hand uh, all, all these actions sort of fall to the local governments to implement and so um, they,

they have a pretty big priority even though they're not um, the first one that people think about on this topic."

Researcher: *"Can you order them [the key organizations] by importance?"*

Interviewee: *"Uh, I mean, I think it'd be nice, maybe this is naïve, but it'd be nice if the county could be, you know, more in the league. I mean, it is their county, and um, their residents that are affected most, but, and so I think a lot of the landuse decisions and such that would, might have to be implemented to be uh, you know, directly affecting these folks. So, I would like to think they would be uh, one of the lead players. Um, and then the state I think is the league as well, and [the] tribes [since] they're co-managers of the fisheries sources and water resources, so."*

In terms of how long these organizations have been involved with watershed issues, some patterns were noted. Many organizations seem to have been connected to water rights issues in the Skagit since the 70s and 80s, contributing to the *"long complex story"* as one participant remarked. Most organizations seem to have been around and involved in Skagit River issues for at least ten years, though many, if not most, of the organizations have been comprised longer. Some respondents said that these organizations have been involved with these issues since *"their inception."* The respondents described the tribes as being involved since *"time immemorial"*, or just simply, *"a very long time."* The same trend was also true for the Washington Department of Fish and Wildlife, indicating it has been around for *"a long time"* according to one respondent. Some also responded with Skagit County being involved since its creation. The agricultural community has been engaged for *"five generations"* according to one respondent. Other

participants commented on the water rights code enacted in 1917, the Ross Dam created in the “20s or 30s” and Seattle City Light being involved in the park service and state water issues since the 80s. The fisheries enhancement groups, including the Skagit Fisheries Enhancement Group, have been working on the watershed problems since the “80s or 90s”, as noted by the respondents. Other mentions included the United States Forest Service being involved in the river issues since 1978, and the instream flow rule since the “90s” but connected with the Skagit since around 2000. The Skagit Climate Science Consortium is the only fairly recent organization mentioned, being involved for less than 10 years.

Contentious or Cooperative?

The most interesting and insightful question asked of the participants was to characterize the dynamics between the key organizations in the Skagit River watershed. In other words, when asked if the organizations’ dynamics were contentious or cooperative, the results were mixed. Five people responded that the dynamics were cooperative, four participants said the dynamics were contentious, and four others stated the dynamics were a mix of contention and cooperation. The almost even mix indicates that out of all of the responses, not one category stood out more significantly than the others, even though the cooperative category had one more vote. The results of Question 7, “How would you characterize the dynamics between the most influential organizations? Are the dynamics more cooperative or contentious, and do they collaborate?” is illustrated in Figure 6.

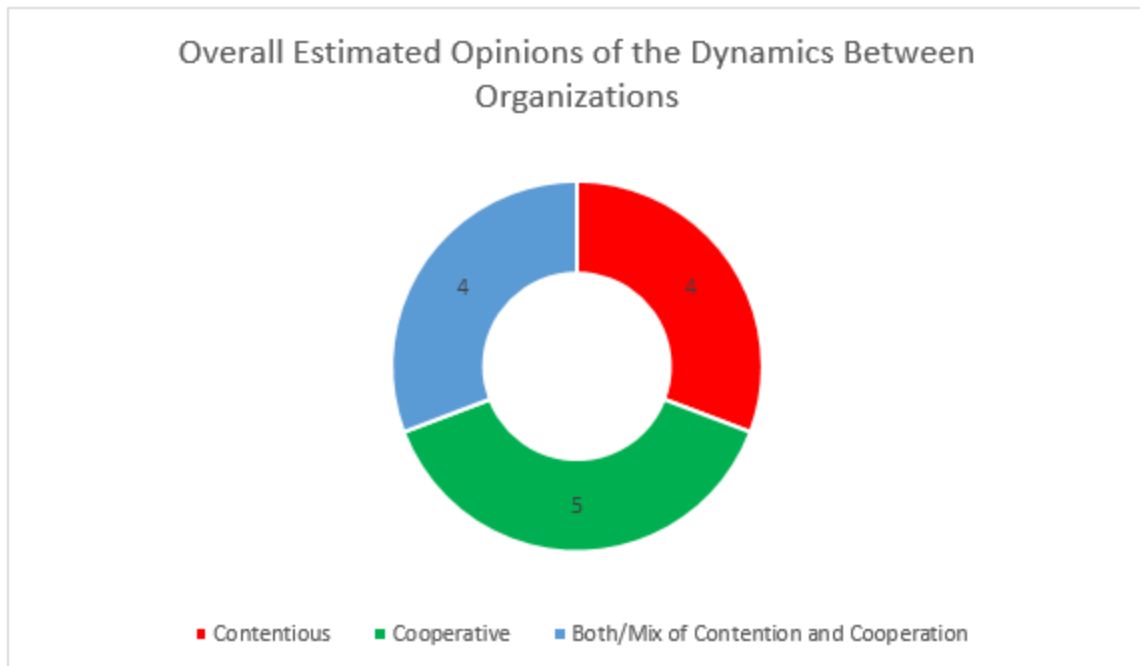


Figure 6. Results of question 7 regarding the opinions of dynamics between organizations.

Many mentioned that the relationships were fine. One person said, *“We don’t do policy, so that takes a lot of controversy out of the watershed council.”* Many respondents remarked on the competing interests in the area that can have an effect on the relationships of the organizations. Some comments included those of mistrust, animosity, lack of communication, and friction between the groups. One statement included, *“Relationships between tribes and agricultural interests have been strained over the years.”* One statement mentioned that, *“there were not enough financial resources to fund the various projects in the Skagit.”* Another participant mentioned that, *“things were very emotional in the Skagit,”* especially the dynamics between the agricultural groups and the tribes. One participant explained that some people believe it is “the tribes versus everyone”, a statement that could spark more contention.

Researcher: *“Ok and so my next question is, ‘How would you characterize the dynamics between the most influential organizations?’”*

Interviewee: “Um, I would say, it is, it’s very interesting. So, we are focused on the same goal. So we are unified in our position as far as what the end point should be. However, we have, and thi-this is basically between the tribe and, there’s three kind of main entities that I can think of. So, the tribe, and then the watershed council members in general, not including the tribes, and then the department [Department of Fish and Wildlife]; and I would say that there’s-Yes, and so, um, and I would say even though we are aimed at the same outcome there’s a very tense relationship between those entities...And it’s, really to be honest, it’s the tribe and, versus the rest of everybody. The reason I think that is, is because the tribe has a very specific goal and a very um. Kind of specific way that they operate and that is, it’s in a way, that it, if it’s in conflict with, with other people then they don’t they’re, they’re not really that um, flexible as far as ho to get things done, and so they, they uh, they feel like they can get, they can, if they push hard enough they can get their own way; and um, if they’re unable to get their way they resort to legal action. Whereas, most of the other or-entities are more um, collaborative and wanna work together to get som-something done, and they’ll be flexible to, you know, other interests and needs in order to, you know, make things go forward. But that’s not to say that the tribes are terrible, it’s just that that’s their, the way they operate.”

Researcher: “So, how would you characterize the dynamics between these influential organizations?”

Interviewee: Uh, well, I would say there’s a lot of animosity and distrust. Um, and, um, I mean, yeah, I mean there’s a lot of oh, it, it feels more emotional to me than sensitive. Um, so... And people have said that it would change with leadership, um, which has also not borne out to be true. There was a changing of the guard so to speak and everybody said it, it’s just these

personalities and once these personalities are gone this issue will resolve itself, and there has been, in part, a changing of the guard, and the issues have not been resolved. So, I personally don't think that it's a personality thing, I think it's a cultural thing."

Researcher: *"Ok, and so my next question is, you've uh, kind of enlightened me a little bit on this but, 'How would you characterize the dynamics between the most influential organizations?'"*

Interviewee: *"Poor. Yeah. Yeah, so um, yeah so, you know they're, I, I think there's, there's mistrust, there's, there's lack of communication. There are um, there're um, entities that won't let um, past things, um go away. So, there's, there's grudges that are being held in the basin, um, that're, are persistent. Um, there's very, you know, and, and at the root of that it's very di-diverse, different, opposite views on the issues. Um, so yeah, so the, you know the, Swinomish Tribe and the [Skagit] county don't get along. Um, the county and Ecology at times have had good relationships but that has come and gone. Um, you know, I think on a staff level, um, Ecology and the county get along well, I think on a, on a staff level, um, Ecology and Swinomish get along pretty well. But I think the organization, the greater organizations have this um, ongoing um, mistrust, or distrust. So that's, and that's, that's part of, you know why we're where we're at."*

On the other end of the scale, the other participants acknowledged how productive the organizations are when they work together. Additional comments included the organizations being collegial, accompanied with great close-working relationships. One respondent mentioned,

“I think that they’re [the relationships] the best that they’ve been in many, many years.” The following response also alludes to cooperation:

Researcher: *“How would you characterize your organization’s interactions with other key organizations or groups?”*

Interviewee: *“Um for the most part, good. I, I, I, um, I think we often have to um, guide, officiate, shepherd, herd cats; and the cat’s don’t always want to go to the same place, but um, but for the most part it’s, it’s a good, it’s a good thing.; but I think that that’s, it’s not undemocratic... Well it is undemocratic but it’s, it’s not um, uncooperative or counterproductive.*

Interviewee: *“For sure. Yeah, there is, there’s all kinds of collaboration and um, you know again, that kind of cuts across common perception because media and, kind of others are more attracted towards stories around the tension. Um, but there’s a long history of collaboration in, in the Skagit; even among parties that can be at each other’s throats through legal mandates and things like that.”*

When I asked if the organizations cooperate, 10 people from the total sample responded yes. Only one person said no, and two said sometimes. Figure 7 illustrates these responses.

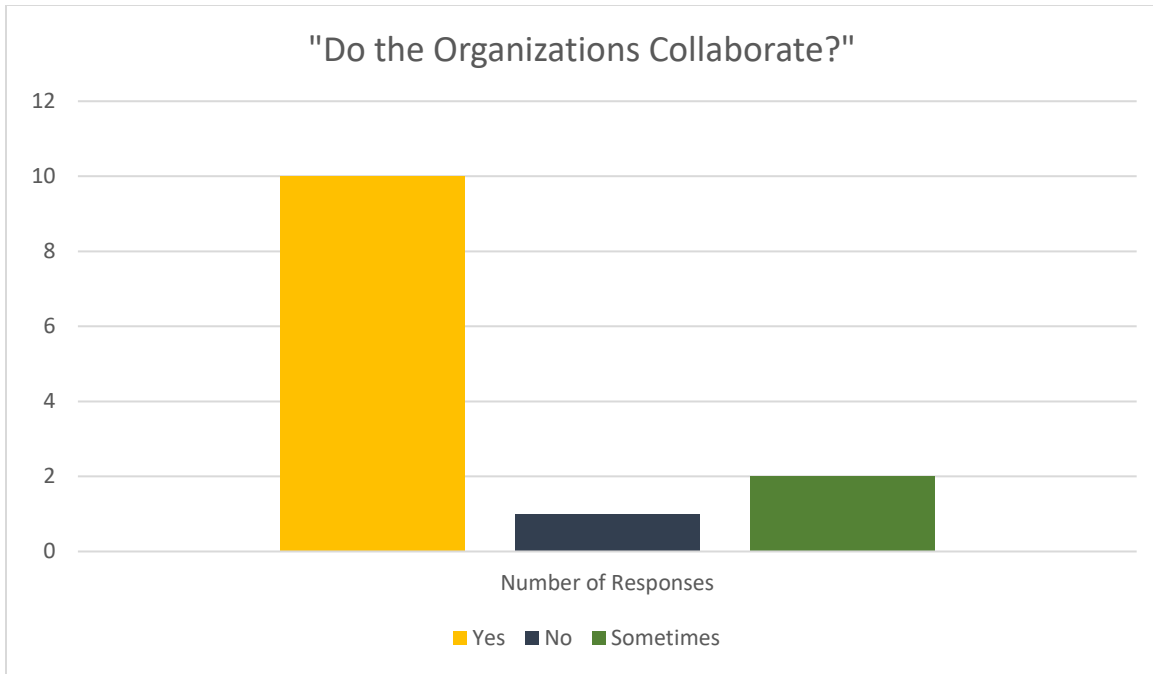


Figure 7. Responses to question 7 regarding organizational collaboration.

One of the last parts of Question 7 in sequence asked the respondents to address what their particular organization’s interactive dynamics were like with other groups in the Skagit arena. Most respondents stated that the dynamics within their organization were positive. The groups seem to cooperate with the other groups most of the time, and the most common word used in this response was “good”.

Interviews for the Skagit Watershed Council Community Engagement Committee

According to the responses from the interviewees for the Community Engagement Committee (CEC), the outlook for citizen participation seems promising. The two members of the CEC and only two respondents of this interview answered the 10 questions optimistically as they described how the committee reaches out to the local community. One participant had been employed for about three and a half years, while the other participant had been employed for over 20 years. Responses indicated that the committee serves as a platform to connect the Skagit

Watershed Council with its local constituents. The respondents indicated that the goals are to educate and build broader connections throughout the community to create an interested, informed, and active group focusing on salmon and environmental recovery. The respondents believe that the committee is currently meeting its goals.

The participants explained that community engagement is important because the community is part of the Skagit River system. One participant mentioned that humans are part of the ecosystem and are the biggest factor for change. The participant went on to explain that local human health and economic needs must integrate with the Skagit River's ecosystem needs, and people should consider the trade-offs and the cost-benefits. Another participant mentioned that most of the Skagit watershed area is privately owned land and without citizen the government cannot do restoration projects on its own.

Respondents from the CEC acknowledged that the committee is newly formed and because of its recent inception, it was difficult for the respondents to deliberate on the reaction they receive from the community. In other words, the respondents cannot tell if they are making a steady impact as of yet, but do seem hopeful. The participants believe that the interactions they have had with the community have been positive and productive overall; one mentioned that new audiences had been engaged that had not previously regarding Skagit watershed matters.

The respondents described different ways that the CEC is utilizing citizen participation. The CEC has been using social media platforms such as Facebook, Twitter, and Instagram to reach out to the community. A seasonal photo contest has recently been created to get locals excited about their Skagit River surroundings and thus far has received an overwhelming response. The Skagit Watershed Council also has an events calendar that shows what events are happening in the area sponsored by its various organizations. One example of citizen

participation was an interview created by the CEC designed for locals that work in the Skagit River watershed. These interviews asked the locals to describe what they love about the Skagit River and how they rely on the common pool resource. One participant also mentioned that there are three different levels of engagement. The first level called the watershed level, or watershed scale, centers only on informative events and little to no interaction with the public. The second level, called the reach level, focuses on efforts in coordination with local projects, education, and outreach. Lastly, the third level called the political level, or broad scale, emphasizes political support and efforts across relevant jurisdictions locally and beyond Skagit County. The committee also has programs and classes that citizens can volunteer and participate in. Some of these include Sustainable Landscaping and Marine Biotoxins topics.

Other remarks made by the participants revealed a new perspective on why there is not an LIO in the Skagit watershed. One participant stated that the Skagit is “siloeed,” meaning all of the different aspects of habitat recovery of the Skagit watershed are not seen together as one project but instead as individual pieces and receive different management. The Skagit River watershed is prioritized by Washington State, and most of the funding for salmon recovery is allocated to the Skagit watershed therefore an LIO is not necessary. Much of the recovery of salmon is then done by the Skagit Watershed Council and an LIO would possibly dilute the planning processes for salmon recovery. The participant also mentioned salmon recovery funds may be lost through an LIO because efforts in the Skagit are siloeed and the funds may be more equally spread out to other projects. The same respondent further said that an LIO takes a lot of work and planning, and the Skagit watershed has not had much previous success on consensus for planning and other aspects within the watershed. Another participant mentioned that the committee does not want to duplicate efforts done by the other organizations working for the Skagit watershed. The

respondent also noted that the committee should continue to work on partnering with other organizations and sharing resources for further efficacy.

Chapter 5. The Future Outlook for Skagit Governance and Climate

Adaptation Capacity

I examined three research questions in this study: 1) What new institutional arrangements are emerging in the Skagit Water Wars? 2) Are these institutions more or less polycentric? and 3) Could these arrangements improve or worsen governance outcomes? I will discuss my interpretation of the findings from the Results chapter (Chapter 4) with regard to those questions, and their connection to the responses from participant interviews after providing an update on watershed governance in the state and discussing my study's limitations.

Current Status of the Watershed

The latest in the Skagit Water War includes the State Supreme Court declining to hear Richard and Marnie Fox's lawsuit against Skagit County in January of 2017 ("Richard A. Fox," 2016; Stone, 2017). Because of the instream flow rule, no new wells are allowed to be drilled within the watershed area, even if one lives on private property. The rule in turn devalues the private property if a well cannot be drilled, as is the case for the Fox's since they were not granted a building permit from Skagit County. Over 700 parcels of land in Skagit County have been devalued by \$20 million, and the county's economy has suffered a loss of \$157 million ("Water-Rights Ruling," 2017). Though the setting of the study was based in the Lower Skagit River, other watersheds and counties will have to manage watersheds consistent with the instream flow rule.

For example, like Whatcom County just north of Skagit County, new landowners are also unable to build because of not being able to drill water wells and has in turn created more conflict (Kaplan, 2017). While the new CEC and Lead Entity Citizens Committees (LECC) exist

and wish to improve the health of the Skagit watershed, these institutions cannot resolve all the permit-exempt wells now shut down by the *Hirst* decision, I will discuss these new institutional developments later in this chapter.

Study Limitations

My study has several limitations. First, this study was an exploratory case study. As Babbie (1997) and many others note, case studies have limited generalizability. My case study was limited to the Lower Skagit River watershed in particular, and therefore other governing entities up the river towards the north may have resulted in differentiated results had those individuals been interviewed. The participants of this study were also mainly limited to the professionals that work for the Skagit Watershed Council and the Skagit Climate Science Consortium. Only one tribal member was interviewed and no citizens were interviewed for this study. The interview questions were written and geared towards those representing organizations to determine if and how polycentric the Skagit River watershed is.

Another limitation was the “social desirability bias.” Some of the interviewees may have been influenced by society in terms of how they should answer questions, even confidentially.

Dillman, Smyth, and Christian describe the bias.

The tendency to provide answers that put one in a good light with the person who asks the question; it is often motivated by wanting to make a good impression in a social interaction (or avoid a negative one). It can occur when respondents falsely deny engaging in socially undesirable behaviors such as drug use or cheating on one’s spouse, or when they falsely claim to have engaged in desirable behaviors like voting or volunteering (2014, p. 99).

Another factor possibly limiting my case’s generalizability was the *Hirst* case in Whatcom County, Washington. The Washington State Department of Ecology (aka Ecology) also set an instream flow rule for the Nooksack River in Whatcom County, just one county north

of Skagit County. The outcome of the *Hirst* case resulted in a change in governance – The Washington State Supreme Court now requires the county to decide if legal water is available with technical assistance from Ecology (Buroker et al., 2017). The *Hirst* case decision happened as I was doing my interviews and may have impacted how my respondents answered my questions.

The Skagit River and Polycentricity

The results of the study can now be viewed through the lens of polycentricity, the design principles of common pool resources, and the principle analytical framework for both: the Institutional Analysis and Development (IAD) framework. It guides research on CPR institutions and the governance of common pool resources like the Skagit River. The eight design principles account for what are deemed as important components for successful management of common pool resources (CPRs) that would avoid a “tragedy of the commons” (Hardin, 1968). I focused on the eighth design principle about nested enterprises or polycentricity. As for nested enterprises and the Skagit River, it may appear superficially that there is some sort of polycentric governance within the Skagit Watershed Council, comprised with its varied regional and local organizations. But the Skagit watershed case seems to violate several of the CPR design principles including monitoring and collective-choice arrangements.

First, the *Hirst* case and the recent low flow event on the Skagit River reveal how the institutional system fell short on the monitoring principle. Successful CPR outcomes are more likely when monitors “actively audit biophysical conditions and user behavior” and “are at least partially accountable to the users and/or are the users themselves” (Anderies & Janssen 2016, p. 72). Localities in Whatcom and Skagit counties were not effectively monitoring the impact of water withdrawals in either basin. Second, another design principle requires participatory

collective-choice arrangements where the individuals facing harvesting and protection rules have access to group processes where those rules are modified. Document analysis of the Skagit Watershed Council meeting minutes does not indicate substantial governance in terms of rule-making and/or coordination, but more in terms of management of restoration projects. The Skagit Watershed Council organizations brings other organizations together to create projects and build relationships with other each other for what seems like “social capital” advancement for the organizations’ and as well as additional funding. There does not appear to be any sort of decision making that goes beyond funding a restoration project, according to the content analysis of the meeting minutes of the Skagit Watershed Council.

Polycentricity is supposed to make governance “more flexible and adaptive” and effective according to researchers Pahl-Wostl and Knieper (2014). The Skagit Watershed Council and the Skagit Climate Science Consortium appear to offer a flexible decentralized system. However, the Skagit River watershed superficially has the structure of polycentricity, and the efficacy of these institutional arrangements appear to lack two key dimensions introduced by Pahl-Wostl and Knieper (2014). They assert that polycentric governance systems must have multiple centers of decision making and as well as coordination by an overarching system of rules in order to function effectively.

“Some new institutional arrangements emerged in the Skagit Case”

The first question researched, “What new institutional arrangements are emerging in the Skagit Water War?” was answered affirmatively. According to the document analysis of the meeting minutes of the Skagit Watershed Council Board of the Directors, new committees involving civic engagement have arisen and are active. They include the CEC and the LECC.

However, no LIO has emerged for the Skagit while this coordinating strategy has been established in every other watershed connected to the Puget Sound.

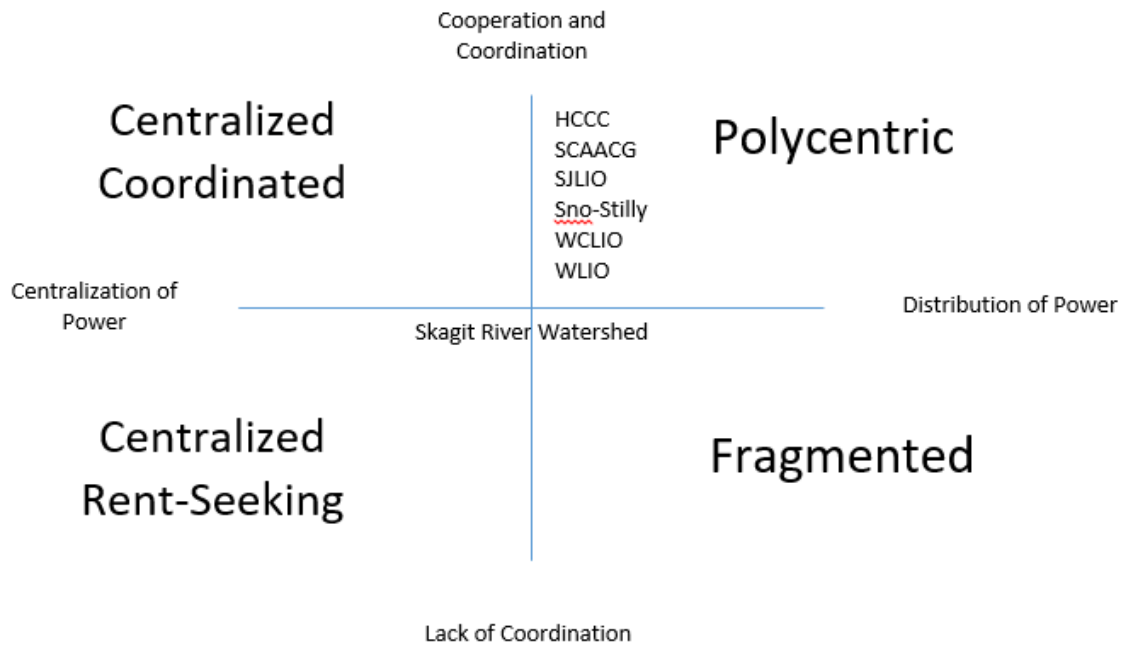


Figure 8. Placement of selected Puget Sound watersheds on regime axis. Adapted from Pahl-Wostl and Knieper, 2014; and “Public LIO Planning,” 2016.

These committees, or “institutions”, build upon the theory of polycentricity discussed earlier in the thesis. The committees comprise members from different organizations all with autonomy at state and local level governments. Both committees reflect, as previously noted, greater civic engagement, meaning the involvement of local people to participate in the activities the committees host, in order to receive local input for feasible projects. Also, even though the emerging institution in the Skagit River watershed named the Streamflow Enhancement/Groundwater Mitigation program is now defunct, it did involve citizen engagement by inviting locals to Interagency Review Team (IRT) meetings for judgement on the

project. Thus, the evidence exists that emerging institutions are participating in the Skagit watershed arena.

The interviews and surveys responses revealed what institutions are (or in this case are not) emerging, if they are more or less polycentric, and what the role is of these emerging institutions regarding governance outcomes. Twelve telephone interviews and three online surveys were conducted out of a sample size of 37 eligible participants resulting in a response rate of 40.5 percent (see Chapter 4). According to the analysis of the interview and survey responses, the participants of the organizations, appeared to have differing perceptions regarding which issues were the most important in the watershed. Most of the participants agreed that there were several significant issues, however, the overall responses indicated that not one issue in particular stood out more than any other.

One interpretation of this result is that even though these members (the sample population) may be from the same organizations, they may not agree with one another. In other words, each member represents a different organization, and the participants may have felt obligated to answer the interview questions in a way that was acceptable according to their organization's views. The interview questions were designed to elicit participant responses to the questions from the view of their *organization*, or the perceived perspective of that particular organization. For example, many of the participants from organizations that are members of the Skagit Watershed Council agree that salmon recovery is the main goal, similar to the mission of the Skagit Watershed Council itself. Likewise, members of the Skagit Climate Science Consortium mentioned climate change as the overall "bigger" problem rather than just salmon recovery. However, because the majority of the participants were members of the Skagit Watershed Council, that fact may result in biased responses.

While the bias may not be surprising, what is interesting is the mix of how the dynamics between the organizations were viewed. As the results indicated, cooperation and contention are almost tied, meaning about one-third of the respondents believed that the organizations were contentious with each other and the other one-third believed the relationships were just fine, while lastly, the final one-third of participants thought the dynamics were mixed.

Polycentricity for the Skagit?

The second question researched in this thesis was, “Are these institutions more or less polycentric?” The answer to this question was yes in relation to the seminal definition (Ostrom et al., 1961) but no for the Pahl-Wost and Kneiper version (2014). Because the committees as noted previously are comprised of a constellation of groups from varying governing levels, the arrangements are essentially polycentric, but they are not performing well. The organizations that makeup the Skagit Watershed Council and the Skagit Climate Science Consortium are all autonomous and each serves a different purpose that is not directly connected to another group (out of obligation), but only by the theme of the mission statements. The CEC of the Skagit Watershed Council strives to involve the public sector for input in the Skagit watershed, and involves many other organizations for this particular purpose. However, there was no evidence of sustained coordination throughout the institutional system and this arrangement may not have much of an impact.

The LECC also does this as well, but for the purposes of governing which projects should be priorities by using the community’s opinions and an economic budget the LECC has to work with. It appears that in 2016, these committees changed the collective-choice arrangements and have allowed citizen engagement and participation in some of the projects of the committees. Collective-choice arrangements are one of the eight design principles of CPRs, and the more

principles present within a commons, the more likely the system will be polycentric. Whether these systems work functionally or not results in a different answer. It appears that because of the conflict present between the stakeholders that these institutions appear, superficially, to be polycentric, but they do not function as clarified by Pahl-Wostl and Knieper: “Polycentric systems combine the distribution of power and authority with effective coordination among various centers and across spatial levels” (2014, p. 141). The operational results have yet to be determined because the institutions are new, but thus far, those present and established do not appear to be functional.

Better or worse governance outcomes ahead?

The third question posited was, “Could these arrangements improve or worsen governance outcomes?” While it may be premature to answer to this question, the prospects are dim because of a more fatal flaw in Washington State’s governance of land use and water scarcity. As Professor Jean Melious (2017) recently argued, a divide between land use governance and water governance has resulted in power struggles between local and state governments. However, the Skagit River watershed occupies both land and water in this case, and the boundaries between the two do not seem clearly defined. Because the boundaries are not clearly defined, another problem arises with effective monitoring of the resource. If the governing bodies cannot communicate effectively over who governs what, then governance efforts may in turn duplicate or neglect certain aspects of the watershed. Melious seems to suggest Ecology has not been a supportive institution for allowing the permit-exempt wells by counties (2017). However, the counties could be shifting towards corruption and rent-seeking regimes if some developers are granted well and special privileges. These emerging rapid

exogenous variables may prove to be a threat to the resource and its sustainability (Anderies & Janssen, 2013).

The Skagit Watershed Council is making some progress, perhaps with its newly organized committees. Although the Community Engagement Committee (CEC) is fairly new, the committee wishes to focus on the health of the watershed ecologically, culturally, and economically by involving community input. However, the committee has only gone so far as to use social media to address these themes. The LECC and CEC are fairly new committees and the efforts and efficacy of these committees towards better governance has yet to be revealed. Also the meetings for these committees have only just recently begun, and it is difficult to justify if these particular committees are improving or worsening governance arrangements. However, because the committees have brought many people together from diverse organizations and groups with the purpose to include citizens in the decision-making process of Skagit River watershed issues, there is great potential for improvement regarding governance outcomes if they take on the challenge of educating participants about the disconnect between land use and water withdrawals.

For example, Dietz, Ostrom and Stern (2003) suggested that three promising strategies derived from the CPR literature could be scaled to regional socioecological systems such as the Skagit River: 1) analytic deliberation, 2) nested institutional arrangements, and 3) institutional variety. While the first and second strategies appeared to exist in the Skagit watershed and seem similar in context, the third strategy, analytic deliberation, was missing. The actors in the Skagit River seemed to experience a struggle with understanding the differences in water and land use laws, as it is in Whatcom County's *Hirst* case. Because of a lack of understanding, the courts were the source of the analytic deliberation as well as a source for conflict resolution. "Well-

structured dialogue involving scientists, resource users, and interested publics, *and informed by analysis of key information about environmental and human environment systems* [my emphasis], appears critical” (Dietz et al. 2003, p. 1910). The disconnect between Ecology and Skagit County planning efforts further exemplifies how key information about the hydraulic continuity between groundwater and surface water is missing (Melious, 2017).

More information on these committees from the committee meeting minutes gives insight as to what progress has been made and what future plans are in the making. Even though some organized groups that have become defunct, such as the Streamflow Enhancement/Groundwater Mitigation Program and the original Skagit Watershed Council “Lead Integrating Organization (LIO),” the leaders of these larger nested organizations had intentions of becoming part of a more integrative, polycentric system. Functional and creative efforts have also been attempted by the locals in the Skagit River watershed, such as the Streamflow Enhancement/Groundwater Mitigation Program, but was not successful. The CEC and LECC also do not look promising for real change in governance. The citizens will have to wait and see if Washington State and its complex watershed socioecological systems evolve into a polycentric system that is dynamic, adaptive, and effective over time.

Future Watershed Studies

Scholars should recognize the importance of both coordination and the power dynamics in watershed governance. The Skagit conflict parallels a study of polycentricity for the Pearl River in China. In China’s Zhujiang (Pearl River) basin, the polycentric system’s “adaptive capacity seems, however, to have been particularly useful for economic growth and at the expense of biophysical systems” according to da Silveira and Richards (2013, p. 324). In other words, power dynamics can get in the way of polycentricity and its efficacy.

Watershed studies should also be cognizant of conflict resolution mechanisms when researching polycentricity as it may indicate effective and sufficient governance. Comparative studies seem to offer a way for similar systems to be examined through the polycentric lens, and then offer an opportunity to compare and contrast what is working and what is not. Future researchers should remember the power struggles many diverse groups often face in large systems as that fact may have a significant impact on social research.

Washington State Legislation?

Washington legislators should recognize the limits of the State's existing polycentric systems, especially when conflict arises, as seen in the *Hirst* decision. Because conflict has arisen in the Skagit River, decision makers should pay careful attention to the power structures at play. Legislation may shift favor from natural resource sustainability and conservation to the economic promise of well-digging for development and profits. Because of the diversity of stakeholders and a history of conflict, Washington must recognize not only the interests of various groups, but if and when those interests transform into rent-seeking. Conflict resolution mechanisms may only become a reality in the Skagit River when governments take different steps towards a concrete decision. Realizing the long history of mistrust between stakeholders may be a first step towards reconciliation and a more coordinated system in the Skagit watershed. Coordination and collaboration may be the two things that legislation will have to address in order for projects and rules to move forward into laws.

Moreover, a changing climate may worsen the stakeholder's abilities and resources to effectively govern at the local scale as well as resolve conflicts. In the wake of the *Hirst* decision and the specific recognition of hydraulic continuity, will this be integrated into new legislation? The Skagit River has gone below 10,000 cubic feet per second (cfs) once in the recent past, and

may do so again regularly in the near future. Could flows below 10,000 cfs become the new normal for the Skagit River in the 2040s? However, ineffective government planning may also be a problem for watersheds, like with the Skagit and the Nooksack well digging and the homeowners' disputes resulting in litigious activity. Governments need to be careful where they step in, especially in the context of future climate change scenarios.

Conclusions

It appears that in order for a true collaborative nesting working relationship to thrive, coordination with other groups is key. Without coordination, these groups would not have been able to form and “nest” as they are now. Coordination and analytic-deliberation may be the key adhesives for maintaining a nest as opposed to an unorganized and ineffective collection of sticks. However, communication to the public that achieves analytic deliberation is also an important matter in the Skagit watershed. Effective polycentricity may arise as the functioning of the Skagit Watershed Council and its policies and mission invite landowner and residential input. While it may have not been clear in the Board of Director's meeting minutes, what is clear is that public engagement can be used as an important and effective tool for governance.

One of the reasons public engagement is very important is that the outcomes of policies affect the public. Local people are affected by the projects and policies that stem from local government, and the public is also the local constituency that votes representatives into office. The locals are ultimately the people that have to live with the policies and projects that impact the watershed, and involving them in the political process means that polycentric systems are present on broader, horizontal levels outside of the vertical levels of government (e.g., Federal, State, and local governments).

Is Polycentricity a Panacea?

Polycentric Common Pool Resources (CPRs) management has become a popular subject of study, especially with the advent of the Elinor Ostrom School. The Ostrom School validates polycentricity as the better way of governance of CPRs. Because CPRs are nonexcludable and subtractable, everyone can partake in using the resource, but the resource can be exhausted if not sustained. By noting those two components of a CPR, further examination should be considered on what a CPR truly is, and what makes polycentricity the answer to CPR problems.

Because anyone can use the resource, does this mean everyone should be allowed to use it? The third design principle denotes that individuals affected by the operational rules are allowed to modify the rules. Does this mean anyone who uses the resource can modify the rules in use? According to Mansbridge (2010), Ostrom never mentions the democracy of CPRs, alluding to the belief that Ostrom will not commit to the idea of democracy in CPRs, most likely because it does not exist. But should CPRs be democratic? Do people really want this level of democracy? If everyone uses a resource and everyone can modify the rules, everyone would be their own manager of the resource. If a limit were to be introduced, wouldn't this make a huge difference to the subtractability of the resource?

Perhaps this is where the first design principle, "defined boundaries," comes into the picture. Perhaps the meaning of defined boundaries applies not only to physical boundaries, but to those who may use the resource as well. Is polycentricity a "panacea?" Polycentricity, whilst not designed to be a panacea, appears to be turning out as one. Blueprint thinking is one of the threats to sustaining commons, as Anderies and Janssen note (2013). However, all systems are different with complex and historical dynamics that result in the changes of power structures and

the ability for governing bodies to cope with it. The design principles may exist in a system, but the definitions may be interpreted differently, thus resulting in different actions. The design principles, what they mean for CPRs, which ones are present and whether they are effective or not, seem to vary by the resource, its size, its history if conflict, and the stakeholders involved. No one system works entirely the same way—each is unique. These points may inspire each resource to be examined individually, as opposed to one prescription for effective governance.

Power Dynamics

Another element for understanding governance strategies was the power dynamics. Results of the dynamics between organizations represented the existence of conflict, but the historical understanding of why the conflict exists may have helped in understanding why the conflict exists. Looking at Tribes and their role in water rights in Washington State from the beginning of reservations to the present offers a perspective on why the Tribes and developers may be frustrated (Blumm & Swift, 1998). The constant battle today compared to the beginning negotiations implies that the divide is deep between the two entities. Power dynamics play an important role in decision making between the actors and can evolve over time, resulting in changing institutions with various outcomes of governance (da Silveira & Richards, 2013).

The research outcomes were essentially expected. In the beginning, it was suspected that polycentric systems did exist, but were not functioning as they should, or they were incomplete. At first, the research intended to focus on the Streamflow Enhancement/Groundwater Mitigation Program as a possible redeeming factor for the Skagit Watershed. Because the program was not yet in effect, it meant that at that particular time the need of this program indicated that the polycentric system was not adequate. If the Streamflow Enhancement/Groundwater Mitigation

Program had been implemented into reality, then the Skagit River may have come closer to a functioning polycentric system at its core. Other basins are using water banks as a mitigation tool (Collins, n.d.) but the attempt in the Skagit did not result in an affirmative answer to changing the distribution of the river water into a reality that could satisfy all of the users.

Also, because the Streamflow Enhancement/Groundwater Mitigation program ceased to function because of lack of citizen interest, that identifies polycentricity did exist, though perhaps not achieving the end results for which Ecology was hoping. The program fell apart due to lack of public interest and landowners not wanting to sell their property, as well as the plan not being able to be implemented for technical reasons.

However, now that the Streamflow Enhancement/Groundwater Mitigation Program is no longer a factor, and new programs are popping up such as the LECC and the CEC, it appears that public involvement is still valued, and therefore the research outcomes seem to validate this. Whether or not this polycentric system is working for everyone involved reveals a slightly different answer. While the overall results are not surprising, it appears that much contention still exists in the watershed. There seems to be a discord between the tribes and the homeowners and the environmentalists in terms of how the river should be governed and subsequently used.

Through the multiple methods of interviews, surveys, and document analysis, the exploratory study attempted to answer the following questions: 1) What new institutional arrangements are emerging in the Skagit Water War? 2) Are these arrangements more or less polycentric? and 3) Could these arrangements improve or worsen governance outcomes? The expected findings that polycentric governance exists in the Skagit River watershed seemed true but also revealed a lack of coordination and possibly struggling power dynamics. The findings provided further understanding of the potential for effective governance through polycentric

systems due to the methods used throughout the research process. The multiple methods offered support to these findings as well as other potential results that were yet unforeseen. The results of this study added further dialogue to the research base in the field of common pool resource management with suggestions for further investigation.

Future areas of study may include revisiting the CEC and the LECC to see what new impacts they have made, and whether or not the impacts have resulted in better governance. A further look at the history of power dynamics in the Skagit River may conclude reasons for conflict. A comparative case study of the another watershed or the Nooksack River in particular may reveal critical insights to productive governance strategies. Repeating the study in five years may result in different answers to interview questions, as well as new developments that follow the *Hirst* case. Further research on the projections for streamflow in the 2040s may provide interesting information as to what new challenges the Skagit watershed and the salmon are facing. An updated look at the litigious timeline of the Skagit Water Wars may determine if that contention still exists, despite the newly formed inclusive committees.

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Appendix A

Interview and Survey Questions Designed for the Skagit Watershed Council

Board of Directors and the Skagit Climate Science Consortium Members

1. Do you have any questions about the document I sent earlier regarding your rights as a participant in this research study? Is there anything that I can clarify?
2. Are you ready to start and may I begin recording (if applicable)?
3. How long have you worked for (did you work) for your organization/company? What was your overall role?
4. What concerns about the [Skagit] watershed are you and others [at the Skagit Climate Science Consortium] occupied with the most? Why do you think these issues are so important for you and your consortium members/co-workers? How would you rank these issues in terms of their importance?
5. [if they do mention adaptation] What do you perceive as the most important factors influencing climate adaptation strategies and/or policy actions in the Skagit River watershed? [if they don't discuss climate adaptation] OR Where do you think climate issues like adaptation rank among the issues for the Skagit River watershed?
6. Do you think there are other key organizations besides yours involved in these Skagit River issues? Can you order them by importance? How long have these influential organizations been involved with Skagit River watershed issues?
7. How would you characterize the dynamics between the most influential organizations (if respondent does not address this in earlier responses)? Are the dynamics more cooperative or contentious, and do they collaborate?
8. How would you characterize your organization's interactions with the other key organizations or groups (if applicable)?
9. Are there other questions I should be asking about the Skagit River watershed?
10. Can you recommend others I should talk with about the Skagit River watershed?

Appendix B

Interview Questions Designed for the Skagit Watershed Council Community

Engagement Committee Members

1. Do you have any questions about the document I sent earlier regarding your rights as a participant in this research study? Is there anything that I can clarify?
2. How long have you worked for (did you work) for your organization/company? What was your overall role?
3. What are the goals for the Community Engagement Committee? Do you believe that those goals are attainable in the near future?
4. What kind of reaction from the community has the committee seen thus far? What do you believe can be done to enhance the committee's approach towards to community?
5. Why is community engagement important?
6. How would you characterize the interactions between the Community Engagement Committee and the community?
7. Is there a process by which the committee communicates with the community?
8. Are there other questions I should be asking about the Community Engagement Committee?

Appendix C

National Institutes of Health International Review Board Certificate of Research Training Completion



Appendix D

Institutional Review Board Memorandum of Approval

**WESTERN WASHINGTON UNIVERSITY
Office of Research and Sponsored Programs**

MEMORANDUM

TO: Alanna Ewert, Environmental Studies
FROM: *Janai Symons*
Janai Symons, Office of Research and Sponsored Programs
DATE: 7/22/2016
SUBJECT: Institutional Review Board– Exemption Research Approval

Thank you for submitting a research protocol regarding your human subject research EX17-001 “A Polycentric Policy Analysis and Assessment of Solutions for the Skagit River Water Wars” for review by the Institutional Review Board (IRB).

Approval: The HSRC has reviewed the materials you submitted and found the project described falls into Category #2: research involving survey or interview procedures. Although the research qualifies for exempt status, the investigators still have a responsibility to protect the rights and welfare of their subjects, and are expected to conduct their research in accordance with the ethical principles of Justice, Beneficence, and Respect for Persons, as described in the Belmont Report, as well as with state and local institutional policy. All students and investigators collecting or analyzing data must be qualified and appropriately trained in research methods and responsible conduct of research.

Determination Period: An exempt determination is valid for five years from the date of the determination, as long as the nature of the research activity remains the same. If the involvement of human subjects changes over the course of the study in a way that would increase risks, please submit a revised protocol.

Problems: If issues should arise during the conduct of the research, such as unanticipated problems that may increase the risk to the human subjects or change the category of review, notify the Research Compliance Officer promptly. Any complaints from subjects pertaining to the risk and benefits of the research must be reported to the Research Compliance Officer.

If you have any questions, feel free to email me at janai.symons@wwu.edu.

Appendix E

Institutional Review Board Memorandum of Modification Approval

**WESTERN WASHINGTON UNIVERSITY
Office of Research and Sponsored Programs**

MEMORANDUM

TO: Alanna Ewert, Environmental Studies
FROM: Janai Symons, Office of Research and Sponsored Programs *JK QJS*
DATE: 11/08/2016
SUBJECT: Institutional Review Board– Modification Exemption Research Approval

Thank you for submitting a modification of research protocol regarding your human subject research EX17-001 “A Polycentric Policy Analysis and Assessment of Solutions for the Skagit River Water Wars” for review by the Institutional Review Board (IRB).

Modification Approval: The IRB has reviewed the materials you submitted and found the project described falls into Category #2: research involving survey or interview procedures. Although the research qualifies for exempt status, the investigators still have a responsibility to protect the rights and welfare of their subjects, and are expected to conduct their research in accordance with the ethical principles of Justice, Beneficence, and Respect for Persons, as described in the Belmont Report, as well as with state and local institutional policy. All students and investigators collecting or analyzing data must be qualified and appropriately trained in research methods and responsible conduct of research.

Determination Period: An exempt determination is valid for five years from the date of the determination, as long as the nature of the research activity remains the same. If the involvement of human subjects changes over the course of the study in a way that would increase risks, please submit a revised protocol.

Problems: If issues should arise during the conduct of the research, such as unanticipated problems that may increase the risk to the human subjects or change the category of review, notify the Research Compliance Officer promptly. Any complaints from subjects pertaining to the risk and benefits of the research must be reported to the Research Compliance Officer.

If you have any questions, feel free to email me at janai.symons@wwu.edu.

Appendix F

Informed Consent E-Mail

Thank you for a prompt reply and your willingness to help with our study of polycentricity and climate risk governance in the Skagit River Watershed. My advisor, Dr. Troy D. Abel, and I are supported by the National Science Foundation in a study to better understand how climate risk governance is achieved in watersheds and aquifers in the Pacific Northwest region of the United States. In particular, we are interested in governance processes in the Skagit River and your insights will be important for our research.

By replying to this email, you are agreeing to participate in this study. Your participation is voluntary and will take about 20-30 minutes. There are no anticipated risks or discomfort associated with answering our questions about the factors affecting governance dynamics in the Skagit River Watershed. You may benefit from thinking about the connections between governing processes and the interactions between different organizations in your watershed work. You can stop the interview and withdraw your participation at any time without penalty.

If you agree to participate in an interview, I would like to record our conversation to accurately document the information you provide. Though you have the right to decline being recorded, I should note that the recording will be used for transcription purposes only and your identity will not be recorded or transcribed. The recording will be erased as soon as it has been transcribed. A random numerical code will be assigned to your transcript to protect your identify and any documentation linking your name to the code will be stored separately from the transcriptions by our lead investigator Dr. Troy Abel. That list of codes and identifying information will be destroyed as soon as we complete our interviews at the end of October.

The transcriptions from your interviews and others will be used for papers to be published or presented at professional meetings, but the identities of all research participants will remain confidential. The transcripts will be destroyed immediately upon finished transcription.

If you have questions about this study or the information in this form, please contact the lead researcher, Dr. Troy D. Abel at (360) 394-2741 or at troy.abel@wwu.edu; or Alanna Ewert at (812) 345-8268 or at ewerta2@wwu.edu. If you have questions about your rights as a research participant, or would like to report a concern or complaint about this study, please contact the Western Washington University Human Protections Administrator (HPA) Janai Symons at janai.symons@wwu.edu or by telephone at (360) 650-3220.

Appendix G

Informed Consent E-Mail (Skagit Watershed Council Community Engagement Committee Interviews Only)

Thank you for a prompt reply and your willingness to help with our study of polycentricity and climate risk governance in the Skagit River Watershed. My advisor, Dr. Troy D. Abel, and I are supported by the National Science Foundation in a study to better understand how climate risk governance is achieved in watersheds and aquifers in the Pacific Northwest region of the United States. In particular, we are interested in civic engagement processes in the Skagit River and your insights will be important for our research.

By replying to this email, you are agreeing to participate in this study. Your participation is voluntary and will take about 10-20 minutes. There are no anticipated risks or discomfort associated with answering our questions about the factors affecting civic engagement in the Skagit River Watershed. You may benefit from thinking about the connections between the civic engagement processes and the interactions between different organizations in your watershed work. You can stop the interview and withdraw your participation at any time without penalty.

There will be no recording of the interviews. The notes from your interviews and others will be used for papers to be published or presented at professional meetings, but the identities of all research participants will remain confidential. The notes will be destroyed immediately

If you have questions about this study or the information in this form, please contact the lead researcher, Dr. Troy D. Abel at (360) 394-2741 or at troy.abel@wwu.edu; or Alanna Ewert at (812) 345-8268 or at ewerta2@wwu.edu. If you have questions about your rights as a research participant, or would like to report a concern or complaint about this study, please contact the Western Washington University Human Protections Administrator (HPA) Janai Symons at janai.symons@wwu.edu or by telephone at (360) 650-3220.