A Q-methodology Study: Stakeholder perspectives on the future management of Capitol Lake, Olympia, Washington

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ABSTRACT

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Natural resource management is often a difficult issue in environmental policy when decisions may transform the cultural identity of an area while at the same time providing uncertainty in the economic and environmental complexities that emerge from the transformation. Increasingly, policy analysts and natural resource managers utilize stakeholder involvement to facilitate the decision making process on issues that have polarized stakeholder groups. This research describes Q-methodology, a method that can be used to set the foundation for productive stakeholder involvement and also to identify areas of contention and consensus in the area of natural resource management. Additionally, this research expands existing literature on polarized policy issues and the use of Q-methodology to help policy makers in contested natural resource decision-making. In order to test this methodology, Q-methodology is applied to the polarized issue of the future management of Capitol Lake in Olympia, Washington. The data analysis provides insights into stakeholder perspectives that would not be available through traditional social science methodologies and offers a foundation for stakeholder involvement to address and overcome polarization on issues.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Acknowledgements

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1. Introduction

Natural resource management is controversial in many settings. Management issues are often deliberated beyond the known and/or theorized technical knowledge. Changes to the landscape affect multiple stakeholder groups on various levels including, but not limited to, social, economic, and environmental. Disagreement about management goals and objectives is common among stakeholders, regulators, and natural resource managers when deciding the course of action to pursue. Policy analysts and natural resource managers increasingly elicit stakeholder involvement to overcome obduracy on an issue and achieve an acceptable solution.

Eliciting stakeholder involvement is at the core of discourse theory which looks at how people view their world based on the normative and factual side on an issue. In discourse theory, facts and values are viewed as inseparable. It is the core of this theory that "outcomes are legitimate to the extent they receive reflective assent through participation in authentic deliberation by all those subject to the decision question" (Dryzek, 2001, p. 65).

One of the ways that literature suggests to analyze discourses is through the use of Q-methodology (Dryzek, 2001; Clark, 2002; and Brown, 1980). Q-methodology was initially intended to study human subjectivity in the political spectrum but has been applied on a limited but increasing basis to study the discourse in natural resource management and environmental policymaking. It has been especially useful to policy makers and natural resource managers when issues are complex, uncertain, and polarized. Q-methodology has provided the foundation for the implementation of discourse theory

applications to reframe an issue that identifies shared goals between groups, consensus and contention items, and also areas of further research.

The primary purpose of this research is to test Q-methodology in order to determine whether or not Q-methodology should be considered a productive means of analyzing and eliciting stakeholder perceptions to assist policy makers and natural resource managers in reframing intractable issues. The case study of the future management of Capitol Lake in Olympia, Washington highlights a regional issue that has over twelve years of controversy in which the management alternatives have polarized stakeholder groups and regulators on the different management alternatives. The results of this study provide information to policy makers and natural resource managers about the current context of the issue as viewed through stakeholder perspectives. This information can be used to reframe the issue and give facilitators a means to move the discussion forward to create an acceptable management plan.

2. Q-methodology and Discursive Democracy

Natural resource management and environmental policy making decisions are often complex and decisions involve a multitude of factors that often are at odds with one another. The theoretical framework of discursive democracy is the idea that communication between stakeholder groups focused on mutual understanding is the best way to build democratic solutions to complex problems (Dryzek, 1990). Q-methodology, when applied to the theoretical framework of discursive democracy, provides the foundation for stakeholder groups and natural resource managers to begin the decision-making process on a contested issue.

2.1. Discursive Democracy in Natural Resource Management

Highly contested natural resource management issues are interdisciplinary by nature and are often simultaneously debated on scientific, political, economic, and social levels. As the social discourse over the management issue becomes more polarized and contested in the community, policy makers and natural resource managers need to effectively understand the attitudes of groups involved in the issue. Discursive democracy brings stakeholder groups together and helps natural resource managers find a management solution.

The initial step in the application of discursive democracy is to identify the discourse surrounding an issue. Dryzek defines discourse as "…a shared means of making sense of the world embedded in language. Any discourse will always be grounded in assumptions, judgments, contentions, dispositions, and capabilities" (Dryzek, 1990, p. 18). Discourses are seen as intertwined with the social practices in

which they are created and evolve over time (Mendonca, 2008). When facts and values are viewed as inseparable as they are in discursive democracy, this illustrates the normative perspective through which people view their reality and thus shape their decisions. It is this dynamic of stakeholder perspectives that plays an especially strong role in shaping natural resource management plans.

The careful examination of the spectrum of stakeholder perspectives has the potential to provide a platform for meaningful discussion between different stakeholder groups over a regional resource management issue. "A stakeholder perspective is the cognitive representation that a stakeholder makes of the external reality and his or her position in this reality" (Raadgever, Mostert, & van de Giesen, 2008, p. 1097). The examination of perspectives provides natural resource managers and other stakeholders with the launching point to work towards a democratic solution to a natural resource management plan.

Discursive democracy views the process of deliberation in the public sphere as an extended and feasible process in order to reach mutual understanding on natural resource management plans. The focus on bringing to light the variety of positions of stakeholder groups can lead to more complex and acceptable solutions. It is the communication between stakeholder groups that directs citizens to seek mutually acceptable ways to solve disagreements. Additionally, discursive democracy applications provide a means of educating stakeholders on the viewpoints of others in the interest of moving the democratic process forward.

2.2. Use of Q-methodology in Discursive Democracy

Q-methodology has been used as an effective tool to advance the use of discursive democracy in the decision making process because it is a systematic means to analyze stakeholder perspectives (Dryzek, 1993). The Q-methodology study selects participants from different stakeholder groups to rank-order statements about the topic under investigation. These statements are ranked according to their preference (ie: most agree to least agree). This process shows the participants' subjective meaning to the statements. Participants' sorts are then factor analyzed to show clusters of subjectivity. This process reveals groups of stakeholder perspectives and the similarities and differences in viewpoint over the issue. These perspectives help to create a platform for meaningful discussion between different stakeholder groups in the discursive democracy process.

Q-methodology research also avoids many of the problems of traditional survey research. This is done by offering a means for the subject to choose how they interpret categories instead of being subject to parameters specified by the researcher as it is in traditional surveys. Sullivan et. al describes a drawbacks of traditional surveys:

> The problem lies in investigating the concepts in a particular way, by operationalizing them in an a priori manner that can severely and arbitrarily restrict the domain within which people can respond. Given this modus operandi, investigators are not likely to learn much from the subjects of their inquiry, other than whether people generally respond as predicted by researchers' hunches or theories. A richer process of learning and discovery by truly listening to respondents' views is precluded (1990, p. 3).

To contrast, in Q-methodology studies, the perspectives of the individuals can be extracted with minimal interference from the researcher because the participant responds to each statement in the set and ranks the statements in context with their reactions to the other statements. The ranking of each statement is in accordance with the facts and values

that form their unique perspective. The data analysis of the Q-sorts provides insights into stakeholder perspectives that would not be available through traditional social science methodologies.

Q-methodology has been used to evaluate stakeholder perspectives on controversial natural resource management issues. These studies have ranged from timber industry management (Swedeen, 2006), global climate change (Addams & Propps, 2000), siting of nuclear locations (Venables, Pidgeon, Simmons, Henwood, & Parkhill, 2009), to river management (Raadgever et al., 2008). Although these studies do not directly connect Q-methodology with applying discursive democracy techniques, all studies were conducted to understand the normative views of stakeholders in efforts to bridge polarized issues in order to come to a resource management plan.

2.3. Research Objectives

The goal of this thesis research is to analyze stakeholder perspectives of a local controversial issue and provide further analysis of Q-methodology as an effective use of stakeholder voices in natural resource management decision-making. The research hypothesis is that Q-methodology is an effective tool for natural resource management and environmental policy making in highly contested resource management issues.

In order to test Q-methodology as a useful tool in natural resource management and environmental policymaking, I used the case study of the future management of Capitol Lake in Olympia, Washington. The issue has divergent views of how to manage the north, middle, and southern basin of the Deschutes River. Chapter three describes the issue of the future management of Capitol Lake in a historical, cultural, economic, environmental, and technical framework. Chapter four discusses the application of Q-

methodology, and chapter five discusses the effectiveness of Q-methodology used in the natural resource management decision-making process.

Q-methodology will be used as a tool to examine the broad range of perspectives between stakeholder groups on the future management of Capitol Lake. This information can be used to gain a better mutual understanding and consensus between stakeholders. The information can also help decision makers move forward on plans for the future management of Capitol Lake. The study has the potential to facilitate discussion and support critical reflection on the perceptions of stakeholders.

3. Case Study Background

The controversial issue of the future management of Capitol Lake in Olympia, Washington was chosen for this research study. Capitol Lake is a 260-acre impounded lake that serves as a reflecting pool for the state capitol building of Washington. In the 2010 Census, the City of Olympia has a population over 46,000 people with a population density of 2,544.4 people per square mile. To the north of Capitol Lake, most of lower downtown Olympia was built on fill material. The downtown is a moderately developed city including shops, restaurants, and places of business. The Capitol Lake area today provides a focal point for Olympia residents as a place for recreation and community events.

Figure 1 (left): Map of Capitol Lake, Olympia, Washington (The Seattle Times, 2009).

Figure 2 (top): Aerial view of the upper, middle and lower basin of Capitol Lake (General Administration, 2011).

To understand the full discourse on the future management of Capitol Lake, I conducted a literature review of related documents. The bulk of the information was drawn from studies commissioned between 1996 and 2009 for the Capitol Lake Adaptive Management Plan (CLAMP). Through these documents, I gathered historical, social, political, environmental, and technical information related to the issue. Additional information was collected from the Olympia Historical Society, Department of Ecology, Fish and Wildlife, advocacy groups, newspaper articles, proposed legislature, and letters to the General Administration. This information enabled me to discern the full spectrum of the issue. To understand the contemporary debate, a brief historical summary is provided in the following sections.

3.1. Historical Framing

Prior to the 1854 Treaty of Medicine Creek, the Steh-Chass people are thought to have lived in the Budd Inlet area for hundreds of years. The Steh-Chass people established a permanent village near the falls of the Deschutes River because it was important shellfish gathering site (Stevenson, 1996). The descendants of these people are known today as the Squaxin Island Tribe. Additional tribes utilized the Deschutes River, Budd Inlet, and South Puget Sound as a transportation route for trade.

In 1845, European settlement began in the Tumwater Falls region. Development grew quickly in the Olympia area because it was the northern most terminus of the Oregon Trail which brought settlers to the area (Stevenson, 1996). Thurston County was established in 1852, and Olympia was named the county seat. Shortly after, in 1855, Olympia was named the Washington Territory Capitol. Overcoming several attempts to

move the capitol to other locations, Olympia became the state capitol in 1889. At this time, the General Administration and the State Capitol Committee were designated with primary oversight for the design and maintenance of the capitol grounds.

To move forward on the design of the capitol grounds, a design competition was held in 1911. The plan by Walter R. Wilder and Harry K. White won the competition (Nicandri & Valley, 1980). The Wilder and White plan represented the City Beautiful movement that focused on using beautification and monumental grandeur in cities. What resulted was the design for the current neo-classical buildings seen on the bluff overlooking the City of Olympia. A master landscape plan was also created. AHBL (2009) conducted a study of the cultural and spiritual values of Capitol Lake, reported the following statement:

> Both plans envisioned a visual connection from the Campus to Puget Sound, and both envisioned that part of the Deschutes estuary would be turned into a reflecting pool, enhancing the visual impact of the Capitol as viewed from the City (AHBL, Inc., 2009).

During the Depression of the 1930's, a shantytown developed on the eastern shore of the tidal-basin. Homes floated near the shoreline and were built from planks and crates. Residents were allowed to live rent free throughout the Depression years (Lockman, 2000). The town was coined "Little Hollywood" and continued until the 1940's when the State Capitol Committee began making plans to create Capitol Lake. The movement towards creating a lake was used as an urban renewal project. Some segments of the community viewed Little Hollywood as an eyesore, and the environmental degradation of the tidal basin was also strongly evident. The area had no wastewater treatment system at the time and untreated human waste was dumped into the

Deschutes estuary from city dwellers. Figure 3 depicts the appearance of Little Hollywood during this period.

Figure 3: A 1930's picture of 'Little Hollywood' in Olympia, Washington (Thurston County, 2011). ***Photo from the Susan Parish Collection.***

Dredging of Olympia's harbor occurred between 1866 to 1911 in order to allow ship passage during low-tide. As a result, Olympia's downtown region was expanded using the dredge materials as fill, which also allowed for use of Percival Dock without the need of a long wharf. Dredging materials created most of north downtown Olympia in which it "…added twenty-nine blocks of land in an effort which removed two million cubic yards of mud" (Stevenson, 1996, p. 118).

Today, most Olympians do not remember a time before there was a lake. In 1951, the 5th Avenue Bridge Dam was constructed and created the 260-acre artificial Capitol Lake. The mudflats were submerged as well as many artifacts and cultural sites of Native Americans. Early in the creation of Capitol Lake, the lake was used for water-recreation. A public beach was created in which swimming and boating were popular past-times of local residents.

Native Americans continued to have a presence in the area after the dam was built, increasingly since the Boldt Decision of 1974. The Boldt Decision ensured that Native Americans have access to their usual and accustomed hunting and gathering places dictated by the Treaty of Medicine Creek in 1854 (United States v. Washington, 1974). Specifically to this region, Native Americans have exercised their right to fish for salmon at the 5th Avenue dam and harvest shellfish. However, many of these practices were modified due to the environmental transformation of the landscape.

The lake's creation resulted in a change of the habitat for the area. Populations of freshwater-dependent species increased and new species appeared, such as trout and bass. While some species declined, other species thrived in the lake environment including some migratory birds and a local bat colony.

Environmental problems with Capitol Lake became apparent due to siltation and lack of water circulation in the late 1970's. These factors contributed to the growth of algae and noxious weeds resulting in increased turbidity and fecal coliform concentration (AHBL, Inc., 2009). The swimming area was closed in 1985 due to health reasons. To mitigate environmental problems, the lake was dredged in 1979 and 1986. Studies began

in the mid 1970's to investigate sediment removal, water quality, and maintenance protocols to preserve Capitol Lake.

3.2. Capitol Lake Adaptive Management Plan (CLAMP)

In 1996, the General Administration created the CLAMP steering committee whose purpose was to address the issue of the long-term planning and management of Capitol Lake. Representatives from nine stakeholder groups were placed on the steering committee to include the City of Olympia, City of Tumwater, Department of Ecology, Department of Fish and Wildlife, Department of General Administration, Department of Natural Resources, Squaxin Island Tribe, Port of Olympia, and Thurston County. The formation of CLAMP was necessary to address long-term planning issues of water quality, tribal rights, maintenance costs, invasive species, and endangered species habitat.

Between 1996 and 2009, the CLAMP committee reviewed four alternatives for the future management of Capitol Lake. These included the status quo lake, managed lake, estuary, and the dual basin estuary. The status quo lake option keeps the lake in its current state by retaining the dam and not dredging the lake. Implementation of the status quo option would ultimately lead to the lake being filled in from sedimentation. The managed lake alternative would implement a dredging schedule to remove sediment. Conversely, the estuary alternative would entail removing the 5th Avenue Bridge Dam, dredging the estuary canal initially, and restoring the area to an estuary. The dual basin estuary alternative would allow for both an estuary and a lake. The 5th Avenue Bridge Damwould also be removed under the dual basin alternative and an artificial lake would be created at the South end of the Deschutes River.

Most of the research efforts were spent evaluating the management alternatives to maintain Capitol Lake or restore the Deschutes Estuary. The management alternatives of the status quo and the dual basin were not explored in-depth. Cost factors of implementation excluded the dual basin estuary alternative from consideration. The status quo lake was socially undesirable in which participants perceived that downtown business would decrease, cultural and spiritual values would be diminished, and environmental benefits would be reduced (ABHL, 2009).

The Deschutes Estuary Feasibility Study was commissioned with funds from the State of Washington to explore the estuary option. This study consisted of numerous smaller studies that focused on the areas of impacts of the estuary was restored to include the biology of the area (Tanner, Gelfenbaum, George, Garono, & Tonkin, n.d.), engineering of infrastructure (Philip Williams & Associates, Ltd., 2008), economic effects (Cascade Economics LLC, Northern Economics, Inc., & Spatial Informatics Group LLC, 2007), and community values (AHBL, Inc., 2009). Community forums were held throughout the deliberation period to gain stakeholders input (Washington Department of Fish and Wildlife, 2006). The debate became very controversial and two dominant management perspectives emerged: those in favor of maintaining the lake and those in favor of returning the lake to an estuary.

In July 2009, the CLAMP Committee issued their recommendation. The committee voted to restore the Deschutes Estuary with six members in favor, two members opposed, and one member did not take a position. The majority who voted in favor of estuary restoration included the Department of Natural Resources, Department of Fish and Wildlife, Olympia City Council, Squaxin Island Tribe, Thurston County, and the

Department of Ecology. CLAMP Committee members opposed to restoration efforts included the Port of Olympia and Tumwater City Council. The Department of General Administration (GA) did not take a position.

The Director of the GA was expected to make a recommendation after reviewing the CLAMP committee's management recommendation. To date, there has been no action on this issue from the GA's office. To complete the decision-making process of the future management of Capitol Lake, recommendations are needed from the GA and Capitol Campus Committee (the Governor, Lieutenant Governor, Secretary of State, and Commissioner of Public Lands). The final decision will rest with the Washington State Legislature.

3.3. Post CLAMP Committee

In 2010, the State Legislature disbanded the CLAMP Committee. The CLAMP Committee had operated for thirteen years and commissioned $1.7 million dollars for studies related to the future management of Capitol Lake (Dodge, 2009 July 9). A formal recommendation has never been delivered from the GA's office; however, legislation was brought up in the House of Representatives in the 2011 Legislative Session. Representative Chris Reykdal introduced House Bill 1938 to place Capitol Lake under historical preservation status and implement a maintenance schedule. The legislation passed out of House Committee on State Government and Tribal Affairs but did not reach the House floor for a vote.

Division between the two sides of the debate have been widening since the CLAMP Committee recommendation. Non-profit organizations and associations have been created to advocate for restoring the estuary, maintaining Capitol Lake, or

maintaining the economic viability of the waterfront through continuation of Capitol Lake. Those in favor of the estuary rely on the technical data presented in the CLAMP study. Those in favor of maintaining the lake point out flaws in the CLAMP study and have developed modified technical and financial projections.

The history of the future management of Capitol Lake helps to understand the context of the issue. There are different perspectives surrounding this issue and each perspective has been formed through a historical context. Q-methodology is applied to this case study to draw out these perspectives and also be used as a tool to set the foundation for future conversations between stakeholder groups.

4. Q-Methodology Applications

Q-methodology is a quantitative means to assist in the orderly examination of human subjectivity. To briefly describe the Q-Method process, the researcher begins by conducting an extensive literature review on the topic being studied. A collection of statements, called the concourse, is gathered that represent the entire spectrum of the public discourse. From the concourse, a Q-set is selected that still represents the spectrum of public discourse but is a manageable set of statements for a participant to sort. The Q-set is then administered to participants, the P-set, who rank-orders the statements in a forced quasi-normal distribution in order of least agree to most agree. The process of rank-ordering the statements is called the Q-sort. The data collected from the Q-sort is then analyzed using a statistical analysis program. The application of Q-methodology for this thesis is described in detail in the following sections.

4.1. Concourse Development

Concourse development consisted of two stages for this case study. The first stage required a review of all documents relating to the Capitol Lake Adaptive Management Plan (CLAMP). Town hall meetings, focus groups, qualitative studies, and technical reports were conducted, recorded, and created through the CLAMP studies. The notes and reports from these studies were utilized to develop the concourse. Additional aspects of the literature review included statements gathered from newspaper articles, position papers, and websites.

The second stage of the concourse development was the in-person interviews. Four individuals with in-depth or personal experience of this issue were recruited to

participate in a semi-structured interview. The interviews ensure that the full spectrum of perceptions on the discourse were identified. Individuals interviewed represented stakeholder groups from the Squaxin Island Tribe, Deschutes Estuary Restoration Team, Capitol Lake Improvement Protection Association, and the economic perspective of a local economics professor.

The two stages of the concourse development elicited 210 statements, Appendix A, to represent the discourse on the future management of Capitol Lake. These statements were taken directly from interviews, written correspondence, articles, and reports. The statements were not edited beyond occasionally supplying the noun for pronouns in the statement, correcting misspellings, and inserting punctuation.

4.2. Sampling a Concourse

The next step in conducting a Q-methodology study is to take a sampling of the concourse in order to reduce the number of statements down to a manageable set of statements for the participants to sort. A matrix procedure was utilized to select the Q-set from the concourse in a systematic fashion, which was initially developed by Dryzek and Berejikian (1993) and then further modified by Paula Swedeen (2006). A 12-cell matrix was used to select 48 statements from the concourse. Statements, which are a part of the discourse element, were sorted into type of claim categories. The first aspect of the sort identified statements into content areas to include:

- State of the ecosystem (SE) describes the state at which the ecosystem is recognized as existing;
- Management of ecosystem (ME) addresses options available for management of the ecosystem;

- Economic (EC) describes the economic relationships that surround the discourse of the future management of Capitol Lake; and
- Motivation (MO) describes the different cultural, spiritual, and aesthetic values held throughout the community.

The statements were further sorted by the type of judgment they represented. I adapted the sampling matrix from Dryzek and Berejikian's 1993 study, "Reconstructive Democratic Theory", and is described in their research as:

- Designative (D), concerning questions of fact;
- Evaluative (E), concerning the worth of something that does or could exist; and
- Advocative (A), concerning something that should or should not exist (p. 52).

The matrix is a tool that the researcher can use to identify different aspects of the discourse and ensure that each aspect is included in the selection of the Q-set. Table 1 describes the sampling matrix that was utilized for this study.

DISCOURSE ELEMENT				
TYPE OF CLAIM	State of Ecosystem (SE)	Management of ecosystem (ME)	Economic (EC)	Motivation (MO)
Designative (D)	SE-D	ME-D	EC-D	MO-D
Evaluative (E)	SE-E	ME-E	EC-E	MO-E
Advocative (A)	SE-A	ME-A	EC-A	MO-A
Note: The letters are the codes that identify the cells used in this study				

Table 1: Sampling matrix for selecting statements from the concourse

After the statements were designated a matrix code then four statements were randomly selected from each cell. The final statements were numbered randomly from 1 to 48 and placed on index cards. Of the 48 statements selected, two came from newspaper articles, 29 from community forums recorded through the CLAMP public involvement

study, 11 from unstructured interviews held in 2011, 9 from CLAMP reports, and 2 from political position papers.

4.3. Selection of the P-set

The P-set represents the people selected to participate in the Q-sort. These participants are not a random sample and instead are a selected group of people that represent a wide and possibly complete range of stakeholders on the topic. Small sample size is not an issue because the aim of Q-methodology studies is to indentify the discourse patterns within the issue being investigated. Typical Q-methodology studies range from 20 to 45 respondents (McKeown & Thomas, 1988). The P-set in this study consisted of 22 people. Participants were selected from key stakeholder groups. They included representatives from the Squaxin Island Tribe, Capitol Lake Improvement and Protection Association (CLIPA), Deschutes Estuary Restoration Team (DERT), faculty at The Evergreen State College Environmental Studies Program, People for Puget Sound, the Olympia Downtown Association, Department of Fish and Wildlife, Olympia City Council, Washington State Legislature, Department of Health and Human Services, International Longshoreman's Association, Olympia Yacht Club, and the Olympia community. These stakeholder groups were identified through the literature review process.

4.4. Q-sort

After the P-set participants were identified and they agreed to take part in the study, an interview was scheduled to perform the Q-sort. During the interview, participants first were given an informational page and a consent form approved through The Evergreen State College Human Subject Review Board. After the consent form was

completed, each participant received a stack of statements numbered 1 through 48. An instruction sheet detailing the Q-sort was provided to each participant. All participants were asked to read through the cards to help understand the spectrum of statements. In addition to the instruction sheet, instructions were also given verbally to twenty of the twenty-two participants. Four of the twenty-two participants were given the option to perform the sort on their own time.

The participants then sorted the statement cards into three piles to indicate statements with which they agreed, disagreed, or were unsure about. Within the general groups, participants then rank ordered the statements according to the extent they agreed or disagreed with the statements. The ranking process allows the participants to model their point of view without having a specific problem definition forced upon them. Participants were asked to place the statements in a forced quasi-normal distribution, which aids the participants in thinking about the relationship between statements. Table 2 portrays the number of cards to rank in each level of the distribution. Figure 4 illustrates a participant in the process of rank sorting the statements.

Least agree			Neutral			Most Agree
-3	-2	-1	0	1	2	3
(3)	(6)	(9)	(12)	(9)	(6)	(3)

Table 2: The structural design of the quasi-normal Q-sort. The numbers in parenthesis indicate the number of cards within each ranking.

Figure 4: Participant conducting a Q-sort (Wikimedia, 2011).

After the participants completed the Q-sort they filled out demographic information and underwent a semi-structured interview to ensure accuracy and understanding of their participation. Information gained from the interviews was noted in the results section of this thesis paper. Two participants were unavailable to participate in the follow-up interviews.

4.5. Data analysis

The PQ-Method 2.11 software (Schmolck & Atkinson, 2002) was utilized to analyze the twenty-two Q-sorts and identify patterns and commonalities between participants. This software uses factor analysis to explain as much of the variance among the individual Q-sorts as possible. Data analyzed with the PQ-Method 2.11 software reveals scoring patterns called factors. A factor can be described as a shared perspective. Q-methodology inverts factor analysis by grouping participants' Q-sorts, thereby indicating underlying shared perspectives (Venables et al., 2009).

4.6. Results

In order to analyze the data, the first step was to determine the number of significant factors. The analysis was done by factor-analyzing the data collected from the Q-sorts through the PQ-Method 2.11 software. Eigenvalues, as seen in Table 3, were used to determine which factors were statistically significant. Eigenvalues are calculated using centroid factor analysis and rotated according to the varimax principle. Factors that had eigenvalues greater or equal to one were selected as significant (McKeown & Thomas, 1988). Factor 4, as shown in Table 3, was included in the study because its eigenvalue was within .01 of 1.

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Eigenvalues	**2.13**	**10.32**	0.55	**0.99**	0.094	0.79	0.46
% Explained Variance	10	47	3	4	0	4	2

Table 3: Unrotated Factor Matrix
**Underlined eigenvalues were the values deemed significant for this study.*

The assessment of eigenvalues revealed three statistically significant factors, which identify patterns and commonalities between participants. The extraction of the three factors, showed six people loading purely and statistically ($p<.01$) on Factor A, ten people loading on Factor B, and four people loading on Factor C. Two people did not load significantly on any factor. Table 4 shows the defining sorts amongst participants.

Participant Number	Description	Factor A	Factor B	Factor C
1	Olympia Downtown Association	0.409	-0.4561	0.4194
2	Economics Professor	0.341	-0.0668	0.6882X
3	Longshoreman	0.6598X	-0.0712	0.3226
4	Environ. Engineer/Marina Owner	0.6884X	-0.4678	0.0814
5	Concerned Citizen	-0.3337	0.7596X	0.1671
6	City Council Member	0.1861	-0.1561	0.5568X
7	Marine Biologist	0.0123	0.7894X	-0.3298
8	Fish Habitat Biologist	-0.2129	0.8673X	-0.0388
9	Water Resources	-0.1315	0.7240X	-0.2782
10	Retail Management	-0.1451	0.8291X	-0.2525
11	Biological Field Technician	-0.146	0.7553X	-0.196
12	Biologist	-0.1815	0.8598X	-0.0284
13	Biologist/Squaxin Tribe	-0.1681	0.7423X	-0.35
14	Consultant	-0.3168	0.7698X	-0.3334
15	Graduate Student	-0.3149	0.5733X	-0.0051
16	Public Health	0.1958	-0.1653	0.6028X
17	Concerned Citizen/CLIPA	0.5774X	-0.4385	0.2586
18	State Representative	0.6945X	-0.0985	0.2394
19	Concerned Citizen/CLIPA	0.6507X	-0.3653	0.2364
20	Legislative Assistant	0.6178	-0.4655	0.4354
21	State Representative	0.3919	-0.1163	0.4800X
22	Concerned Citizen/CLIPA	0.7391X	-0.1307	0.2947

Table 4: Factor Matrix with an X Indicating a Defining Sort

The data analysis has simply revealed the natural differences among the participants' perspectives and has shown how those perspectives are grouped.

After the three factors were extracted, the data analysis using the PQ-Method 2.11 software generated an idealized Q-sort score for each perspective which "…represents how a hypothetical individual loading 100% on a factor would order the statements" (Dryzek & Berejikian, 1993, p. 52). The idealized Q-sort for each discourse is reported in Appendix B. To determine the character of each factor, the defining statements were analyzed for each factor based on the normalized factor scores.

Based on the characteristics found in each factor they were termed business focus, natural systems focus, and location of restoration focus. These labels cannot represent all aspects of their categories but are simply used for identification purposes. Table 5 gives a brief description of each of the subgroups.

Factor Subgroup	Description
Factor A: Business Focus	Categorized by the business and aesthetic value that Capitol Lake holds for this subgroup. People sorting on this factor related the aesthetics of the Lake as an important component of the health of the downtown business economy and community recreation.
Factor B: Natural Systems Focus	Categorized by a strong concern for the environment of the Puget Sound region as a whole. People sorting on this factor had strong agreement that entire ecosystem needs to be protected and restored, regardless of the location.
Factor C: Location of Restoration Focus	Categorized by advocating for location specific restoration projects that do not impede on the current urban landscape. People sorting on this factor strongly agree with the social and community components that Capitol Lake provides to community members.

Table 5: Description of significant factor groups

The following sections indicate the significant statements at $p<.01$ and provides an interpretation of the overall characteristics found in each factor. The numbers in parentheses indicate the corresponding statement number to the description listed in Appendix B.

4.6.1 Factor A: Business Focus

Factor A is categorized by the business and aesthetic value of Capitol Lake. People sorting on this factor connected the aesthetics of the lake to the health of the

downtown business economy. It is distinguished from the other two factors by its strong agreement that if the estuary was restored there would be vulnerability of the port both functionally and economically (8, 14); a decrease in aesthetics to the area in which the Wilder and White Plan would be ruined (34); and flood risks to the downtown area (5). Participants who loaded on Factor A ranked the following statements as indifferent or neutral in which they had an idealized score of zero. The neutral statements placed little importance on the location to implement restoration (4); that the current use of the lake is important to prevent pollution to the sound (20); and the benefits of creating an estuary (3). This is significant because the other two factors had strong agreement or disagreement with these statements.

People sorting on Factor A strongly disagree that the dual basin alternative would be ecologically and economically productive (47); that the marina and the Port of Olympia can remain viable with estuary restoration (14); and that the estuary will bring cost savings (10). They had distinguishing statements that ranked statements negatively while Factors B and C ranked them positively. These included disagreement with the functionality of the dual basin estuary (46, 17); and the Deschutes Estuary being able to improve the ecology of the area (29).

4.6.2 Factor B: Natural Systems Focus

Factor B can be categorized by a strong concern for the regionally interconnected nature of Puget Sound, its estuaries, and the regional watershed. People sorting on this factor had strong agreement that the community and government need to make decisions that aid in restoration of the entire Puget Sound (37, 13); Capitol Lake is an unhealthy system (42, 2); and that estuaries are needed to maintain health and restore habitat (27,

33). Participants sorting on this factor also had mild agreement that maintaining a unnatural construct is a good management plan (43, 11); the Port of Olympia and the marinas will remain viable with estuary restoration (7); the Deschutes Estuary restoration would bring cost savings (10); and the restoration of the natural processes of the estuary would be educational and inspire deeper connection with community members and the environment (35, 31).

People sorting on this factor strongly disagree that restoration efforts should be focused on other areas (6, 4, 45); and that the smell and aesthetics of the estuary will be offensive (41, 25). People had a mild disagreement that the lake is needed as a community resource (12, 44, 18, 26); dredging would be needed if the estuary was restored (39); and that the cost to restore the estuary would be prohibitive (19).

People sorting on Factor B typically showed a polarized perspective from Factors A and C throughout the results. However, the severity of polarization differs between factors and opens the potential of deeper conversation between stakeholder groups.

4.6.3 Factor C: Location of Restoration Focus

Factor C can be categorized by advocating for location specific restoration projects that do not impede on the urban landscape and its recreational uses to the community. People sorting on this factor strongly agree that there are better locations to implement restoration projects (4); and Capitol Lake provides social and community values (44). There is mild agreement that the dual-basin plan provides a good alternative that integrates both environmental and social-economic considerations (46, 47, 17).

People sorting on this factor strongly disagree that artificial construction cannot be maintained in a natural environment (11); and that there should not be a “do what ever

it takes" mentality when choosing restoration projects (21). People had mild disagreement that the estuary option will reduce mosquito problems (15). Factor C had the least distinguishing statements as compared to Factor A and B. However, the focus on the ideal location for restoration projects was the overall distinguishing perception between Factor C and the other factor groups.

4.6.4 Consensus and Contention

Identifying the consensus and the contention items is important to help facilitate stakeholder groups to reach an agreement on the goals needed for management. Results from this study clarified that there is deep polarization between the two major management options of maintaining Capitol Lake or restoring the Deschutes Estuary. While there were a multitude of contention items, the study reported only one consensus item that was scored outside of the neutral ranking. The primary consensus statement that emerged is statement 37:

A	B	C	
+1	+3	+1	(37) It is our task to ensure that the Puget Sound forever will be a thriving natural system, with clean marine and freshwaters, healthy and abundant native species, natural shorelines and places for public enjoyment, and a vibrant economy that prospers in productive harmony with a healthy Sound.

Statement 37 summarizes the many dynamics that are involved with the Capitol Lake management issue in terms of the social, environmental, and economic considerations. All stakeholders want the best option for their community but they have not decided upon a consensual means to achieve these goals. Consensus items can be used in discursive democracy settings to facilitate group discussion in a positive manner by focusing on common perspectives.

Consensus items between Factor B and C provide further insight on aspects that facilitators could use to explore in further discussion. This is important to consider because of the positive correlation, as seen in Table 6, between Factors A and C show

Factor	A	B	C
Factor A: Business Focus	1	-0.5315	0.5811
Factor B: Natural Systems Focus	-0.5315	1	-0.3666
Factor C: Location of Restoration Focus	0.5811	-0.3666	1

Table 6: Correlation Between Factor Scores

very similar consensus on items. The following statements may be effective to further the discussion on management options because Factors B and C are negatively correlated but show some consensus items. The statements below list the consensus items with their normalized score for each factor.

A	B	C	
-1	+**1**	**+1**	(29) The estuary might be an important step in improving the health of Puget Sound.
0	**-2**	**-2**	(20) The lake gives you a place to capture all the pollutants and then scoop them away before they enter the Puget Sound.
0	**-3**	**-2**	(3) There is no real benefit to creating a tide flat.
+2	**-1**	**-1**	(8) One good winter rainstorm could fill in the Yacht Club and Percival Landing to the point that they are not useable if the estuary were to be restored.

These areas of consensus bring additional avenues of facilitating group discussion of the future management of Capitol Lake. Stakeholders in Factors B and C recognize the importance of an estuary environment but also recognize that there are potential unintended risks that may result if implemented. There is also recognition of uncertainty

regarding the sediment transfer to the marinas and the Port of Olympia, however, both Factor B and C have mild disagreement to perceived impact.

Facilitators should also recognize the strong correlation between Factors A and C. These two factors both showed strong agreement that Capitol Lake holds strong aesthetic value for the community (18, 26); and that the State has defaulted on their responsibility to keep maintain the lake (24). Factors A and C also showed strong disagreement that the restoration of the estuary would improve the health of the Puget Sound (27); artificial constructions cannot be maintained in a natural environment (11); and that the aesthetic value to walkers and birders would be increased with estuary restoration (31).

Overall, Factors A and C held polar opposite perceptions on the future management of Capitol Lake than Factor B. The general topic areas in contention included ideal location of restoration projects, costs involved with implementing management alternatives, the viability of sustaining economic and social endeavors under the estuary restoration option, and the aesthetic value of management decisions. A graphical representation of the consensus and contention items between factor groups is presented in Figure 5.

4.6.5 Interviews

Interviews are used in Q-methodology studies to give the researcher feedback about the understanding of the statements presented, to identify any aspects missing in the Q-sort, and to enable the researcher to further interpret the findings in the data analysis. Overall participants reported ease of understanding with the Q-sort procedure. The first ten participants did not report any missing topic areas and the Q-sort remained

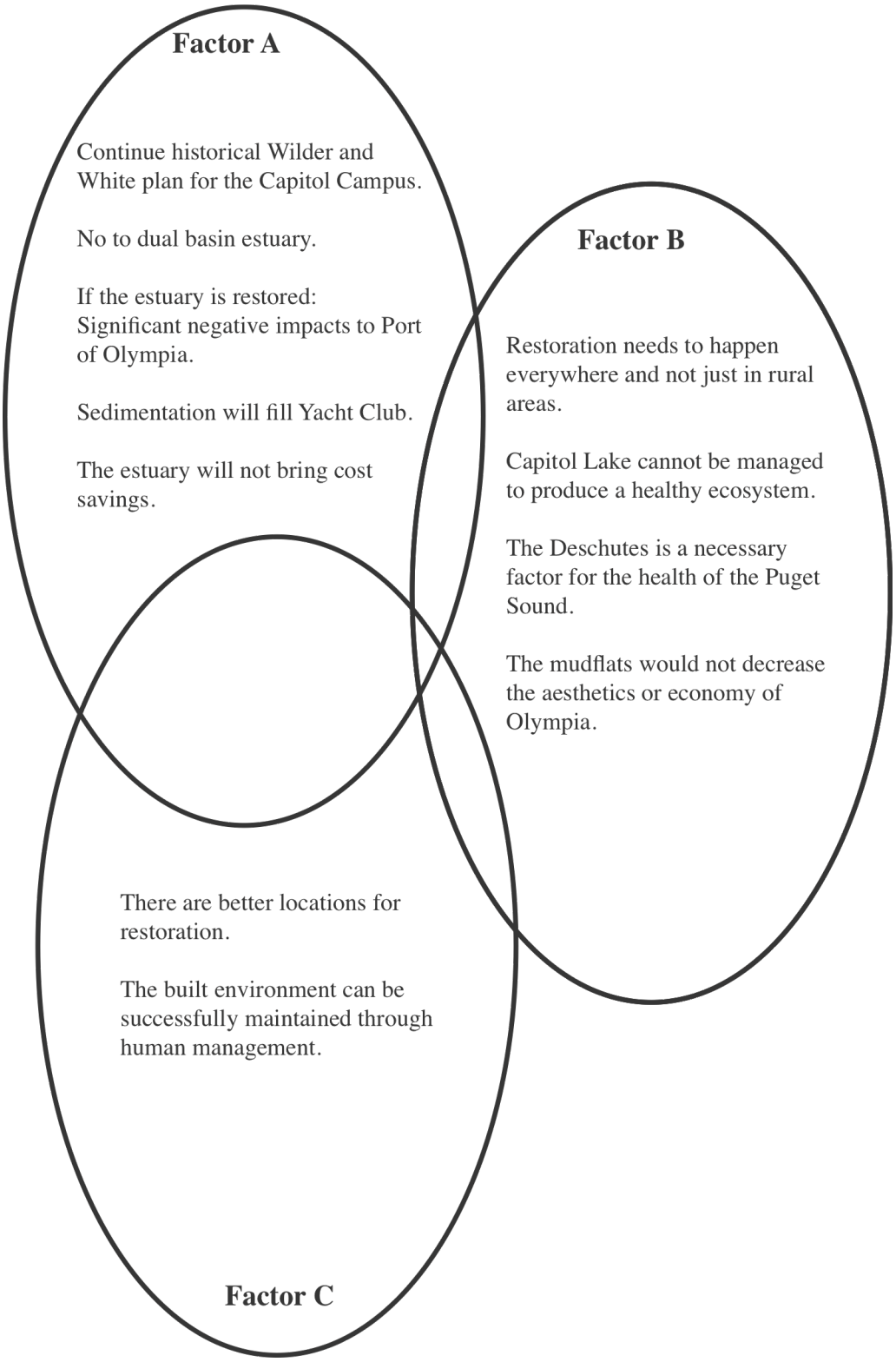

Figure 5: Graphical representation of the distinguishing contention statements between the three factors.

unchanged throughout the study. However, a few participants did identify some missing areas late in the study. This included concerns about the infrastructure costs reported in the CLAMP studies, the effects of dredging on the health of the estuary, and the concept that management should instead be focused on controlling non-point pollution (pollution in which you cannot identify the source).

The strength of conducting interviews following the Q-sort is that the participant can reflect on the statements they just encountered and expand on their perceptions. This information can be used in group facilitation as subject matter that needs to be defined and explained. Interviews can also generate new areas that need to be explored in terms of policy making or through additional research. The remaining information of this section highlights the information gained from the interviews.

Some participants loading on Factor A further explained their concern with estuary restoration if the Port of Olympia and the marina were to remain viable. This perspective focused on the environmental outcomes of dredging if the estuary was restored. Participants remarked about the need to dredge the Port and marinas when the area was impacted with too much sediment. Further explanation showed concern that dredging would eliminate any environmental merit of the restoration project. Consequently, some Factor A participants believe the financial burden would be excessive for the little perceived benefit that came from the restoration.

Some participants loading on Factor B expressed their confidence in scientific studies conducted during for CLAMP. Numerous participants expressed that estuary restoration is the best management option based on the science that is here today. A few participants also expressed that the CLAMP studies reflect the possible range of

economic and technical values for the different management options and any call for further studies is excessive and unnecessary.

Some participants loading on Factor C stressed the idea that estuary restoration would not be effective because of the location of the water body to an urban center. Because of the location, the non-point pollution will continue to degrade the area. Instead the management issue should be how to control non-point pollution instead of the way the Lake is managed. Participants sorting on Factor C also expanded upon the perspective of location specific restoration projects. Some participants expressed that they wanted a "win-win" for both increasing environmental benefits as well as maintaining a strong and vibrant downtown. The idea of the dual basin alternative was raised in three of the four participants sorting on Factor C as a management solution. These participants noted that they believed the benefits to the environment as well as the downtown businesses and the community for recreation would be supported through the dual basin alternative.

Interestingly, some participants loading on Factor A and C expressed their lack of understanding on the functions of estuaries and the importance that estuaries have within ecosystems. This study recommends that further education on these topics is needed if stakeholder facilitation is held in the future. Some participants from all factor groups expressed the need to develop cost sharing option between the State, local government, and private users of the Port and the marinas. There is an understanding between all stakeholder groups that this aspect would need to be determined if estuary restoration would take place.

5. Discussion

As demonstrated through the case study presented in this research, Q-methodology studies are important to systematically identify and quantifiably weigh stakeholder perspectives on a natural resource management issue. The identification of the different perspectives provides an avenue for stakeholders to see how other stakeholder groups view the issue. This information can then be used as a foundation to open a dialog between stakeholder groups and natural resource managers to begin the decision making process.

Facilitators can use the results from this Q-methodology study to bring stakeholder groups together. Consensus items bring a common perspective to the group and can be leveraged to begin discussion. The discussion then evolves to include the areas of conflicting perspectives. The challenge for facilitators will be to expose these contentious areas and have stakeholder groups participate in the application of discursive democracy. This entails willingness on behalf of all stakeholder groups to be educated about opposing viewpoints and to be open minded when weighing new information.

For the issue on the future management of Capitol Lake, this study is timely, as meetings between the major advocacy organizations (CLIPA and DERT) are beginning to be set-up through government agencies. At the conclusion of my data collection, I had the opportunity to attend one of the first meetings that included both management perspectives of Capitol Lake since the CLAMP Committee disbanded. The meeting, held by the Department of Ecology, was a task force to look at the Total Daily Maximum Load (TMDL) of the Capitol Lake area. TMDL is defined as the maximum amount of a

pollutant that can be received by a water body and still safely meet the water quality standards (United States Code, 2007).

At the meeting described above, two organizations with differing management perspectives of the future management Capitol Lake were able to present their positions and findings. Meetings such as these are attempting to incorporate all aspects of the issues and involve key stakeholders in the decision making process. The participatory process in the decision making of natural resource management is at the core of discursive democracy. Results from Q-methodology studies can be used to help facilitate future meetings and set the foundation for further discussion between stakeholder groups. It is here that facilitators hold meetings between stakeholder groups to work towards an acceptable solution for all parties.

5.1. Critique of Work

Based on the experience of implementing a Q-methodology study, a review of the processes have revealed certain aspects that could have been structured differently to make the results even more dynamic. This includes the selection of the Q-set and the P-set, as well as ranking categories for polarized issues. These aspects can be applied to future Q-methodology studies to strengthen the structure.

For this case study, the Q-set was structured to minimize researcher bias. The 210 statements were coded to represent the spectrum of the discourse and then randomly selected in each coding group. While random selection is valuable to an extent, a stronger set of statements could have been derived if some deviation was utilized. A simple solution would be to randomly select statements and then review the statements to ensure that no perspective is missing. If a perspective is missing, the researcher then adds it to

the total number of statements.

Another modification to this study would be to expand the ranking categories to include -4 and +4 ranking categories. Previous research focused on polarized issues, utilized a tighter ranking system to best capture areas of consensus (Van Eeten, 2001). However, the ranking system that was utilized within this study seemed to limit the degree of strength each participant could place value on each statement. An alternative way to modify the ranking categories could be to specify more statements ranked in the extreme categories (ie: four statements in both the -3 and +3 ranking categories).

Selection of the P-set is another possible modification to this study. In the literature review of Q-methodology studies, some researchers identified participants based on the stakeholder groups identified in the concourse development (Sweeden, 2006). However, other researchers had implemented a more regimented selection of participants in order to ensure the full spectrum of possible discourses is met (Brown, 1970). Through this research, it is recommended that future practitioners of Q-methodology use a more structured approach in selection of the P-set. The same caution, as suggested in the Q-set, is extended for the researcher in order to review the list of participants and add people if a stakeholder group is suspected of not being represented.

Q-methodology studies are set up and implemented to remove researcher bias, however, the interpretation of the factor groups still lies heavily on the researcher. The researcher bias during interpretation can be avoided by involving stakeholder groups in the data analysis. This would take discursive democracy to the next level in which participants are identifying the different perspectives of other stakeholder groups and provide a starting point for further discussions. However, further research is needed to

test the applicability of stakeholder groups to analyze and interpret the data with minimal guidance from the researcher.

Lastly, this study notes that in order to conduct a Q-methodology study, it takes a significant amount of time to develop the concourse as well as administer the Q-sort compared to survey studies. Typically, to administer a Q-sort, the researcher spends thirty to forty-five minutes with the participant with an additional ten to twenty minutes for the follow-up interview. However, a study by Van Tubergen and Olins (1979) indicated that Q-methodology Q-sorts are just as effective when distributed by mail as they are through in-person meetings. The limitation to mail distributed Q-sorts is that the researcher is unable to conduct an in-person interview and explain the sorting process if the participant is confused.

In summation, Q-methodology studies provide a wealth of information about stakeholder perspectives, and natural resource managers can use this information to help facilitate stakeholder meetings. Modifications as listed in this section, can help make future studies stronger and also provide a means for more productive dialogue between stakeholder groups. The option to distribute the Q-sorts by mail will reduce the time intensive aspects of the methodology and thus making it feasible for natural resource managers to conduct a Q-methodology study.

6. Conclusion

Q-methodology has yet to overcome the research paradigm of traditional survey studies. However, every year, more studies are conducted using Q-methodology. The information derived from these studies is finding more resonance when natural resource managers are working to include public participation in the decision-making process. This case study of the future management of Capitol Lake presents another opportunity to advance Q-methodology as a useful tool in natural resource management and environmental policy decision-making.

Q-methodology avoids many of the limitations of qualitative studies, such as the conventional surveys, by providing a structure that minimizes researcher biased. Mainly, this is apparent in implementation of the Q-sort where the participant chooses the information that is important to then and ranks the cards accordingly to their held perception. Additionally, Q-methodology is a means to gain insights of stakeholder perspectives that would not be available through traditional social science methodologies.

The importance of this case study and other Q-methodology studies is that through quantitative means, the areas of consensus and contention are identified between stakeholder groups. The information obtained from Q-methodology studies can be utilized to give context of the perceptions stakeholder groups hold and also identify additional research areas. Ultimately, Q-methodology studies build the foundation to facilitate stakeholder meetings. Facilitation efforts can progress, even in contested issues, by recognizing and identifying areas of consensus and contention.

Although findings in this case study may seem obvious to the stakeholders who

are immersed in the issue, this information gives a clear picture of the overall discourse and a clear framework of areas of concern and agreement. In order to move forward and create a resource management plan that is feasible, all stakeholder groups must move towards mutual understanding through the process of discursive democracy. Otherwise, the management result that no stakeholder group desires, the status quo lake, will prevail by default of taking no action. Therefore, the discourse must continue in order to meet the needs of all stakeholder groups, and Q-methodology provides a launching point for this discourse to occur.

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8. Appendices

Appendix A: Concourse Development

The dual basin estuary will support the drainage problem and keep the public who use the area.
The dual basin option supports all of the current recreation valves while improving the habitat.
A hybrid of the current pond and a natural tide flat would be the best option.
The dual basin estuary will support the drainage problem and keep the public who use the area.
The Lake is good for the city, tourism, economy, boating.
The dual alternative does the most to meet people's needs and wants by also creating crucial habitat for salmon.
The marinas and the Port of Olympia can remain viable with estuary restoration.
Restoration would be an environmental success story that could remind us that we can correct what we have done wrong or carelessly in the past. It could be a model for other areas and communities that also need large scale restoration.
Eventually people will get it. You cannot maintain an artificial construct in a natural environment.
I see this as a very tribal thing. It is part of the campus and the Tribe should not be involved.
The importance of salmon spawning with the return of the estuary would only fill the Indians pockets with plenty of cash to support the future political campaigns of those on Capitol Hill in charge of this decision.
Maintaining the lake is pushing against the current, it does not make sense.
The estuary will bring cost savings.
I think returning the lake to an estuary will make it even more attractive for walkers and birders.
By seeing the natural process of an estuary at work, people in the urban environment would have more a sense of place with Puget Sound.
There is too much invested in the Lake and too many businesses that would be negatively impacted.
A healthy waterway would have real economic benefits.
Fewer people will recreate with the estuary because of the smell, which will result in businesses declining, then a large decrease in tax revenue, and thus less revenue to build and support the parks.
The Olympia Yacht Club, along with the docks outside Anthony's, would become obsolete with the large amount of silt to flood the southern portion of the sound.
Local marinas and the Port of Olympia will remain viable with estuary restoration and cost less than long term lake management.
If you destroy Percival Landing, you destroy a major player in the rejuvenation of Olympia.
Olympia has not made the progress that it should in revitalizing downtown, but the establishment of mud flats would make any chance of revitalizing downtown even more remote and difficult.
Once the 5th Avenue Dam is removed and a new bridge is in place, the traffic flow will improve, pedestrian safety across the very narrow sidewalk at the dam will improve, and will serve as a major economic stimulus to our region.
We need more money for healthcare. Stop wasting money on expensive maintenance.
A healthy downtown is what is important and taking away the lake would hurt it.
Return the lake to an estuary. Allow the natural processes to provide balance and health to Puget Sound and all its wildlife.
Capitol Lake is part of an unhealthy ecosystem. All is in various stages of unhealthy and it needs recovery.
The ecology of the area needs this estuary to maintain its health.
The Deschutes estuary was a natural functioning system until it was dammed. Restoring the estuary would give the Deschutes a connection to salt water and natural functioning conditions could reoccur to restore

habitat that's supposed to be there.
We have plenty of areas for birds and wildlife here in Washington State and we need to dredge this beautiful lake before it becomes a mud hole with swamp grass.
We've destroyed most of Washington's estuaries in the last 150 years. It's time to take responsibility for our historic mistakes.
I would love to see the Lake swimmable again. Olympia is so disappointing it does not have any swimmable areas.
The Lake will need to be managed to keep it healthy.
The estuary is compatible with Heritage Park. Walking/jogging trails will remain and should be enhanced with a 5th Avenue bridge replacing the now dangerous narrow sidewalk along the dam.
Without extensive management of the Lake, I would rather the Deschutes look like Totten or Eld.
Wetland restoration and protection is vital if we are to have a healthy Puget Sound waterway.
I am frustrated that we do not manage the lake.
I feel there are better spots to do estuary restoration in a more rural setting. A downtown environment lends itself more to a lake.
Puget Sound is indeed an icon of our state — there are few other places in the nation that can compare. And yet the state Capitol is the home of a dammed-up estuary that is polluted, full of invasive species and a public health hazard.
I go to the visit and look at things around the Lake, but I would always wonder 'what did it look like before this'?
The estuary may reduce mosquito populations.
The estuary might be an important step in improving the health of Puget Sound.
The General Administration is not capable of managing the resource. They are ignorant of the resource and it is not their expertise. They do not understand the natural system management. A different state agency is needed to manage Capitol Lake.
What happens if the estuary does not work? Will there be problems with erosion and what if the public does not like the results?
If the new estuary is formed, I certainly would support rigorous sustainable actions, information paths and signs, educational activities based on exploration and sharing of information.
If you are going to turn that area into what it was, you would take out all of downtown.
A "Mudd Bay" is not aesthetically acceptable to our Capitol City, which of course, is urban. Expanding the cost sharing partners and maintaining the lake should be our emphasis.
We can change the environment and it will stay that way for a while but the natural processes will put it back that way it is eventually.
How can environmental authorities and state legislators support the contradiction of a lake while encouraging, funding, and sometimes requiring restoration of other near shore and estuarine areas?
We need to return to dredging protocols of the mid 1980s.
The people before had a great idea for the lake and the Capitol.
The upland needs to be cleaned up so it keeps the lake healthy.
We need to consider dredging only the North basin, there is a nearby site for dredge spoils to be deposited
Restoring the estuary might negatively affect the lovely Heritage Park and lake area; all development with public funds.
We have a responsibility to improve our natural environment where possible. This is a unique opportunity to restore one of the largest estuaries in the Puget Sound.
An estuary is much cheaper over the long run and will save taxpayers millions of dollars compared to managed lake.
I think there are a lot of mitigating factors for restoration. Lots of lurking and intervening areas that could cause further environmental degradation.
Dredging Capitol Lake will only become a financial black hole.

Management of this ecosystem would be better in the hands of the Department of Natural Resources or another state resource management agency, instead of its current overseer, the Department of General Administration.
While there's no surplus of state funds for lake maintenance, there could be federal funds available to help pay for estuary restoration
Natural systems such as estuaries are basically maintenance free.
Still, while science and symbolism are both important, I fear that the fate of Capitol Lake will be decided by inertia or short-term economics, and as time passes and nothing is done, the status quo will have prevailed by default.
Reverting back to mud flats would be a disaster for Olympia from both an aesthetic and economic point of view. It would forever mark this community as a dumpy, dirty, unhealthy place because of dirty mud flats.
One good winter rainstorm could fill in the Yacht Club and Percival Landing to the point that they are not useable if the estuary were to be restored.
The dredging costs to the marinas will probably be prohibitive under the estuary option.
Olympia is an industry-based estuary and we may want to focus our money else where that would be more productive.
The state has more important financial responsibilities than a reflecting pond.
The estuary will save taxpayers a lot of money, especially when we are focusing on cleaning up Puget Sound.
Restoring the Deschutes estuary from its current incarnation as Capitol Lake would be environmentally and financially beneficial to the State and the local community.
Over the long term the estuary is less expensive because after the dam is gone, it will manage itself.
It is a lot less expensive to maintain as a Lake if it were maintained properly.
A duel basin is a great compromise financially, socially, and biologically.
Removing the dam would be three times as much money over 50 years than maintaining the Lake.
The estuary option is not only the most ecologically beneficial decision, but also the cheapest.
An estuary is much cheaper over the long run and will save taxpayers millions of dollars compared to managed lake.
When presented with some of the costs to turn it into an estuary, I was flabbergasted. I can't imagine spending so much money to turn it into something else while we already have a lake.
I think that time and money should be spent on protecting estuaries of greater significance than the Deschutes, preferably in areas not already substantially altered by human activity.
As we try to alter nature, it wreaks havoc with our environment, and the ability of native plants and animals to survive.
Economically, you would either destroy the Port of Olympia yacht club or you would commit the State to a regular program of dredging with estuary restoration.
The lake is a wonderful resource.
The State has defaulted on their responsibility to keep it a functional lake.
The lake gives you a place to capture all the pollutants and then scoop them away before they enter the Puget Sound.
Dual basin estuary seems the best of both worlds as an ecological and social value for Olympia's people and wildlife.
We forget how grand and how beautiful the natural state is because we have touched everything and changed everything that we forget what the natural beauty can offer to us as humans.
It is time we begin to undo some of our past mistakes and work to restore Puget Sound's ecology.
Without hydraulic controls of a dam, the lake will look like a glistening dung stinking mudflat devoid of wildlife or any recreation aesthetic.
Retuning Capitol Lake to an estuary would be the second largest restoration project ever undertaken in the Puget Sound and it would be right on the state capitol campus thus showing that Washington really does have the will to lead Puget Sound recovery.

We have lots of estuaries; let's keep this beautiful landmark.
An urban estuary with walking paths, park benches, and educational kiosks provides a way for people to understand and appreciate the importance of the natural world.
Capitol Lake is a landmark and a big part of the charm and character of Olympia.
A mudflats may meet the esoteric personal needs of a few "back to nature" self-serving "purists", but so would tearing down all the buildings in the city so that the trees can grow back. Restoring the estuary is not in the best interest of the community.
As much as I am pro conservation of natural habitat-there needs to be something for people too. This body of water is a gathering place for the community and a walking place for individuals. A dual estuary seems to offer some habitat for both animals and people.
Restoring the natural estuary would provide openness and health. To me, this is aesthetically pleasing.
Downtown Olympia and our State Capitol Campus would benefit from the opportunity to reconnect with nature.
I think the restoration of the estuary would represent a significant move forward in recognizing and accepting our responsibility to share the land with other organisms.
While a natural mudflat and habitat can provide a peaceful setting, it does not compare to the tranquility of a water body that reflects its historical and natural surroundings at a glance.
It is important to have places to go, to see, to touch, to smell, to understand how healthy systems require health and balance in its smaller components.
To turn the northern reflecting pond into an estuary would ruin one of the most scenic landmarks in our community.
When Capitol Lake was created, it made sense in response to the needs of the times. What makes sense now is to invest in our environmental and ecological health, and do whatever we can to provide a clean environment for future generations.
Walking by the lake soothes my soul.
Capitol Lake helps prevent flooding.
There is no real benefit to creating a tide flat.
If the reflecting surface of the lake in front of the Capitol was maintained and other portions were restored to a more natural state and the water quality improved, then I think civic pride would increase, recreational and other businesses would increase, the entire area would be more accessible providing more public use.
The estuary would ruin the beautiful Wilder and White plan for a reflecting lake for the Capitol buildings and it would lessen the amount of open space in the North Capitol Campus.
I believe the use of the lake area would decrease greatly if the estuary was restored. It would no longer be a place to enjoy as it is now.
Capitol Lake serves a lot of activities that go on in Olympia.
I do not see how creating an estuary would help communicate the history of the area.
I do not think anyone would be orientating events around a mud flat.
Salmon are not historically from the Deschutes River and should not be a factor in the debate.
The Lake is recent history and artifact of man made intervention and should be restored to the natural function.
Dredging the lake is a goofy 50's vision of the world.
Capitol Lake is a connection between constituency and government in a democracy with a direct relationship to the physical and natural place of the state.
The site was originally changed from an estuary to the reflecting lake because it was such an eyesore.
There is no better way to instill a sense of place for what the northwest than providing access to a unique estuarine ecosystem every day in our downtown.
Just because an estuary is the least expensive option is no reason to destroy this beautiful asset of our City and State.
Estuaries are better for boating and kayaking. The estuary will draw kayakers, fisher people and wildlife

enthusiasts.
So much of our efforts have been spent on containing nature. Almost always, this robs us spiritually.
Estuary restoration will provide a hands-on opportunity for our local schools at all levels to teach their students about marine sciences and wetland restoration.
Restoration is the path of altruism — a path this society would do well to get on.
It is always better to have a natural area than a contrived one.
Being the State Capital, it would have the added benefit of sending a message to the rest of the state- and the nation – that legislators here are not just talking the talk, saying “Do as I say, not as I do”.
Deschutes Estuary restoration will have a positive impact on educational opportunities at all academic levels.
The cost of maintaining the lake vs. an estuary should have nothing to do with the decision; it’s the aesthetic value.
If Capitol Lake is saved, we will continue to have a Capitol Lake Fair as opposed to a “Mudflat Fair”.
People are holding on to a century old ideal.
Why build some new mud flats and justify them on an educational basis when we are not taking "advantage" of the mud flats that we have.
The State of Washington and the City of Olympia have set ambitious goals for environmental sustainability, and this is an enormous opportunity to help them achieve these goals, to “walk the walk”.
The estuary alternative brings improved recreation and traffic safety.
If trying to build momentum with restoration, you should use the most promising site that will be easy to implement given limited resources. The Deschutes Estuary is not this site.
Our city, our State, our environment deserves better than Capitol Lake.
If you really need an estuary to teach something that is not available for a lake, go a few miles north to the Nisqually River area. THAT area was preserved by our forbearers to do this kind of teaching.
As it is today with its landscaping and parks, Capitol Lake is a wonderful recreation center for our community from dawn to dusk. It is a focal point for walking and special events. The city center is not the place for an estuary.
The lake is one of the most beautiful parts of a fantastic city and state capital. To throw this away will reduce the beauty of the city.
Anything you do to Capitol Lake detracts from the markets downtown and downtown is already struggling.
The Lake is a calm expanse of water, birds, wind, and sounds that bring a new dimension to our urban setting.
The whole character of the downtown waterfront and Percival Landing will change with estuary restoration. The marinas and public docking areas will not be able to function because of increased sedimentation. All the recreational boats will be gone.
The smells that come from the seashore bring back good memories for many people who grew up around the sea.
Today’s cultural values and personality of Olympia are centered on downtown and Capitol Lake. We need to keep the lake so our traditions can be kept as well.
This is one of the rare occasions where aesthetic considerations outweigh those of environmental purity.
An estuary would bring more people to the edge of an estuary, which is much needed. Residents of Southern Puget Sound do not have much access to the Sound and restoring the estuary would make the Sound accessible.
An estuarine ecosystem is beautiful; it’s magical; it is full of LIFE.
The mud flats are beautiful.
The reflecting pond in front of the Capitol is aesthetically pleasing and makes the walk around the lower portion of the lake very tranquil and comforting. It provides balance in our busy lives.
The reflection is truly stunning.
There is a great learning opportunity for kids and adults to have a natural estuary right here in downtown.

The tidal changes would have a positive impact on the aesthetics of the area. With water moving in and out, it gives a real sense of seeing nature at one of its finest moments.
The estuary alternative threatens the downtown location of the yacht club and will likely affect easy access to downtown amenities.
People come to Olympia from all over the world and we should be the leader in restoration management.
The aesthetic value of this civic icon is enormous; it defines our community; it is our Central Park.
The lake is a critical part of the Capitol Campus and Olympia, enjoyed by joggers and hikers who don't want mudflats downtown.
A restored Deschutes Estuary will enhance public recreation at the Capitol Campus and will draw users to the newly opened tidal waterway, now blocked by the 5th Avenue Dam.
Even with the algae problem the lake now experiences, it is a gem in the center of the city from a beauty standpoint and a gathering point for families and community events.
The Lake provides the ability to reflect the beautiful buildings on the West Capitol Campus.
The peaceful water provides a wonderful solace for spiritual reflection.
An estuary would be beautiful at all tidal levels. Mud flats are inherently beautiful, although, very different from impounded water.
The relationship of a clear water body associated with a wooded hillside and monumental buildings at the peak has a long and powerful role in the Western landscape tradition.
I am a walker and use Percival Landing a lot. It would not be a walking destination if it were mud.
Capitol Lake as a reflection pond is a reason to go to downtown.
The estuary would take away the ability to reflect the beautiful Capitol Group of buildings.
Capitol Lake symbolizes that containing the spirits of true expression can only result in stagnation.
With an estuary at low tide, visitors will leave Olympia remembering us as just another backwater town.
The smell of Capitol Lake if returned to an estuary will resemble Bud Bay; an awful and unpleasant smell of a mud bog.
Current cultural activities will be negatively impacted by the dam removal.
It is silly to eliminate something that is so iconic to the Olympia area.
An urban estuary restoration project serves as a showcase to our region and the nation on how to improve the health and beauty of an ailing waterway.
Restore the estuary to realize the true cultural and spiritual values of our Pacific Northwest marine and Native American heritage.
The current lake is a highly identifiable part of our State Capitol and city, an integral part of our urban living and economy, and a destination for all citizens of the State.
Many of the events held at the lake would no longer want to be around the mud flat.
It has great value in its current form, in the built environment.
To me the lake is more attractive and has a historical connection to the state Capitol.
We need to keep the lake for the cultural and community recreational values it provides if for nothing else.
An issue I have not seen discussed is the potential for increased mosquito production, especially the salt marsh mosquitoes. The estuary area at south bend/Raymond has a considerable problem at certain times of the year. How would this be different?
Capitol Lake is important for bats.
The opportunity here is to convert a failing, unhealthy lake into a major restoration project at the base of south Puget Sound
If Capitol Lake is made into an estuary, it will have all kinds of bugs.
We need areas like the estuary because we have lost many such areas and are in danger of losing many of the forms of life that need them.

The estuary would play a role in Puget Sound cleanup, improve habitat for native fish and wildlife and provide an environmental education opportunity in the capital.
The dual basin alternative allows continued existence of the reflecting pool for community events and also restores the estuary that will rebuild natural habitat and cleanse the lower Budd Inlet of pollutants.
We need to restore the balance necessary to ensure the mutual health of everyone, human beings and other creatures alike, as well as the health of the waters.
We should restore the area to its most natural state.
Returning the lake to an estuary will return salmon to the area, which will help the fishing industry.
The lake itself is a dead zone. Restore to estuary and bring in native vegetation to support the return of wildlife.
The smell of organic rot wafting across the estuary will be what is in store for Olympia if Capitol Lake is changed into an estuary.
Isn't dredging the inlet so boats and ships can move freely? It's only fair that they pay for it.
It is our task to ensure that the Puget Sound forever will be a thriving natural system, with clean marine and freshwaters, healthy and abundant native species, natural shorelines and places for public enjoyment, and a vibrant economy that prospers in productive harmony with a healthy Sound.
The marinas and port existed long before the dam was built, and deep draft ships sailed to the port and into what is now the lake.
Capitol Lake is not a lake… it is a river attempting to reconnect with its estuary.
Recreation will be negatively impacted by the increase sediment of the dam is removed. Percival Landing will become the new 'mud bay".
Prior to the dam, the natural scouring action of the undammed river provided deep water areas and transported much of the annual sediment load further into the deeper parts of Budd Inlet.
The waters of the Salish Sea (aka Puget Sound) have suffered severe damages by industrial activities. The Salish Sea, an ecological system, has a right to exist, to be healthy, and to flourish robustly. It is wrong, morally and ecologically incorrect, for our society to harm the health of the waters. It is wrong to harm the health of the creatures therein and thereupon.
At the time Capitol Lake was created, lack of sewage or industrial waste treatment meant that the Deschutes Estuary was polluted with human waste. That is no longer the case.
Estuary environments are vibrant, clean environments, with thriving wildlife populations and few or none of the types of problems that are created by the damming of the Deschutes Estuary.
I think an estuary would increase the presence of wildlife, particularly birds and fish, which would have a very positive aesthetic value.
An increase in habitat for these species with the Deschutes Estuary restoration would have an effect on bird species.
Salmon are not historically from the Deschutes River, keep the lake.
A naturally functioning Deschutes Estuary would also cool water temperature, improve water quality in Budd Inlet, curtail noxious weeds and invasive species, and provide vastly increased habitat for fish and wildlife.
Is there a guarantee that destroying the current ecological niche for wildlife will create a positive ecological niche for any desirable critters?
The estuary is a productive area and a part of a whole system in which everything is connected: Fish, shellfish, water quality, living conditions, and the spiritual connection.
The port should pay their share.
I don't want to stop eating salmon… Do what it takes to help these threatened fish.
Both the estuary and the Lake serve as a reflecting point for the Capitol.
If we are to reach the states goal of restoring Puget Sound to health by 2020, every city, every town, every municipality, every agency and every citizen must make local decisions for the benefit of the entire Sound.
The estuary will contribute to a healthy Puget Sound and to the health of the nearby ocean.
The dual basin estuary would be good for wildlife that use that lake as well as the people/pets that spend

time on or around it.
The silt washed from the river will expand the mud flat estuary far into Budd Inlet.
There are a lot of shore birds on the tidal flats of mud bay that cannot live on Capitol Lake because there is no habitat for them.
The estuary will provide increased habitat and will be a naturally functioning system.
You would displace the current species that live there.

Appendix B: Idealized Q-sort for each discourse

Statement Scores on Each Factor				
		FACTORS		
		A	B	C
1.	If you really need an estuary to teach something that is not available for a lake, go a few miles north to the Nisqually River area. THAT area was preserved by our forbearers to do this kind of teaching.	0	-2	0
2.	Puget Sound is indeed an icon of our state — there are few other places in the nation that can compare. And yet the state Capitol is the home of a dammed-up estuary that is polluted, full of invasive species and a public health hazard.	-2	2	-1
3.	There is no real benefit to creating a tide flat.	0	-3	-2
4.	I feel there are better spots to do estuary restoration in a more rural setting. A downtown environment lends itself more to a lake.	1	-2	3
5.	Capitol Lake helps prevent flooding.	1	-2	0
6.	Olympia is an industry based estuary and we may want to focus our money else where that would be more productive.	1	-1	1
7.	The marinas and port existed long before the dam was built, and deep draft ships sailed to the port and into what is now the lake.	-3	1	-3
8.	One good winter rain storm could fill in the Yacht Club and Percival Landing to the point that they are not useable if the estuary were to be restored.	2	-1	-1
9.	Restoration would be an environmental success story that could remind us that we can correct what we have done wrong or carelessly in the past. It could be a model for other areas and communities that also need large scale restoration.	-1	2	0
10.	The estuary will bring cost savings.	-3	1	-1
11.	Eventually people will get it. You cannot maintain an artificial construct in a natural environment.	-2	1	-3
12.	The lake is a wonderful resource.	2	0	2
13.	If we are to reach the states goal of restoring Puget Sound to health by 2020, every city, every town, every municipality, every agency and every citizen must make local decisions for the benefit of the entire Sound.	0	3	0
14.	The marinas and the Port of Olympia can remain viable with estuary restoration.	-1	1	-1
15.	The estuary may reduce mosquito populations.	0	0	-1
16.	An issue I have not seen discussed is the potential for increased mosquito production, especially the salt marsh mosquitoes. The estuary area at south bend/Raymond has a considerable problem at certain times of the year. How would this be different?	0	0	0
17.	The dual alternative does the most to meet people's needs and wants by also creating crucial habitat for salmon.	-1	0	1

Statement Scores on Each Factor				
		FACTORS		
		A	B	C
18.	The lake is one of the most beautiful parts of a fantastic city and state capital. To throw this away will reduce the beauty of the city.	3	-1	2
19.	Economically, you would either destroy the Port of Olympia yacht club or you would commit the State to a regular program of dredging with estuary restoration.	2	-1	1
20.	The lake gives you a place to capture all the pollutants and then scoop them away before they enter the Puget Sound.	0	-2	-2
21.	I don't want to stop eating salmon… Do what it takes to help these threatened fish.	0	1	-3
22.	Both the estuary and the Lake serve as a reflecting point for the Capitol.	-1	0	0
23.	Anything you do to Capitol Lake detracts from the markets downtown and downtown is already struggling.	1	-1	2
24.	The State has defaulted on their responsibility to keep it a functional lake.	2	0	2
25.	Reverting back to mud flats would be a disaster for Olympia from both an aesthetic and economic point of view. It would forever mark this community as a dumpy, dirty, unhealthy place because of dirty mud flats.	0	-3	1
26.	As it is today with its landscaping and parks, Capitol Lake is a wonderful recreation center for our community from dawn to dusk. It is a focal point for walking and special events. The city center is not the place for an estuary.	3	-2	2
27.	The ecology of the area needs this estuary to maintain its health.	-2	2	-2
28.	I go to the visit and look at things around the Lake, but I would always wonder 'what did it look like before this?	0	1	-1
29.	The estuary might be an important step in improving the health of Puget Sound.	-1	1	1
30.	The port should pay their share.	2	0	0
31.	I think returning the lake to an estuary will make it even more attractive for walkers and birders.	-2	1	-2
32.	Isn't dredging the inlet so boats and ships can move freely? It's only fair that they pay for it.	0	0	0
33.	The Deschutes estuary was a natural functioning system until it was dammed. Restoring the estuary would give the Deschutes a connection to salt water and natural functioning conditions could reoccur to restore habitat that's supposed to be there.	-1	2	-1
34.	The estuary would ruin the beautiful Wilder and White plan for a reflecting lake for the Capitol buildings and it would lessen the amount of open space in the North Capitol Campus.	2	-1	0

Statement Scores on Each Factor				
		FACTORS		
		A	B	C
35.	By seeing the natural process of an estuary at work, people in the urban environment would have more a sense of place with Puget Sound.	-1	2	-1
36.	Return the lake to an estuary. Allow the natural processes to provide balance and health to Puget Sound and all its wildlife.	-2	2	-2
37.	It is our task to ensure that the Puget Sound forever will be a thriving natural system, with clean marine and freshwaters, healthy and abundant native species, natural shorelines and places for public enjoyment, and a vibrant economy that prospers in productive harmony with a healthy Sound.	1	3	1
38.	Capitol Lake is important for bats.	1	0	1
39.	The dredging costs to the marinas will probably be prohibitive under the estuary option.	1	-1	1
40.	If the reflecting surface of the lake in front of the Capitol was maintained and other portions were restored to a more natural state and the water quality improved, then I think civic pride would increase, recreational and other businesses would increase, the entire area would be more accessible providing more public use.	0	0	0
41.	The smell of organic rot wafting across the estuary will be what is in store for Olympia if Capitol Lake is changed into an estuary.	-1	-3	0
42.	Capitol Lake is part of an unhealthy ecosystem. All is in various stages of unhealthy and it needs recovery.	0	3	-1
43.	Maintaining the lake is pushing against the current, it does not make sense.	-3	1	-2
44.	We need to keep the lake for the cultural and community recreational values it provides if for nothing else.	1	-1	3
45.	We have plenty of areas for birds and wildlife here in Washington State and we need to dredge this beautiful lake before it becomes a mud hole with swamp grass.	1	-2	0
46.	The dual basin estuary will support the drainage problem and keep the public who use the area.	-1	0	1
47.	A hybrid of the current pond and a natural tide flat would be the best option.	-2	0	2
48.	To me the lake is more attractive and has a historical connection to the state Capitol.	3	-1	3