Title: The Restoration of Still Creek: How the Salmon Returned

Executive Summary

Rehabilitation of Still Creek is not a unique situation. Less than 100 years ago, Vancouver was home to over 50 wild salmon streams (Vancouver Street Stories, 2012). However Still Creek recently made the news after salmon returned to spawn in 2012 for the first time in 80 years. This exciting news sparked our imaginations. We asked ourselves, *how were the salmon able to return? Why did they return in 2012 specifically?* To answer these questions we relied on newspaper articles, visiting the Vancouver Archives, reading governmental and non-governmental reports, and finally interviewing key players in the restoration. For our results we found that the actual physical processes that allowed for the salmon to return and for the river to return were a result of governmental groups, NGOs, institutions, and community groups coming together to make river improvements governed by theories of river restoration.

Introduction

Since 1950s, the City of Vancouver and City of Burnaby has started their transformation from a suburban area to a mixed industrial-residential area to fit the transportation hub character the region aspired to be. The undergone changes were vast and are briefly described in our timeline (Appendix A). The green space in the region was turned into industrial warehouses and factories. To accommodate the influx of residents, houses, apartments were built and to maximise the available land to build infrastructure, rivers was culverted underground in order to gain the extra 15% of land that was formerly river (GVRD, 1974). The river system was changed to a extend that up to 90% of the rivers was put underground (Figure 1). Following the changing landscape, the salmon and wildlife disappeared with these rivers. Still Creek is just one of these lost rivers that were impacted by urbanization. The creek runs across Vancouver, Burnaby, and New Westminster and is part of the larger Brunette River Watershed which empties into the Fraser River. Recently Still Creek has received a lot of attention as a success story despite all of these lost streams when salmon returned to spawn for the first time in 80 years in 2012. Prior to this, biodiversity and fish species decreased severely in the region due to heavy pollution, so much so that recreation activity was also prohibited (GVRD, 1974). As a very much symbol of biodiversity, many people celebrated when the salmon returned in 2012. The news hinted the effort of restoration made by the local governments and organizations that lead to this return. The plan implemented is based off of the "Still Creek Enhancement plan" initiated by the Government of Vancouver in the year of 2002. Our interest to the topic is how does the government and other groups came to the decision of rehabilitating the Still Creek among the vast amount of streams and river in the City of Vancouver. Other questions include how was the creek restored and why did it happen at that time? Using river restoration theory, we are also able to see what can be learned from Still Creek that can be used to influence more rivers to be rehabilitated.

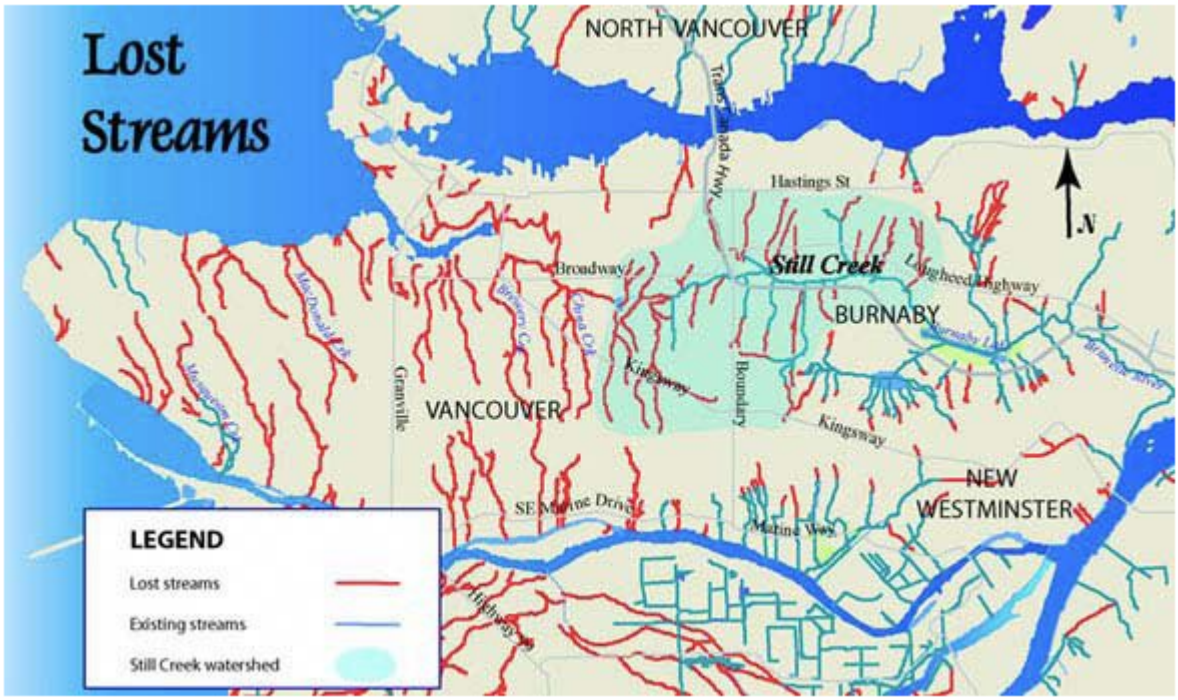

Figure 1: Lost streams of the Greater Vancouver Region. Note the Still Creek watershed in light blue. (Vancouver Street Stories, 2012).

Statement of the Problem and Research Objectives

A challenge of this study was to find out what made the government and other organizations commit to the rehabilitation project. The study also wanted to find out who and how many other parties contributed to the project. From that point onwards we asked; how does the project come into plan and what has been done to rehabilitate the creek. The rehabilitation of Still Creek is an important milestone for the return of biodiversity to the highly developed urban area like Vancouver. A large contract when considering that the city was an important hub in resource management and export in the 70s and 80s.

Our key objective was to showcase the successful elements of the project so that future projects to use this information to learn what should be done and how to improve. The environmental protection regime often looks ahead to the unexploited natural landscape but omits the landscape we are standing and close to our neighbourhood. The project showcased people, that urban forest can function amongst society. The effort is worthy for bringing wildlife back to our community. It also shows that environmental protection is not only the work of professionals but also regular involvement. Another important point in the rehabilitating Still Creek is the cooperation effort from NGO's and the government (GVRD, 2001). NGO in many cases have different ultimate goals compared to the government. Usually the government seeks the well being of society, but the NGO's might focus more on their mission. The conflict might happened due to the different objectives. By studying the reasons behind the changes of the

rehabilitating of Still Creek, the result could be an important transferable experience in know what can be done to connect the NGO with the government next time in rehabilitating other neighbourhood or landscape. Also, how to take advantage of public involvement to facilitate the stewardship plan. These experiences can provide much improvement to the future projects.

Background Context and Literature Review

Still Creek had not been given much interest other than as a stormwater route until the late 1990s and 2000s following increased community awareness and governmental trends towards environmental sustainability and access in the city. In our study, a huge gap of knowledge that we found in our preliminary research was why and how Still Creek was chosen for the rehabilitating work. The news and government reports we read never unveiled the reason they choose Still Creek as the stream to be restored and how did they come into the decision of rehabilitating Still Creek. In the preliminary research, our group discovered the government of Vancouver and Burnaby had cooperated in the plan and published reports about the proposed changes to be made and success and challenges. However, none of the documents talks about why Still Creek was restored or what specific efforts were made and by who.

The historical background of the Still Creek have been outlined from the unpublished confidential documents available from Vancouver Archive. A file called “Planning 1976 - 1993” included plans and letters of the government wanted to change the area from industrial zone to a residential-commercial mixed area. The plan has been discussed for decades and got rejected with the application of a pure residential area. Later on, a folder called “File - Still Creek’ in the Vancouver Archives including the current zoning plan which unveiled the reason why the Granville Boundary Industrial was chosen as the main site for the enhancement of Still Creek. Although it is an industrial zone, the region is close to the residential and education areas like BCIT and other training institutes. They would like to take advantage of these institutions to develop a high-tech industrial area with less pollution and high value added industries. At the same time Still Creek is one of the only streams in Vancouver that is not completely underground, as seen in Figure 1. The government wants to take advantage of the natural scene to restore it into recreation use and increase the surrounding value of the real estate, which also aligned with increasing awareness of the benefits of protecting the environment.

Our study looked at the documents that could be forgotten or deemed unimportant and discovered the decision behind the restoration work was no coincidence because it followed a series of socio-economic decisions made at the time. In the City Council minutes, they even outlined the roles of government and the cooperating NGOs in the plan. While the plan is a great success, our research also unveiled the power of the government as a crucial player in planning the extent of the work NGOs can or cannot do and what the restoration plans should include.

In part due to general trends of increasing environmental awareness in city planning and due to increasing community engagement in Still Creek at that time, the majority of the literature following the previously mentioned documents were written by governmental bodies and NGOs in the 2000s. These documents outline the main challenges to Still Creek such as pollutants entering the creek from runoff (GVRD, 2001) and incorrect sewage lines (Still Moon Arts Society, 2010a), unpredictable flow rates leading to erosion, changes to the channel morphology, flashy streams, and increased sediment load (GVRD, 2001), invasive species, and garbage dumping (Still Moon Arts Society, 2010b). Additional studies recorded the pollutant types in the water, including trace metals, hydrocarbons, E. coli, and faecal coliform levels (Environment Canada, 1998). Building off of these studies, further reports began to make recommendations and outline the main actions needed for restoration that would bring back the vitality of the river and allow the salmon to return. Recommendations included improving the riparian zone to filter pollutants and mitigate runoff flows, garbage clean-ups, reduction of chemicals and pesticides in the neighbourhoods surrounding the creek, and improving stormwater and sewage infrastructure (City of Vancouver, 2002; City of Vancouver, 2006). These actions have been undertaken or are in the process of being undertaken, as reported by more recent government and NGO reports, which also emphasized the importance of building fish ladders and monitoring water quality ((Still Moon Arts Society, 2010a; Evergreen, 2017; City of Vancouver/Burnaby, 2011; City of Vancouver, 2017).

Most of this work has been influenced by the broader discipline of river restoration theory. River restoration is a practice that modifies a river's water, sediment, and solutes and makes changes to the channel, riparian zone, and floodplain (Bennet et al., 2011). Current river restoration theory has three main branches: 1) river restoration by hydrologists and hydraulic engineers based on the desire for flood control or irrigation; 2) restoration under hydrogeomorphic engineering that views rivers as dynamic systems; 3) the incorporation of ecology into river restoration with a focus on biodiversity and increasing habitat for specific species (Palmer & Bernhardt, 2006). Most experts in river restoration would argue that a combination of the three theories are the most effective, though using ecology as the main focus may lead to more long lasting impacts (Palmer & Bernhardt, 2006; Wolh et al., 2015). These researchers have also emphasized the importance of monitoring the results and including community perspectives and other disciplines that otherwise may not be included in the practice of river restoration such as cultural anthropologists, environmental educators, and city planners (ibid).

From this literature review we see that quite a lot of research has been done on Still Creek in terms of restoration by governments, journalists, and organizations, but very little academic research has been undertaken. In particular, while most of the reports showed how the river was restored from a hydrological standpoint, there were large research gaps that failed to answer exactly how and why Still Creek was restored from the human and social side. Questions

surrounding specific actions that each group took, who lead the charge, and particularly, why was Still Creek being restored at that time were left unanswered. This report fills those necessary gaps by being the first document to investigate and include the work of multiple groups, not just the one writing the report. Our research brings together seemingly separate disciplines and stakeholders to provide the first holistic report that includes history, scientific river restoration theory, and present day work to fully answer the questions of how and why Still Creek was restored so that the salmon could return. Furthermore, this broad analysis provides the jumping-off point for future research conducted on Still Creek and river restoration by providing necessary background, analyzing the work that has been done, and offers implications and next steps.

Methodology/Study Design

After setting our research questions and hypothesis, we started our research by looking into online information of how the whole story happened. We found many news articles that indicate that the salmon are back in the city. Many reports emphasized this is a miracle but still an unstable one due to the small amounts of salmon returning and the challenges of keeping the river habitat clean. Most of the new articles only introduces background facts and information to the public. However, we were still able to find a few key players in the restoration plans through those new reports. From a piece of news article called *Watershed moment for Still Creek*, given by Vancouver Courier in August 2016, we found that "[o]ver the last decade, Carmen Rosen has watched the conversation move from disaster to miracle." Therefore, at that stage, we thought Carmen Rosen could be the one that actually started the restoration plan and should be one of our potential interviewees. We also hear about Herb Hammond, "an ecologist with the Silva Foundation and project lead" who said that the area of Still Creek "was an old-growth forest 100 years ago, full of coniferous trees that slowly filtered the water down from the forest canopy." (Vancouver Courier, 2016). A picture of Herb Hammond conducting field tests in the Still Creek Watershed was also displayed under the newspaper title. Therefore, we chose Mr. Hammond as another potential interviewee. Using the similar method, a report given by Water Bucket Organization named *Still Creek – rebirth of an urban stream in Metro Vancouver* (2012) led us to Mark Angelo, who is a Canadian river conservationist, chair of BC rivers day and world rivers day, and inaugural chair of River Institute at British Columbia Institute of Technology.

There are a few non-governmental reports can be easily accessed online. One of them is a famous one named *Still Creek Rehabilitation and Enhancement Study* (2002) given by Evergreen, prepared for city of Vancouver Community Service Planning Department and City Plans. This is the most integrated report we have ever found. It not only introduces background, land use, stream characteristics, water quality, ecological values, City of Vancouver policies, provincial government and federal government legislation but also education and community art

which is rarely covered by other reports. It is a long report, about 138 pages long, and evaluates almost every aspects of Still Creek Restoration.

There are limitations we have strongly experienced when looking into governmental documents. Based on City of Vancouver Policy documents in appendix 3 in the *Still Creek Rehabilitation and Enhancement Study* (2002) we researched some of the policy documents, but many were not easy to access. Fortunately, one of our interviewees, Carmen Rosen, provided us a list of policies related to Still Creek specifically (Appendix C). The policy background list was completed by Branca Verde in 2015 for Still Moon Arts Society. She not only list all the policies related to Still Creek restoration plan, but also evaluated specific objective/target of each one and who/what/how was these. It helped us to understand better of what the government has done, how is the speed of the restoration process. In general, it helped us to form an idea of the timeline of the project.

As mentioned above, we understand that only grabbing information from the library or online is far from sufficient. Since the whole plan started about 20 years ago and it is still in process now, not much valuable details can be reached by only researching in class. For this reason we chose interview as a vital method to make our research complete. We filtered and contacted several potential interviewees based on research we mentioned above. Although we did not get all the responses, most of them replied and showed us they willingness to participate in our research. This also inspired and encouraged us a lot. We interviewed Carmen Rosen from Still Moon Community who talked to us about how she started rescuing the Ravine Park, which is park along the Still Creek by creating the Mosaic Garden, and started the Lantern Festival. Mark Angelo from BCIT River Institute and Herb Hammond from Silva Forest Foundation who both told us that they are still working with the project. Maurice Coulter-Boisvert from Fisheries and Ocean Canada who gave us basic information about Chum salmon. We also interviewed Dana MacDonald from Evergreen who conducts monthly data collection and monitoring activities at Renfrew Ravine. It is more like oral history to us since the stories and details our interviewees shared with us have not been recorded anywhere else before we explored them. One limitation here is that those interviewees we talked to are still a small portion of all the people who were making efforts in the project. City government and First Nation voices are also missing here because we were unable to reach someone from the City of Vancouver or Burnaby, but we felt that the government documents explained enough. The four main nations whose land Still Creek is on, the Musqueam, Squamish, Stolo, and Tseil-Waututh have no personal record of activities at Still Creek specifically, though there was a fishing village that many of the nations used at the mouth of the Brunette River (Rosen, personal communication, 2017). Current work is being done by Still Moon Arts Society to further involve these nations.

Additionally, archival research provided support for our research. We went to Vancouver Archive to look for historical information and images, Xwi7xwa Library to do the First Nation

research, and the UBC Geographical Information Center to see aerial images. We also used ESRI software to investigate the normalized difference vegetation index that shows whether the target area contains vegetation and how their health condition is. Limitations we experienced during archival research is that not all the documents there are available to access. This could provide bias in our research. Additionally the ESRI images were difficult to view and understand based on feedback from the first class presentation so we did not include them in the blog or final report.

Results and Analysis

From our research using interviews, government reports, non-governmental organization (NGO) documents, newspaper articles, and the Vancouver archives, we found three main reasons that lead to how Still Creek was restored and why: 1) physical improvements to the creek including improving water quality, fish access, and the riparian zone; 2) the importance of collaboration across groups and community involvement; 3) the symbol of the salmon as a tangible way to motivate people and measure success.

Firstly, the actual physical processes that allowed for the salmon to return and for the river to return were a result of governmental groups, NGOs, institutions, and community groups coming together to make river improvements governed by theories of river restoration that included ecology, hydrology, and community needs such as recreation (Figure 2). Many of the restoration activities were based off of the 2001 Brunette Basin Watershed Plan and the 2002 City of Vancouver Still Creek Rehabilitation and Enhancement Study and subsequent studies that approached the restoration work as a means to mediate impacts of urbanization, the main cause of degradation. The riparian zone was restored at many locations along the creek, particularly at Renfrew Ravine, by City planning departments and organizations like Still Moon Arts Society. Improving the riparian zone through pulling invasive plants, planting local plants, and removing garbage filters pollutants, provides natural habitat for species, and cools the water and reduces volumes of water entering the river from runoff and stormwater lines (City of Vancouver, 2002; Still Moon Arts Society, 2010). Additional measures were taken to reduce pollutants by encouraging people living close to the waterway to stop using chemicals on their lawn and for cleaning cars which would runoff into the creek (Rosen, personal communication, 2017). Other pollutants were reduced through the City of Vancouver's improvements to stormwater management such as installing stormwater retention-infiltration structures, reducing impervious surfaces, repairing sewage lines, and building swales, with country lanes also proposed as a means to prevent polluted runoff entering the creek (2006; 2017). Salmon were able to enter the stream after the water quality improved from these actions and from fish ladders built by community groups. One surprise was the involvement of corporations such as the TI Corporation who redid the Highway #1 as part of the Gateway Project as recommended by the

Department of Fisheries and Oceans (Coulter-Boisvert, 2017) that allowed the salmon to cross to Still Creek.

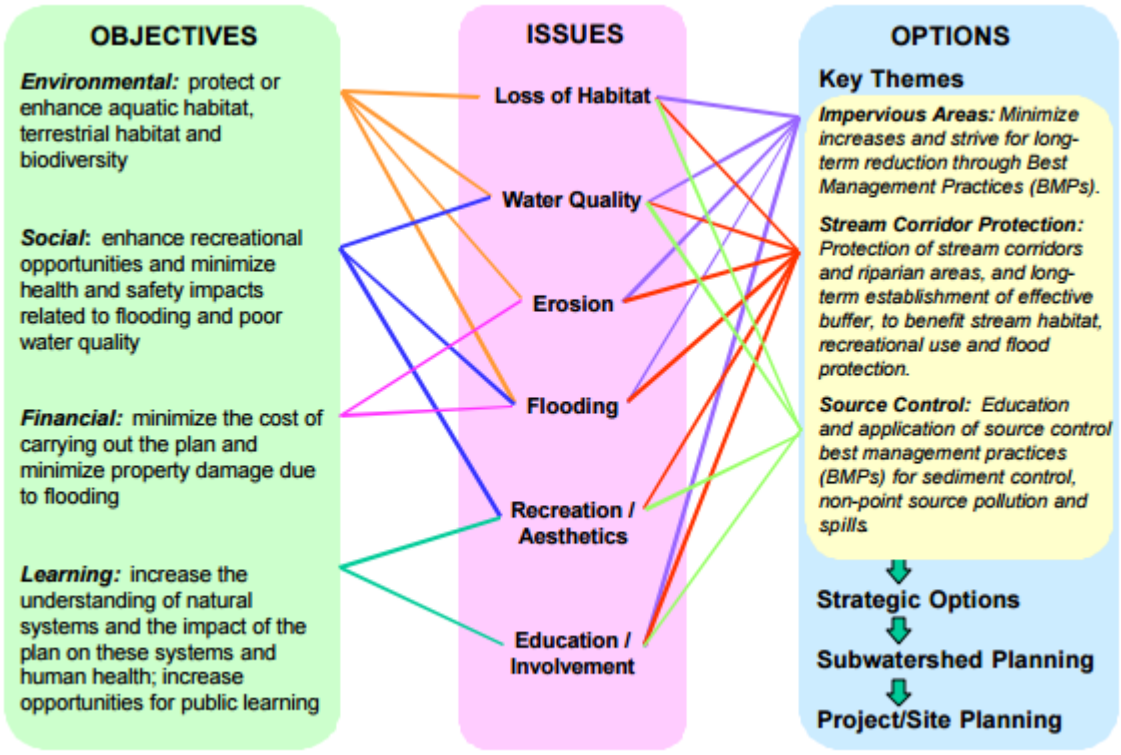

Figure 2: Objectives, issues, and options for improvements, Brunette Basin Watershed Plan (GVRD, 2001)

All of these improvements could not have happened without collaboration amongst groups and the efforts of the local communities. The organizations involved (Figure 3) include Still Moon Arts Society, Evergreen, Silva Forest Foundation, and other organizations, as well as the City of Vancouver, the City of Burnaby, the Vancouver office of the federal Department of Fisheries and Oceans, schools, and even corporations. Many river restoration theorists note the importance of multiple disciplines coming together for effective river restoration, and acknowledge the necessity of communities being involved as well (Palmer and Bernhardt, 2006; Wolh et al., 2015). Although river conservationists like Mark Angelo have been advocating for Still Creek since the 1970's, as Angelo reports, working for Still Creek was "a lonely exercise at that time" because many people viewed the creek as a "lost cause" due to pollution (personal communication, 2017). In the mid-1990's, artist Carmen Rosen noticed that people in Renfrew Ravine were afraid of the creek because of the pollution and stories of children getting diseases from the water (personal communication, 2017). To combat this fear, she organized community events like garbage clean-up days and an annual lantern festival, which led to people viewing the creek as a benefit not a danger (ibid). Her work timed perfectly with general trends towards viewing urban rivers as a resource that can be used to improve the quality of life of those living

around it, as well as moves towards protecting habitat of species (City of Vancouver, 2002), corroborated by the increase in governmental reports on Still Creek at this time.

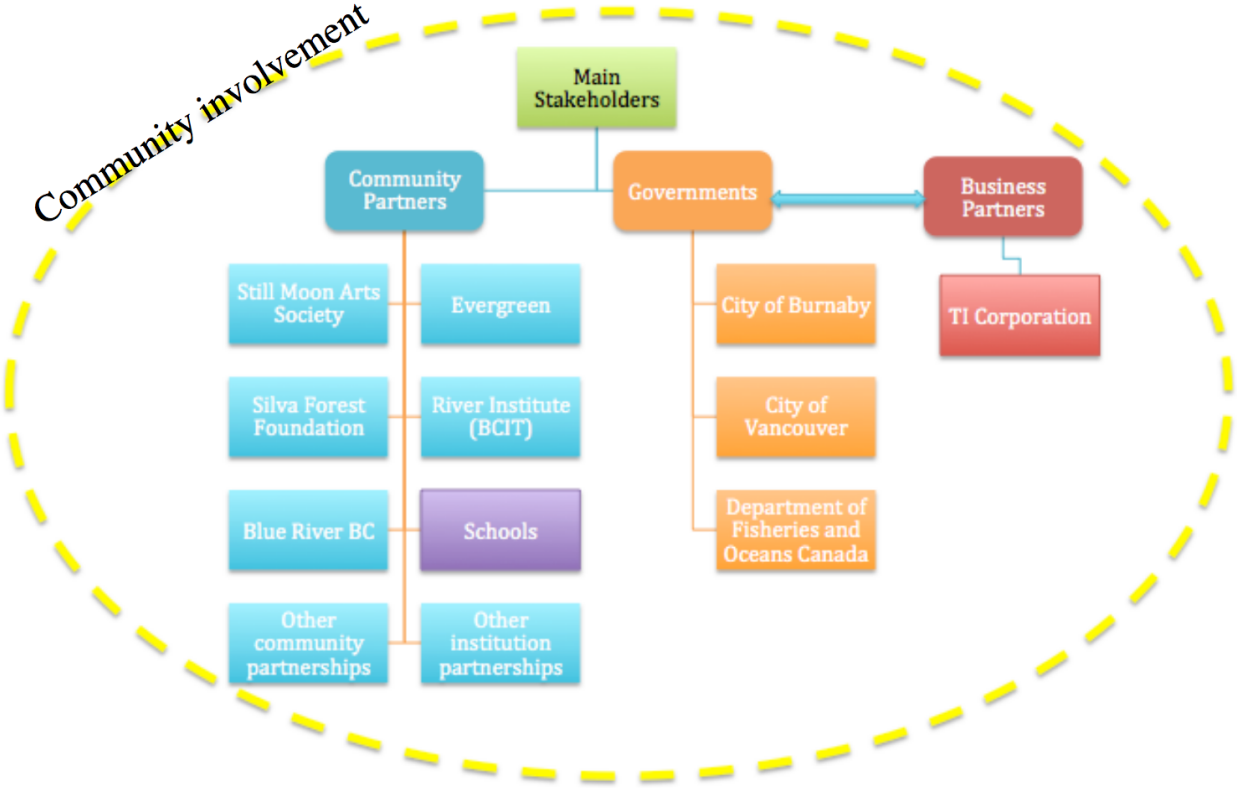

Figure 3: Main stakeholders in the Still Creek restoration process.

Many people interviewed emphasize the importance of community involvement in encouraging governments and other organizations to get involved and citizens drove restoration work and monitoring efforts (Coulter-Boisvert; Rosen; Angelo; MacDonald, personal communications, 2017). The importance of salmon is something that anyone can understand and get inspired about, particularly members of the community that would not otherwise be trained in river restoration sciences or be aware of the importance of river ecology health. The return of salmon are a tangible result of restoration and as shown from the prevalence of salmon-themed community art, have become a symbol of hope for those working on the restoration. As stated previously, the salmon were able to return after the water quality and fish access were improved, and improving salmon access is something that anyone can be involved in. Still Moon Arts Society and other organizations involved local volunteers in building fish ladders (Rosen, personal communication, 2017). The symbol of the salmon and the collaboration of different stakeholders and communities truly answers the "why" of how the creek was restored and provides key insight to other groups that want to restore rivers elsewhere.

Significance of Results

To quote Carmen Rosen "… having an environmental success story that you can hang your hat on," speaks volumes (Rosen, personal communications, 2017). Our results have shown that the rehabilitation of Still Creek did more than providing cleaner air, an improved drainage system and habitat restoration, it also strengthened the bond of community members by helping people reconnect through stories about salmon, inspiring creativity, and providing hope and opportunity to future ecological enthusiast. And like the stories which are now being shared amongst the community around Still Creek, our research aims to keep the legacy of this project alive because it deserves it. So much effort went into this project. To quote Mark Angelo "...we remember an announcement, but we forget the push that was undertaken to get to that point."(Angelo, personal communications, 2017). Keeping record of the all these positive efforts is essential for projects currently struggling to find their footing as well as provide tips and insights for future projects. From our results we can conclude that there were four critical components to the success of this project. Firstly everyone needs to be on the same page, especially for a project with so many stakeholders. During our interviews no one made a statement or even hinted to the possibility of clashing opinions. Although there are a few exceptions, more often than not, conflict of interest leads to non-fluid progression and unsatisfactory decision making. The second component is persistence (as already mentioned). There is a reason why so many individuals today are so persistent to protect and restore ecological ideals. The benefits that can arise from rehabilitation are limitless. To quote Coulter-Boisvert "None of this would have happened had it not been for the ongoing stewardship efforts." (Coulter-Boisvert, personal communications, 2017). Visions for the Creek began during the 1970's, but changes only physically took place during the early 2000's after sustainable development plans and funding necessary were finalized. In some ways it is disappointing to see how a project which can be classified as 'short scale' could take so long. But in other ways, it is better to wait and make sure to do it correctly the first time, rather than go through a costly operation through trial and error. These leads to the third necessary component. Encouraging local engagement. It is not uncommon for there to be a disconnect between the individuals who are renewing an area versus those who actually live there. Although during the earlier stages, most of the help came from experts beyond the local lands, the project did encourage the participation of local community partners and in turn, they helped to get the locals more invested. Still today volunteer work takes place along the Creek. This a key component towards extending the long term legacy of the project and validating to the government why they should continue with funding. And the final critical component is to invest big. One of the best ways you can inspire engagement is to create drastic visual change. Significant change helps to spark new hope into people's hearts and in turn create long term engagement. Financial risk should always be considered, but so to should opportunity.

In terms of amnesia, our work alongside the newly documented sources coming from elsewhere are keeping this success story alive. However because the stages prior to the 1990's were poorly documented, some of the earlier work from Mark Angelo as well as from the initial visionaries are being slowly forgotten with time. However recent documentation is helping to elongate the longevity of this project and maintain the relevancy of the operation. In terms of amnesia, the most significant and interesting part of our results showed that the project is helping locals reconnect with their ancestral roots and with their love for nostalgic nature. Reconnecting with ecological ideas and reconnecting with our ancestral origins during a time of globalizing monoculture and urbanization is key step towards ecological prosperity and promoting biodiversity.

Implications and Next Steps

Due to time constraints and limited resources, our team was only able to gather insightful information from community partners. However even before the river was rehabilitated, development policies had to be formed, funding had to be collected and complex planning and management strategies had to be forged. Government representatives, Business partners and sustainable development experts played a significant role both prior and during the development of Still Creek. Getting a better understanding of their role is a key step towards unraveling the processes behind the Salmon's return.

Another future step would be to interview the voices which weren't heard during the rehabilitation process. Obtaining the opinions of those voices will be beneficial towards understanding power relations as well as gaining a better perspective on what might have happened if these voices were heard. Although from our interviews we know that the First Nations were more concentrated with larger scale issues such as the ongoing fish rights dispute along the shoreline (MacDonald, personal communications, 2017), it would still be interesting to hear their opinions on the project and find out if they have any suggestions to make it better. There may also be individuals from the community partners, government representatives and business partners who opposed to universal incentives. Who were these people? Why did they have a different vision? These question will most certainly help gain a better understanding of the power relations that took place. Recording opinions from residents around the Creek and obtaining insightful local knowledge would also be interesting to explore.

Based on all the data we've compiled together, it is clear that the project has enriched social and ecological aspects back to the neighborhood, and as a result it is considered and environmental success story. However what about financial success? From our research, it was demonstrated that approximately two million dollars have gone towards this ongoing rehabilitation project (City of Vancouver, 2008). Additionally many of the projects between 2002-2012 went between 5-25% over budget. Financial viability is necessary component to long

term success, and is a key component that should never be ignored. Combining the social, environmental and financial aspects into a single cost/benefit analysis research project is both unique and crucial to explore. The exploring idea that environmental and financial components can work hand in hand is important step towards inspiring new and improved project in the near future.

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Appendix A: Brief Timeline

A BRIEF HISTORY OF

STILL CREEK

Still Creek is part of the larger Brunette River Watershed which passes through Vancouver, Burnaby, and New Westminster before entering the Fraser River. In 2012 the Creek made history when salmon returned to spawn for the first time in 80 years.

1914
The Greater Vancouver Area designated Still Creek for stormwater runoff due to increased urbanization in the area.

1929
Still Creek envisioned as part of the "Parks and Pleasure Drive" system connecting Vancouver and Burnaby along the creek, however unfortunately due to stormwater management needs, parts of the creek were relocated and culverted to move water

1932
Collective memory as the last full salmon spawn in Still Creek

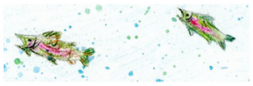
1950-1960
Buildings were built close to the creek's riparian zone which lead to flood risk, pollutants entering the creek, erosion, and decreased access to the water

1970-1980
Stormwater engineering philosophy began to shift towards the preservation of more "natural" systems, thus protecting the creek from being fully enclosed. Conservationists like Mark Angelo began calling for the creek's protection

LATE 1980S
Vancouver City Council began policies to protect the creek and daylight culverted areas

1996
Artist Carmen Rosen began community activities like lantern festivals and garbage clean-ups to engage peoople with Renfrew Ravine

2002
The Still Creek Rehabilitation and Enhancement Plan was endorsed by Vancouver City Council

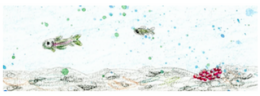


2006
The first City-lead improvement project was completed. Numerous activities such as riparian habitat improvement and building fish ladders have been conducted with community groups, governmental bodies, and schools

2012
Chum salmon return to spawn for the first time in 80 years

2016
15 salmon returned to spawn in Still Creek in the fall

2017 and beyond
Efforts continue towards protecting the creek, ensuring water quality, and engaging community through events and citizen scientist activities.



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Appendix B: Interview and Research Schedule

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
20 Miaoer emailed Herb	21	22	23	24 Franny email Carmen, Jennifer, Craig, Pat	25 Miaoer emailed Herb again	26
27 10:30 am meet w/ Jess Miaoer emailed Ken and Mark	28	March 1	2	3	4 Miaoer emailed Emily (Herb's associator)	5 Franny emailed Jennifer again
6 Jennifer responed, forwarded email to Maurice	7 Meet 1-2pm	8 Franny phone interviews Mark (9am); Maurice (1pm)	9	10	11	12
13 Franny interviews Carmen, 12pm VIVOArtsCentre	14 Meet 11:30am Jake interviews Dana McDonald, 1pm Miaoer phone interviews Herb 10am	15 Have presentation ready	16 PRACTICE PRESENTATION 6:30pm Open House Salmon Policy	17	18	19
20	21 Joey goes to archives	22	23	24	25	26
27	28 Meet 10am to practice	29 Finish presentation	30 FINAL PRESENTATION	31	April 1	2
3	4	5	6	7	8	9
10	11	12	13 BLOG DUE	14 FINAL REPORT DUE		

Name	Organization	Consent Form Received	Form of contact
Herb Hammond	Silva Forest Foundation	Yes - 3/14/2017	Phone interview
Carmen Rosen	Still Moon Arts Society	Yes 3/13/2017	In-person interview
Jennifer Nener	Department of Fisheries and Oceans	n/a	Email, passed on to Maurice
Craig Rust	Musqueam Nation	n/a	Email for resources help
Pat Beaton	Burnaby Art Gallery	Yes 4/10/2017	Email interview
Mark Angelo	BCIT	Yes - 3/8/2017	Phone interview
Maurice Coulter-Boisvert	Department of Fisheries and Oceans Canada	Yes - 3/10/2017	Phone interview
Dana MacDonald	Evergreen	Yes 3/14/2017	Phone interview

Appendix C: Government Documents

Still Creek Enhancement – Policy Background

Compiled by Branca Verde 2015

The following is a summary of policies and documents related to Still Creek.

Prior to the policies noted in the tables below, City Council had:
- endorsed Still Creek to be maintained as open water course (1988);
- supported the concept of a continuous pedestrian/bicycle pathway linking 29th Avenue Station to Burnaby Lake (1990);
- adopted Still Creek CD-1 Guidelines (1990) [later incorporated into subsequent area policies];
- approved an Inflow and Infiltration Reduction Program to eliminate sewage cross-connections in the Still Creek area (1994);
- endorsed the draft Brunette Basin Watershed Plan (2000); and
- established the Still Creek Enhancement Fund (2000) [with contributions from the Vancouver Film Studios for the lease of Cornett Road].

POLICIES RELATED TO STILL CREEK SPECIFICALLY

POLICY	SPECIFIC OBJECTIVE/TARGET	WHO/WHAT/HOW
Still Creek Enhancement Study City Council 2002	*Plan identifies 10 year action plan and longer term (10 - 50 year) plan to enhance and rehabilitate Still Creek*	• COV study contracted to lead consultant Lees & Associates, with input from Ministry of Land, Water and Air, GVRD (now Metro Vancouver), Department of Fisheries and Oceans (DFO) and City of Burnaby; • Document provides comprehensive vision for Still Creek; • In July 2002, Council adopted the *Grandview Boundary Industrial Area Rezoning and Development Policies and Guidelines* which contained specific directions for Still Creek;
Renfrew-Collingwood Community Vision City Council 2004	*Plan provides directions to help guide policy decisions, including: ` 23.3 Restoration and Preservation of Renfrew Ravine*	• Broad based community consultation process (bringing CityPlan to the neighbourhoods). For Renfrew Ravine the directions included: - Provide more naturalized landscaping and habitat areas - Stabilize ravine wall; better maintenance - Include historical and interpretive signs…walking paths and trails - Encourage stewardship and community involvement
Still Creek Integrated Stormwater Management Plan (ISMP) COV Council, Burnaby Council and GVRD (Metro Vancouver) 2006	*Plan identifies goals to guide:* • *Rainwater Management* • *Environmental Protection* • *Recreational Enhancement*	• Collaborative study in partnership with City of Burnaby and Metro Vancouver; (administered under regional framework of Metro Vancouver); • Plan outlines short-term actions that can build foundation for longer-term achievement of the goals identified
Renfrew Ravine Hydrology and Geotechnical Study 2008	*Technical study for Renfrew Ravine:* • *Terrain Mapping, Hydrology and Management Plan*	• Report by Kerr Wood Leidal Consulting Engineers (funded by Still Creek Stewardship Society - grant award); • Both the 2002 Plan and the 2006 ISMP (noted above) identified the need for additional engineering studies in order to move forward with implementation; this report was commissioned to provide some of the technical details;
Grandview Boundary Mixed Employment Area Plan (GBMEA) City Council 2012	*Plan sets future vision for transition from industrial and large format retail to a mixed-employment area with a variety of land uses*	• Still Creek identified as key amenity in the Public Benefit Strategy and watershed protection and enhancement are specified in the Rezoning and Development Policies and Guidelines for GBMEA (reiteration of the 2002 Still Creek Enhancement Plan).
Renfrew Ravine and Community Park Master Plan Park Board 2013	*Long-range Master Plan (building upon previous studies) aims to enhance access to nature while preserving and enhancing the ecological functions and benefits of the parks.* *Identifies priorities for 2015-17 and future Capital Plan funding decisions.*	• Vancouver Park Board contracted Catherine Berris Associates to develop a Master Plan for two parks: Renfrew Ravine Park and Renfrew Community Park; • The Master Plan details enhancements to the creek bed and increased habitat area in Renfrew Community Park, along with expanded pathways and better integration of recreational and ecological amenities; • For Ravine Park, the Plan calls for daylighting of the 27th Ave. cross-over, limited increased access and installation of three accessible viewing decks;

OTHER CITY POLICIES/OBJECTIVES WHICH STILL CREEK ENHANCEMENT WILL ADVANCE

POLICY	SPECIFIC OBJECTIVE/TARGET	WHO/WHAT/HOW
Greenest City Action Plan City Council 2011 Goal 4: Green Transportation	*Make the majority of trips (over 50%) on foot, bicycle, and public transit*	• long term Still Creek Plan calls for a public greenway for pedestrian and cycle access along a naturalized creek corridor;
Goal 6: Access to Nature	*Public engagement idea* "Put the blue into green: daylight our Lost Creeks" *Plant 150,000 additional trees in the city between 2010 and 2020.*	• long term plan will create public greenway and wetland areas with passive park space (seating areas, viewing platforms); • daylight sections of the creek culverts as sites come up for redevelopment; • plant additional trees along riparian areas;
Goal 7 Lighter Footprint	*Reduce Vancouver's per-capita ecological footprint by 33% over 2006 levels*	• use stewardship activities and other public outreach to promote learning, best practices such as "Top 10 things we can do in our own backyard" (increasing permeable surface, plant native species, install rain barrels, etc.); • provide and promote enhanced pedestrian link for nearby residents, employees, adjacent schools and facilities;
Goal 8: Clean Water	*Reduce per-capita water consumption by 33% by 2020*	• increase understanding of the relationships between rainwater management and water consumption through education activities with local community and neighbouring schools; promotion of rain barrels through public education events;
Goal 10: Local Food	*Increase city and neighbourhood food assets by a minimum of 50%.*	• provide a berry trail (native species) along the naturalized edge of the creek corridor;
Climate Change Adaptation Strategy City Council 2012	*Recognize that habitat, parks & greenspace can play an important role in mitigating the effects of storm events* *Outlines several actions related to stormwater management to reduce impacts of climate change including the separation of sanitary/stormwater sewers*	• long term plan to daylight more sections of Still Creek and creation of additional wetlands for stormwater infiltration; • Still Creek Conservancy Program (Sewers Design Branch) 2014/15 - crews are working door-to-door in the Still Creek watershed to identify and eliminate sewer cross connections; this project is increasing the understanding of connectivity of the storm sewer to Still Creek.
Urban Forest Strategy Council 2014	*Goals and strategies to:* • *Protect existing trees and continue to grow canopy cover* • *Plant new trees* • *Actively manage and care for trees on City and Park Board lands*	• Past and future Still Creek enhancement projects add new trees (native species) appropriate for riparian areas; • Enhanced/naturalized habitat projects create renewed interest in stewardship opportunities and care of creek surroundings;
Rewilding Vancouver - Environmental Education and Stewardship Plan (EESAP) Vancouver Park Board 2014	*Plan sets priorities, objectives and goals related to:* • *Special Wild Places in the City* • *Nature in Every Day Life* • *Meaningful Park Board Leadership*	This Plan: • Identifies Still Creek as a biodiversity hotspot in the city; • Aims to enhance, protect, maintain and monitor special wild places in Vancouver; • Calls for appropriate planning and allocation of capital and operating budgets in order to engage staff and partnerships in implementing actions, including: enhancing communication, coordination and networking; recruiting and training volunteers; empowering City staff to be leaders and advocates for education and stewardship;
Biodiversity Plan (pending)	*Work underway - will add bio-diversity focused target to the Greenest City Action Plan.*	• Bio-diversity hotspots, such as Still Creek, will be the focus of evaluation for further protection and enhancement.

Appendix D: Alternative Dissemination Piece

Please view our blog which provides a visual of our research here: https://blogs.ubc.ca/stillcreek/

Still Creek recently made the news after salmon returned to spawn for the first time in 80 years in 2012. This is noteworthy for many reasons, but particularly captures the imaginations of people that realize that perhaps nature and urban spaces can live together in harmony. While many newspaper articles celebrated the return and highlighted some of the key players involved, and government and non-governmental organization (NGO) documents outlined some of the main actions to be taken, we were still left with many questions. How was Still Creek actually restored? Why was it restored at this time, and who was a part of it? What can be learned for future restoration work? We begun to ask ourselves these questions as we conducted our research, using newspaper articles, the Vancouver archives, government documents and meeting minutes, NGO reports, and websites of the organizations involved. From our research, and subsequent interviews, we were able to get a more full picture of the changes that were made and what sparked the collaboration.

From this research we saw many trends of government reports or NGOs only talking about the work they did and not really mentioning the longer-term motivation or reasons why. For this reason, we created a blog that could make our synthesis of information available to the public. Our final report is the first academic research paper conducted on the restoration of Still Creek, so we also wanted our blog to be a resource that could pave the way for future research. The return of the salmon is still tenuous as only 15 salmon returned to spawn last fall, so much more research on river restoration must be taken to analyze what more can be done. Additionally, we hope that having a main hub of information on Still Creek will also provide lessons and advice to people hoping to conduct restoration projects on other rivers in the Greater Vancouver Region and elsewhere.

While being a main source that brings together disparate information, our blog also has something for everyone. We hope that people who are more visual learners will look at the timeline of events to get a snapshot of what occurred, or can get inspired by the gallery of photographs that show Still Creek as it is presently. People who are more interested in history can review the brief background under that section, or those concerned with the actual outcomes of our study will find their questions answered under the “Results” tab. The “Implications and Next Steps” tab can inspire more research and the “Methodology” section can help guide those who are just getting started. We have also included the main resources that we find are useful for studying Still Creek, including highlighting the main parties involved, and will include our final report for those who want to read more.