

*Fraser Salmon and Watersheds Program – Living Rivers Project
Coquitlam River Stakeholder Engagement Phase I*

The Story of the Coquitlam River Watershed Past, Present and Future



Prepared for: The City of Coquitlam and Kwikwetlem First Nation

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Oceans, Habitat
and Enhancement



Coquitlam



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Executive Summary

The Coquitlam River Watershed is one of many watersheds found on the north shore of the Lower Mainland Region. This watershed was shaped by forces of glaciation 10,000 to 14,000 years ago. The Coquitlam River Watershed is a typical example of the watershed in the region. The Lower Coquitlam River Watershed, below the Coquitlam Lake Dam, includes at least 30 watercourses. The two largest tributaries of the Coquitlam River are Or Creek with a catchment area of approximately 22 sq km and the Hoy/Scott/Pinnacle Creek catchment area totalling approximately 17.5 sq km.

Human activity has significantly impacted the Coquitlam River over the last century starting with:

- The erection of the dams firstly for water supply in 1904, then power generation in 1914 for the growing communities on the Lower Mainland which effectively cut off spawning and rearing habitat for salmon in the upper part of the river. Sockeye were extirpated circa 1913.
- Remaining salmon populations have also suffered great instability over the last century due to urban development. The natural characteristics of the lower watershed have been altered as urban development proceeded. A significant portion of the watershed's drainage is now carried in the storm drain system, which eventually empties into open watercourses.
- Mining activities began in the 1950's. During the 1950's, gravel removal activities began to take place both in and along the Coquitlam River. From this time period until the mid 1960's it was common practice for industry and government agencies to remove gravel directly from the river. These activities were principally responsible for the destruction of the main pink and chum spawning beds. The direct destruction of the salmon spawning grounds did not stop until the B.C. Gravel Removal Order came into effect in 1965.
- Commercial logging began in the 1960's and 1970's. While logging was a less significant impact to the river than were other mentioned activities, present day instability issues, and consequent pulse sediment loadings of Or Creek to Coquitlam River upon heavy precipitation events, can likely be attributed to previous logging activity in the Or Creek watershed.

Despite these major impacts, the fish stocks have managed to persevere and are showing some signs of improvement. Improved logging practices, urban planning and environmental stewardship are contributing to a healthier urban river. Of particular note is the return of the sockeye salmon to the Coquitlam River for the first time in 100 years. This success is the result of a joint initiative by the Kwikwetlem First Nations, Department of Fisheries and Oceans ("DFO"), Metro Vancouver and BC Hydro. Further work is ongoing on re-establishing the sockeye run and incorporating a fish ladder in the dam. This delicate balance is fragile and decisive action is required today to ensure success into the future.

The Coquitlam River watershed is part of the traditional territory of the Kwikwetlem First Nation. The Kwikwetlem First Nation members live on the Coquitlam River and are working hard to restore their culture, traditions and livelihood, all of which depend on a healthy Coquitlam River.

Many other stakeholders are actively studying and working to improve different aspects of the Coquitlam River, including the Ministry of Environment (MOE), the cities of Coquitlam and Port Coquitlam, BC Hydro, DFO, Metro Vancouver, the aggregate industry, and stewards. With a combination of technical expertise, funding allocated to various studies, and environmental policy, complexities of some of the issues in the river are much better understood than in the past. As part of the recently completed water use plan, BC Hydro has committed to a 16-year monitoring program on the benefits of increased dam flow releases, with a key objective to enhance fish productivity.

Various parties have wanted to engage in a watershed management planning process for a number of years. This type of plan was known to be successful in other areas of the province.

The City of Coquitlam and Kwikwetlem First Nation agreed to oversee a preliminary research phase (I) of a proposed four phase Watershed Management Plan Initiative. Minimal engagement of the community has occurred in this phase; however, a public consultation component is intended for Phase II. The scope of Phase I included:

- Developing an accountability framework looking at the many stakeholders and the various legislation and mandates;
- Researching and summarizing the many documents relevant to overall health of the river;
- Identifying watershed interests; building an understanding of their interests/perspectives; establish a dialogue; and,
- The results from the review of relevant documents and stakeholders perspectives highlight a number of considerations for the future of the Coquitlam River.

The need for a definition of an urban river. The Coquitlam River is part of a growing urban region. Through a community based watershed planning process, there needs to be a common definition, vision and principles established and agreed to by all stakeholders – government, community and industry.

Through this process we need to build a community coalition. Currently there is a lack of communication and mistrust among the many stakeholders – government, community and industry – this had made collaborative engagements, such as meetings and workshops, difficult.

- There exists a complexity of government jurisdictions and competing mandates as demonstrated in Appendices A and C.

- For a healthy Coquitlam River there needs to be:
 - A continuum of funding and coordination – historically, where efforts are started, they are discontinued primarily due to funding limitations, and another effort is later initiated which can result in redundancy, lost information, and frustration within the community;
 - Effective fish passage at the dam, and throughout the watershed;
 - Various levels of government committed to play a role in watershed management and/or legislation and enforcement;
 - Ongoing mitigation of sediment loading to the Coquitlam River from natural erosion processes (Or Creek) and continued implementation of best practices at the aggregate mines;
 - Consistent long-term water quality and fish count data, recognizing the monitoring and analysis of the overall health of the river needs to be done as part of a coordinated and integrated Coquitlam River corridor strategy;
 - Effective enforcement across all environmental legislation and all levels of government;
 - Continued collaboration of stakeholders, such as the City’s Coquitlam River Aggregate Committee;
 - A better understanding and mitigation of the impacts of past decisions on hydrology and water flow in the upper Crown Lands which negatively impact the aggregate mining industry along Coquitlam River.

Some of the lessons learned from previous watershed initiatives include the following:

- The importance of keeping community and stakeholders ‘in the loop’;
- Consulting community and stakeholders in decision-making processes;
- Developing a continuum of funding for projects on the river;
- Having a consistent team or committee to consult with for report submissions (planning for implementation of recommendations); and,
- Involving all levels of government in initiatives;

The recommendations that have been produced over previous decades reinforce the need for decisive action. It has been documented that the most successful environmental strategies are the ones that regularly engage all levels of government. Although there remains a division of objectives, mandates, and concerns amongst the parties listed above, it is clear that we have entered a time of a paradigm shift in thinking from an environmental standpoint.

We have seen real progress in the last decade, and the hope is that the Coquitlam River Watershed Project will promote the continual effort for the effective management of the watershed.

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1.0 Introduction

The Coquitlam River Watershed is one of many watersheds found on the north shore of the Lower Mainland Region. This watershed was shaped by forces of glaciation 10,000 to 14,000 years ago. The Coquitlam River Watershed is a typical example of the watershed in the region. The Lower Coquitlam River Watershed, below the Coquitlam Lake Dam, includes at least 30 watercourses. The two largest tributaries of the Coquitlam River are Or Creek with a catchment area of approximately 22 sq km and the Hoy/Scott/Pinnacle creeks catchment area totaling approximately 17.5 sq km.

Various fish species make the Lower Coquitlam River Watershed their home, and have done so for hundreds of years. Currently 24 fish species are known to inhabit streams within the watershed. Over the decades, several factors have contributed to lower salmon numbers – reduced habitat quality, construction of the Coquitlam dam and overfishing in the ocean.

To gain a greater understanding for the historical and present-day socio-political, biogeophysical, cultural, and economical complexities of this region, the next sections examine significant events which have occurred in the Coquitlam River Watershed from circa 400 BC to present.

2.0 Pre-1914

2.1 A Natural Territory

Archaeological evidence and carbon dating indicate that humans have inhabited areas of the Coquitlam River watershed since the last ice age, approximately 9000 years ago. Six sites have been identified in the Coquitlam Lake watershed, between Cedar Creek and Branch Creek. These sites harbour traces of Kwikwetlem Nation descendents. By the late 1700's, Spanish and English explorers had arrived to the west coast of Canada. A century later, circa 1878, the Confederation of Canada restricted traditional Indian fishing activity. It was during the same time that commercial fishing commenced.

2.2 Historical Salmon Populations

The name Kwikwetlem was derived from the sockeye salmon which historically made its spawning grounds near the shores of the Coquitlam Lake. It is translated to 'red fish up the river'. Scientists, archaeologists, and historians concur that records of historic salmon populations, as well as information regarding the Kwikwetlem Nation, are 'virtually non-existent' (Koop, 2001). The few unveiled archives make reference to the sockeye salmon that ran in May and spawned primarily in Coquitlam Lake. C.B. Sword, the Inspector of Fisheries for the Department of Marine and Fisheries, documented in 1909 that the species appeared to depend entirely upon the lake for breeding purposes. The Coquitlam Star (1911) discussed the Kwikwetlem and its translation making reference to "a fish which teemed up the Coquitlam every year in April, and as an article of diet, would not be surpassed for its flavour and nutritive powers" (Koop, 2001). The species was known to be indigenous and distinct from generic sockeye populations. It was for this reason nick-named the 'bastard' sockeye.

Inspector Sword also referred to species of Coho, Chum, and steelhead which spawned in the tributaries of Coquitlam Lake. Today, we have only rough estimates of what the salmon numbers totalled pre-development on the Coquitlam. Koop (2001) quotes a few of the existing archives related to salmon populations and the construction of the dam in 1904. Some of these quotes include;

“Anyone who made the trip around Coquitlam Lake in those days could see not hundreds, but thousands upon thousands of dead salmon scattered along the beach and floating in the water,”

“That the City did not even attempt to prevent the salmon “run” during the spawning season, when thousands of full grown salmon died in the lake and had to be raked from in front of the City’s intake pipe,” and,

“ It is not a very important spawning area, and as above explained the Sockeyes that resort to it are of no commercial value, and there does not appear to be any indication that the run of Cohoe Salmon is decreasing.”

The latter quote signifies acknowledgement of the sockeye salmon. The next sections examine the processes that contributed to the extinction of the Coquitlam sockeye, as well as unstable coho, chum, and steelhead salmon populations.

2.3 The Dam of 1904

The British Columbia Electric Railway (BCERC – predecessor to BC Hydro) was established by 1897 in the New Westminster region. The company was avid in its search for an efficient way to provide power to the settlers of what were rapidly colonizing lands. Observation stations were installed and political discussions began. In 1899, Chief Johnny of the Kwikwetlem Nation wrote¹ to the federal government explaining that his people’s survival was directly dependent upon the salmon of the Coquitlam River. He further stated, “We are all loyal subjects of the Queen and would like to be given a chance to live honestly and comfortably.” He asked for compensation for his peoples in the event that the dam construction went ahead (Koop, 2001).

Following political negotiations between the Vancouver Power Company (VPC – a subsidiary of BCERC), the Coquitlam Water Works Company, and the City of New Westminster in 1902, the VPC was granted a water license for rights to approximately one half of the minimum flow (of the Coquitlam reservoir) during the dry season run-off, which equated to approximately one seventh the flow during high water (Koop, 1994). The Coquitlam Lake Reservoir was already the source of water supply for New Westminster City.

¹ An exhibit of this letter is included in, ‘Red Fish Up the River,’ (Koop, 2001). The letter was dated March 19th, 1899 and was written by Chief Johnny of the Kwikwetlem Nation to John McNab, Inspector of Fisheries, New Westminster City.

2.31 Coquitlam/Buntzen Tunnel Diversion - 1905

To maximize the power supply for New Westminster, a tunnel diversion was proposed from the southwestern shore of Coquitlam Lake to the northeastern shore of what is currently known as Buntzen Lake. The project went ahead in 1902 and was completed by 1905 (Figure 1). It was the first of its kind in North America.



Figure 1. The Vancouver Power Company's Clay model of the diversion project. Coquitlam Reservoir and water supply intake to the right. Photograph from Koop, 2001.

Likely the first optimistic relation between the Federal government and Kwikwetlem was in 1904, when C.B. Sword, the Inspector of Fisheries for the Department of Marine and Fisheries, responded to Chief Johnny's concerns and reinforced the department's "exclusive right to legislate for the protection of fisheries." The construction of the dam began in 1904. Measures were taken during the construction process to facilitate the continual flow of the river. Inspector Sword provided the engineering company with the plans for a fish ladder prior to construction.

It has been documented that the fish ladder was built, but not to adequate specifications, and thus was unsuccessful at transporting returning spawners up and over the five foot dam to the Coquitlam Lake. Koop (2001) further discusses the acknowledgement from different parties that the inadequacies of the ladder resulted in population devastation, particularly of the sockeye.

2.4 The Dam of 1914

Extensive dam leakage was noted in the dam in 1906. Negotiations, proposals, and plans for a new, 70 foot high dam commenced. Dam construction began in 1909, and was completed in 1914 (Photograph 1). A fish ladder was not constructed as a part of the new dam. Justification for its absence was given to the preservation of a clean water supply for the people of New Westminster. Archived articles in May of 1912 (during construction of the second dam) contradict one another in regards to salmon observation: Sockeye were noted to be plentiful in the Coquitlam River; while another article noted obscene salmon devastation was noted on the downstream side of the dam.² The dam of 1914 effectively cut off spawning and rearing habitat to coho, chum, steelhead, and sockeye salmon.

The Dominion Water Power Act was amended in 1909 to give water rights to the VPC instead of to the Provincial Government: the VPC now had rights to the entire Coquitlam reservoir. The Act was further amended circa 1913 to legalize the use of a freshwater resource without intent to return the water. The diversion tunnel from Coquitlam to Buntzen Lake had negated this legislation since its construction.



Photograph 1. Final phase of the Coquitlam Dam - 1913. Photograph from Koop, 2001.

² Exhibits in *Red Fish Up the River* (Koop, 2001) discuss the following articles: The Coquitlam Star newspaper (May 15, 1912) discussed the abundance of salmon (mostly sockeye) up the Coquitlam and its tributaries. F.N. Cunningham, Chief Inspector of Fisheries, reported to the mayor of New Westminster (May 21st, 1912) that hundreds of sockeye had been observed dead below the dam and surrounding waters black.

3.0 Flooding Events (1892, 1921, 1955 and 1961)

Another source of environmental stress for the Coquitlam River watershed has been the flooding events of 1892, 1921, 1955, and 1961. It is known that the flood of 1921 was the most significant and the most devastating. It was reported to exceed the estimated 1:200 storm event frequency and generated a peak flow of approximately 23,500 cfs in Port Coquitlam. Records for the flood are sparse: this combined with the much altered nature of the watershed since that time has provided little value in evaluation and mitigation techniques. The flood of 1961 was noted to be the second most significant flood and flood levels, flows, boundaries and locations were examined. This information provided insight to the economic impacts and costs from damages which were reported to be largely to infrastructure. Although extensive debris jams and occurrences of erosion were documented, information on impacts to fish habitat were not discussed.

During the sixties and seventies a series of dyke systems and erosion prevention measures had been implemented downstream of Scott Creek, protecting Colony Farms, Indian Reserve No. 2 (IR#2) and the floodplain of the City of Port Coquitlam. The construction of dykes can adversely alter the elevation, as well as the substrate composition of the river bed. Due to degradation of the mainstem of the Coquitlam River, off-channel habitat works have been underway within the last few years on the lower reaches of the Lower Coquitlam River.

4.0 Mining, Dredging and Other Sediment Impacts

The late 1950s saw the first of the development of gravel mining operations along the Coquitlam River, and the eventual removal of 200 acres (91 ha) of vegetation along the river. The Coquitlam River valley has long been a source of low cost aggregate. The close proximity of the valley to urban areas and major transportation routes and the relative ease of extraction have meant these sources of aggregate have been much sought after for a variety of development activities in Metro Vancouver.

During the 1950's, gravel removal occurred both in and along the Coquitlam River. From this period until the mid 1960's, it was common practice for companies and government agencies to remove gravel directly from the river. Dredging of the river was common practice in order to move coal and other goods up the mouth of the river to supply Essondale and other business activities.

These activities were principally responsible for the destruction of the main pink and chum spawning beds. The direct destruction of the salmon spawning grounds did not stop until the BC Gravel Removal Order came into effect in 1965.

As environmental regulations were virtually unheard of in the sixties, and impacts of dredging and gravel mining not fully understood, the gravel operations were free to extract as much gravel as quickly as they could do so. In a four year period during the seventies, over four million cubic yards ($3.1 \times 10^6 \text{ m}^3$) were reported removed.

In the early 1980's the Province was considering releasing the Westwood Conservation Reserve for urban development. Recognizing the importance of the Coquitlam River Valley aggregate source to the lower mainland, the Province commissioned a study to determine the maximum extent of economic gravel extraction from Crown Lands on the west slopes of the Coquitlam River Valley. The study provided the limit of gravel extraction and made recommendations which have formed the basis of the mining plans for the current mining operations. The report also recommended diversion of the existing water courses around the active the mining area.

While the stormwater drainage from the development was directed away from the mines, the necessary diversions were not constructed and created significant water flow through the aggregate mines.

Over the past few decades further degradation of the crown lands above the mines have occurred due to increased access along hydro and gas right of ways which created additional water flow and quality impacts on mining operations.

Since the late 1980's the gravel operators have been mitigating their off-site sediment loading issues through the use of:

- Benching and terracing of exposed slopes;
- Settling and containment ponds;
- Water clarification systems with use of flocculant;
- Closed and partially closed circuit water flow systems;
- Storm sewer installations surrounding property lines;
- Tarpaulins or polyethylene sheeting coverage;
- Hydroseeding;
- Dissipators; and,
- Dust Control Measures.

However, challenges remain, including:

- Availability of volume and area for settling ponds;
- Increasing degradation of the crown land bordering the mines which are contributing enhanced water flow through the mines.

Other Sources of Sediment: Or Creek and Natural Slide Areas

In the 1970's the Or Creek watershed was logged, and to this day is a source of sediment (described in more detail below in logging impacts). There are also two slide areas near the mouth of Or Creek and two slide areas on the Coquitlam River upstream of the gravel operations which can be significant natural sources of sediment under conditions of heavy rainfall. Heavy rainfall events, even at low to moderate river discharges, can produce significant concentrations in the river from natural conditions.³ These natural conditions have worsened due to human activity in the BC Hydro and natural gas right-of-ways which include four wheel driving, ATV usage and paintball activities.

³ Thurber Consultants – Westwood Plateau Area Escarpment and Gravel Study Phase 2 page 18

The escarpment has a history of natural landsliding of the “debris avalanche” type, which is a common phenomenon in steep slope with the soils found in the lower mainland. Gravel pit development along the Coquitlam escarpment has considerably reduced the potential for this type of sliding.

The second source of erosion is caving erosion due to the seepage of groundwater which forces horizontal outflow from the steep face causing rapid caving of the sand layers beneath the seepage lines. Catastrophic caving erosion occurred along the Coquitlam River before the beginning of gravel mining.

Water Quality Data

Community, government and particularly environmental groups became increasingly concerned during the sixties, seventies and eighties regarding the runoff and sedimentation issue.

Several studies have attempted to investigate the origins and extent of total suspended solids, including those conducted by Fisheries and Oceans Canada (1970 to 1972), the Coquitlam River Water Management Study (1975 to 1976), Western Canada Hydraulic Laboratories (1982 to 1988), Douglas College (circa 2001), the City of Coquitlam (2004 to present), and industry (1994).

To date, data have been inconsistent, of shorter term or influenced by external variables, and recent data have been reported to have had several calibration and debris-jamming complications, likely resulting in error. External variables have made it difficult to extrapolate a point-source for sedimentation in the upper reaches of Lower Coquitlam River, though key sources include the instability of and long-term erosion which has occurred in Or Creek and sediment loading to the river between Fulawkwa Creek and Galette Avenue. There is also a strong correlation between rainfall events and increased TSS/turbidity readings. Most of the parties also agree on the need for the accurate identification of and prescription for additional sources of sedimentation in areas local to the gravel pits.

Coquitlam River Aggregate Committee

The Coquitlam River Aggregate Committee was formed in 1999 when the City of Coquitlam Environment Committee identified the need to address concerns regarding the accumulation of silt and sediment in the Coquitlam River. On October 4, 1999, Coquitlam Council moved to establish a multi-jurisdictional task force to deal with the issue of sedimentation on the Coquitlam River.

The Coquitlam River Aggregate Committee’s mandate is limited to dealing specifically with impacts to the Coquitlam River as a result of gravel mining operations; however, this committee brings together stakeholders to work collaboratively to remedy the impacts of aggregate mining and to help improve the health of the Coquitlam River.

The Committee has identified a number of issues and challenges that could improve the health of this valuable river; these include:

- Reduction of overburden by-product;
- Improvement of onsite sediment runoff control;
- Offsite strategies;
- Testing and monitoring;
- Rehabilitation.

Gravel operations remain part of our local economy. Sustainable development requires the use of resources with minimum impact on the surroundings, including water, resources and air quality. The community of Coquitlam has taken a pro-active role by working with representatives from the aggregate mining industry, the stewardship community, an energy utility, and three levels of government: federal, provincial and local in an unique working group to how Coquitlam can become a best practice for sustainable development practices in aggregate mining.

Perhaps most importantly, this committee is building a better understanding of the challenges and opportunities faced by the aggregate mining industry on the Coquitlam River and is moving toward a more collaborative working relationship.



Photograph 4. View of the upper reaches of the lower Coquitlam River watershed. Gravel pit operations in foreground and to the right. Photograph referenced from <<http://www.allardcontractorsltd.com/companyhistory.html>>

5.0 Logging Impacts and Urban Development

Logging Impacts

Although logging and burning activity had occurred in the Coquitlam River watershed as far back as the early 1900's, and likely the late 1800's, for various developments, logging of a harmful nature with respect to the watershed did not commence until the 1960s and 1970's when the logging industry began to intensify. Notably, the City of New Westminster valued the protection of the forests at the beginning of the 20th century, stating, "The City of New Westminster [have] certain riparian rights on Coquitlam Lake...the city might induce the Government to place a reserve on the timber in this valley" in a letter to an engineer consultant (Koop, 2001). Attempts were made by a small logging company to obtain permission to log 12,000 acres of the upper watershed in the early 1900's, but attempts were finally failed. Trespassing rules were imposed in the upper watershed circa 1910 which strictly prohibited the altering of any type of vegetation in the area. Relatively small logging operations prior to 1942 amounted to a total of 3, 875 acres (1570 ha).

Significant events in the Coquitlam River watershed with regards to logging activity include:

- **1927:** The Greater Vancouver Water District acquires a 999 year Land Act lease agreement (called the Indenture) for Crown lands in Capilano and Seymour from the provincial government, to protect the forest lands from future logging and private land alienation;
- **1930:** Water District obtains legislation to protect the watersheds from future mining;
- **1942:** The Coquitlam watershed is protected under the 999 year Land Act lease agreement; and,
- **1967:** The Water District amends the 1927 lease agreement (called the Amending Indenture) which requires the District to log the watersheds forests under the authority of the Ministry of Forests. The Water District can cancel the Amending Indenture at any time.

Between 1972 and 1993 approximately 3458 acres (1400 ha) of land was logged, amounting to 82 cutblocks and approximately 100 km of road construction. In order from highest to lowest species removal, Western red cedar, Western Hemlock and Pacific silver fir were harvested. The logged areas were re-planted with Douglas Fir in order to propagate second growth timber intended to be more wind, fire, and insect resistant.

In a Water Management Report prepared by the Ministry of Environment in 1978⁴, water quality (as a result of poor logging practice) was noted to be much less sensitive upstream of the confluence of Coquitlam River and its major tributary, Or Creek, than water quality in the Or Creek watershed, itself. The Or Creek watershed underwent comparable logging activity to that of Coquitlam in the 1970's; however, this watershed has both steeper slopes and rougher terrain. Its lack of catchment storage contributed to high sediment and debris loads to the Coquitlam. These loads would settle in the gravel bars and spawning habitat of the Coquitlam River. Consequently, good logging practices were considered to be more important in the Or Creek watershed than in the Coquitlam.

⁴ The Coquitlam River Water Management Study (1978) prepared by The Ministry of Environment in a collaborative effort between stewards, government, and industry appears to be the first of its kind. Comparable to a modern day Environmental Impact Assessment, it included thorough and calculated analyses of all apparent variables impacting the watershed (flood control, dam safety and protection, low flows, water quality, mining, logging, urban development, geotechnical hazards, diversions, recreation, and water management).

While logging was a less significant impact to the river than were other operations, present day instability issues, and consequent pulse sediment loadings of Or Creek to Coquitlam River upon heavy precipitation events, can likely be attributed to previous logging activity in the Or Creek watershed.

Urban Development

The Lower Coquitlam River Watershed, below the Coquitlam Lake Dam, includes at least 30 watercourses. The two largest tributaries of the Coquitlam River are Or Creek with a catchment area of approximately 22 sq km and the Hoy/Scott/Pinnacle Creek catchment area totalling approximately 17.5 sq km. Land use and urban development patterns have evolved over time, responding to the needs of residents, businesses and other in the community. Human settlement is an important component of the watershed.

The natural drainage patterns of the lower watershed have been altered as urban development proceeded. A significant portion of the watershed's drainage is now carried in the storm drain system, which eventually empties into open watercourses. Recognizing the importance in balancing land development and environmental values, the City of Coquitlam embarked on developing integrated watershed management processes, the most recent process for this watershed, including Scott Creek and Hoy creeks and their tributaries. The Integrated Watershed Management Process (IWMP) investigates issues related to the quality and quantity of rainwater runoff, flood protection, environmental protection of aquatic resources, wildlife and their habitats, land use, green ways, and recreation. The Scott Creek watershed contains a high level of urban development with land uses ranging from residential in the upper areas to commercial in the lower areas. Erosion impacts from urban development in the watershed and its tributaries are certainly a contributing factor to the health of the Coquitlam River.

The Coquitlam is expected to grow significantly in the coming decades and while current legislation and community will respects the impact of development on the Coquitlam River, the impact of urban development will continual to alter the natural watershed.

6.0 Stewardship Groups (circa 1960s to present)

Due to both natural and anthropogenic adverse impacts to the watershed over the last century, concerned individuals started forming environmental groups to help mitigate some of these impacts, as well as to restore altered ecosystems. With the exception to the Port Coquitlam and District Hunting and Fishing Club which formed during the sixties, the majority of these groups formed in the nineties. Some of these groups include:

- Burke Mountain Naturalists;
- Como Watershed Group;
- Colony Farm Park Association;
- Coquitlam River Watershed Society;
- Coquitlam Riverwatch;
- Friends of Mundy Park Heritage Society;
- Institute of Urban Ecology, Douglas College;

- Hoy Scott Watershed Society;
- Maple Creek Streamkeepers;
- North Fraser Salmon Assistance Project;
- Port Coquitlam and District Hunting and Fishing Club;
- River Springs Streamkeepers;
- Rivershed Society of BC;
- Riverview Horticultural Centre Society; and,
- Watershed Watch Salmon Society.

Academic institutions as well as local businesses intermittently contribute research, education, awareness, and funds in efforts to increase the health of the Coquitlam River watershed. Key contributions of the steward groups have been and still remain to protect and enhance various forms of sensitive ecology in the watershed; to educate, increase awareness, and encourage involvement; as well as relieving financial stress from governments.

The stewardship groups have been involved in, but not limited to, the following activities:

- Awareness and education through various activities (i.e. fundraisers, celebrations, community days/weeks, fishing derbies, tours, etc.);
- Advocacy (volunteer committee involvement, workshops, meetings, etc.);
- Hatchery management (cultivating salmonid eggs and fry, and stocking tributaries);
- Habitat restoration and enhancement (riparian planting, off-channel habitat creation, enhancing channel complexity – large woody debris, boulder placement; invasive species removal); and,
- Surveillance Activities – regularly documenting visual observations along the Coquitlam River and its tributaries.

Over the years, the integrity of the environmental steward groups has been un-daunting. Most have been started by long-term residents who have observed and/or heard of the immense changes in the watershed over the last century (in particular the once thriving salmon stocks in the first half of the 20th century). Of paramount concern to most, if not all of the groups, has been the sediment issue.

Stakeholders and community groups alike realize the mass devastation of salmon stocks that occurred earlier last century originated with the construction of the two dams and virtual elimination of flow from Coquitlam Lake to the river. Despite the decline in and even extirpation of salmon stocks, efforts to stabilize these stocks began circa the 1970's. Scientific research from the same time (CRWMS, 1978) supported concerns raised over the damaging effects of low water flow, lack of fish passage, and silt in rivers. This complex socio-political and environmental issue remains today. The Watershed Management Initiative of 2008 hopes to address this issue: it is realized that bridging communication gaps between stewards, government, and industry will be an important starting point in this process.

7.0 1978 to Present - Events, Studies, Initiatives and Recommendations

A primary concern of stakeholders, stewards, and even government representatives today is the allocation of funding without decisive action. There have been numerous efforts in the last couple of decades with the purpose of addressing and planning for the management of the health of the Coquitlam River watershed. This section examines these initiatives, as well as significant events and studies which have taken place over the years. Recommendations from these efforts have been summarized where available.

1978 - Coquitlam River Water Management Study, MOE

Recommendations

- The installation of a stream gauging station on Or Creek;
- Future logging operations proceeding pending the implementation of soil conservation measures into all phases of logging activity;
- The construction of a bridge over the Coquitlam River to provide access to the Or Creek drainage area, prior to any additional logging of the latter area;
- The establishment and enforcement of silt discharge standards from gravel mining operations by the Ministry of Energy, Mines, and Petroleum Resources under the Mines Regulation Act with consideration to fish spawning habitat;
- The withdrawal of the reclamation and conservation section from the Soil Removal Bylaw by the District of Coquitlam for reasons of simplification pending [the above] procedure implementation;
- The Coquitlam Lake Reservoir be not operated at above a water level elevation of 493 feet, for flood protection downstream;
- A set of nine dyke construction guidelines were included;
- Flood control requirements to be implemented in zoning bylaws for developments in the floodplain;
- Major slide areas be stabilized and isolated from the mainstem of the river;
- Urban development planning to include riparian zones; controlling of activities within the wetted stream perimeter to minimize impacts to fish habitat; ensure urban runoff mimics that with which would occur under natural conditions; and,
- Ensure that measures are employed to minimize water quality degradation.

Additional recommendations regarding flow releases, a Water Management Committee, Outdoor Recreation, and Dam Safety were also included in this document.

1996 to 1998 - Or Creek Assessments and Bioengineering Prescription

The GVRD engaged in several studies between 1996 and 1998 with the objective to rehabilitate environmental values of the Coquitlam River watershed downstream of the BC Hydro dam, including the Or Creek drainage. As previously discussed, Or Creek is a well-known source of sediment to the Coquitlam River due to its bank instability issues.

These studies identified the following items:

- Classification of the lower reaches of Or Creek as Class A habitat (coho and steelhead juveniles, and Dolly Varden), with physical obstacles limiting anadromous fish movement;
- Recognizing the sediment-loading concerns from lacustrine bank failures to the Coquitlam River;
- That failures more than 50 metres long require immediate remedial action;
- That bed load and coarse fragments are not as much a concern in suspended sediment loading as fine-grained material;
- Terrain stability, gullies, and road analyses were required to gain a better understanding of Or Creek watershed restoration requirements;
- The major sources of fine sediment were from two off-channel tributaries;
- Discouragement the diversion of water away from a toe area to avoid erosion further downstream;
- Areas of high clay content and that were being undercut were noted for immediate remedial action;
- Recommendations for increasing stability included blasting, danger tree removal, wattle fence and pole drain installation, planting and seeding;
- Forty landslides, 60 gullies, and 22 kilometres of roads were inventoried resulting in detailed assessment recommendations for four landslides, eight gullies, and 7.8 kilometres of road within Or Creek;
- The fundamental conclusion from these studies was that the greatest risk to resources was the delivery of fine sediments from the lacustrine failures in the lower reaches of Or Creek.

Or Creek remains one of the prime sources of fine-sediment loads to the Coquitlam River. It has been documented that the sediment loading is generated typically in pulse loads as a result of bank erosion. Moreover, these loads are known to consist of both bed load and fine sediment, which generate a greyish color when suspended. Alternatively, fine sediment which has been observed in the vicinity of the gravel pit operations is known to consist of fine sediment, be brown in color, and stay suspended longer.

1996 - Coquitlam River Watershed Community Initiative (CRWC)

Commencing in 1996, coordinated by master's student Angela Smailes, the CRWC Initiative was a groundwork phase involving public consultation. The intention was to decide upon a vision, goals, and procedures for engaging in a watershed initiative. A series of workshops were organized and attended by many individuals from different sectors. A final report entitled, 'Coquitlam River Watershed Community Initiative – Final Report for the Groundwork Phase' was completed in 1997 generating the following recommendations:

- The formation of a 'start-up committee' to set up a watershed-based entity;
- The entity was to engage in the following items:
 - Establish a mechanism for coordination and communication between individuals and groups in existing and future projects in the watershed;
 - Establish principles that make ecosystem health and community-based input a priority;
 - Provide support (fund-raising, information, publicity, networking, etc) for community-based projects and programs;
 - Initiate a review of government legislation, policies and programs pertaining to the watershed and determine room for change;
 - Provide a forum and problem-solving mechanism for stakeholders to engage in discussion; and,
 - Ensure that the watershed initiative is carried out in a sustainable manner;
- The 'action group' was to set up a short, medium, and long-term plan including the following items:
 - Establish priorities for stewardship projects (short-term);
 - Establish priorities for a watershed management plan, monitoring program, mapping, landowner contact program, etc. (medium-term);
 - Conduct a mapping program of each basin in the watershed, establishing environmentally sensitive areas, establish a community-based watershed plan and integrate mapping activities, establish a method of tackling ecosystem health of sensitive areas based on type of problem and jurisdiction setting up projects accordingly (long-term);
 - All levels of government and agency should participate; and,
 - Stakeholders should be consulted.

Public News (1990's to present)

Reporting of environmental community initiatives had begun to reinforce awareness of the health of the Coquitlam River watershed circa the 1990's. Articles, including 'Resuscitating the river,' and 'People, not policy, are saving salmon,' gave credit where credit was due to volunteer groups and individuals making a difference in the watershed. Articles such as these seemed to publicly identify a divide between certain levels of government and the stewardship community.

1997 - Green Links: Connecting Ecosystem Fragments in the City

A study initiated by Douglas College (Institute of Urban Ecology) in 1997 and funded by BC Gas and the BC E-team examined the potential for mitigating the fragmented ecosystems in urban areas. The area studied was a green corridor connecting of five 'Environmentally Sensitive Areas' including Colony Farm, the Riverview Lands, Mundy Park, Pinnacle Creek, Scott Creek, and the Port Moody Ecological Reserve. Interestingly, residents of nearby urban areas were in support of improvements to trails and parks, but very few were willing to participate in enhancement works in their own yards. This identified the need for further education and awareness. Plants identified in the study included 15 tree species, 22 shrub species, 59 flower and herb species, six fern/horsetail species, 15 moss species, and four rush species – a total of 121 species. Moreover, researchers found 51 bird species in the corridor. Recommendations of the study included:

- Establish formal parks within the corridor;
- Extend stewardship initiatives in the corridor;
- Establish a native plant storage and rearing facility as an ongoing source of plant stock, preferably at Colony Farm;
- Establish secondary school program to raise native plants from seed for planting;
- Create nodes of enhanced natural habitat i.e. butterfly gardens, bird gardens and plant biodiversity;
- Promote bird/bat boxes;
- Establish educational signage on trails;
- Enhance trail network from Pinnacle Creek ravine to Mundy Creek; and,
- Wetland restoration projects near Scott and Pinnacle Creeks.

1997 - Maple Creek Fish Habitat Enhancement Plan

With the support of the USHP and MOE, the Maple Creek Streamkeepers studied Maple Creek to identify fish habitat enhancement projects that streamkeepers could construct or install themselves with limited direction and funding. Maple Creek is reported to support chum and coho salmon, steelhead, cutthroat and rainbow trout, and has been subjected to significant impacts primarily from urbanization. These impacts include a lowered water table, higher water temperatures, gravel compaction, and instream vegetation succession. The creek was also isolated upon the Coquitlam River dyke installation. Although there are no supporting data, anecdotal information strongly suggests that the productivity of the Creek has decreased significantly in the last quarter of a century. Twenty-one restoration prescriptions were proposed in and around Maple Creek

1998 - The Coquitlam River Watershed Society (CRWS)

The Coquitlam River Watershed Society was formed in 1998 from which several education and advocacy initiatives were generated. These have proven to be tools in the watershed management process. This society was registered as a non-profit organization in 1997, and its intention was to build on watershed initiatives which commenced in 1996 from the series of workshops coordinated by Angela Smailes. Some of the successes from the CRWS initiative include:

- The Working Together in the Coquitlam river Watershed Workshop of 2001;
- Publishing the *Tri-Cities Watersheds* Calendar for 2001-2002;
- Publishing the *Coquitlam River Watershed Almanac* of 1999, jointly with Douglas college, Fisheries Renewal BC, and the City of Coquitlam; and
- Supporting the Coquitlam River Watershed Symposium put on by Douglas College in 1999;
- Undertaking watershed planning initiatives which were finalized in a report in 2001;
- Producing the Lower Coquitlam River Watershed Atlas of 2003.

The Coquitlam River Watershed Society remains active in their planning efforts, including providing environmental stewardship representation to the City's Coquitlam River Aggregate Committee.

1998 - RACE for Coquitlam River Watershed – Letter to CRWS

A letter from a volunteer group (RACE) identifying mistrust and lack of communication between government-initialized groups and the volunteer community. Reference is made to the lack of access to high tech equipment, funding or personal contacts that the government associated groups have. The volunteer group suspected hidden agendas. The summary of this letter reinforces the need for bridged communication between the volunteer community and government.

1999 to date - The Outdoor Recreation Council of BC

Each year the Outdoor Recreation Council of BC solicits nominations for BC's Most Endangered Rivers from its member groups, as well as from the general public and resource managers from across the province. In 1999, the Coquitlam River was ranked the fourth most endangered river on the 'Top 10 Endangered Rivers of BC' published list as a result of excessive sedimentation and urbanization. During 2001, it was raised to third on the list. Recent year ratings for the Coquitlam River have shown an improvement in its standing against other endangered BC rivers. The Coquitlam River was ranked number five in 2007 and number eight ranking for 2008. These Council coordinated assessments have been used as a milestone on political agendas for increased awareness and the need for attention to the health of the river.

1999 - Urban Ecology at Douglas College - The Coquitlam River Watershed Almanac Project

The purpose of the Almanac was primarily to create awareness of environmental sensitivities while providing a resource for school study. The Almanac highlighted stewardship initiatives and has been a guidance tool for community environmental responsibilities.

2000-2004 - Steward Coordinator Position

Between 2000 and 2004, a position was created by DFO and funded by an employment strategy program, Community Futures. A steward coordinator was hired for three watersheds, one of which included the Coquitlam River watershed. Initiatives were largely focused on workshop coordination, the coordination of a GIS stream mapping program, assistance with the creation of the Watershed Atlas, sitting on the Water Use Plan Consultative Committee, and coordinating with the Coquitlam River Watershed Society.

There were mixed feelings about the success of this position. Some felt the position was not engaged enough with stewards, and others felt the position was stretched too far across the stewardship coordination of three watersheds, and thus not focused enough. There were no final reports produced summarizing the outcomes of the position.

2000 - Hoy Creek Water Quality Report

This study was conducted by Douglas College in an effort to identify the impacts of urban development on Hoy and Scott Creeks. Hoy Creek originates from the Westwood Plateau and runs down the southward slope, where it drains into Scott Creek, a tributary of the Coquitlam River. Conclusions and recommendations of this study included the following:

- Temperature has regularly exceeded water salmonid spawning criteria. It was recommended that a more detailed temperature analysis be undertaken (with data-logger equipment);
- Obtain precipitation data for the period of study and use to changes in temperature, pH, turbidity, and flow;
- Continue water quality monitoring to obtain a full year of data; and,
- Re-obtain dissolved oxygen measurements, especially for when temperatures begin to rise.

2000 - Coquitlam River (CR) Corridor Strategy

Initiated by the City of Coquitlam, the Coquitlam River Corridor Strategy was dedicated to the management of the mainstem of the Coquitlam River.

Recommendations

- Improved gravel mining practices by:
 - Forming the Coquitlam River Aggregate Task Force; and
 - Developing an implementation strategy for Task Force Recommendations.
- Achieve environmentally sensitive urban development by:
 - Encouraging input from stewards to review and suggest revisions to regulations and Best Management Practices; and,
 - Inclusion of integrated stormwater and watershed management planning principles in future initiatives.
- Prepare a trail system in the CR Corridor;
- Improve Management of Fish and Wildlife by:
 - Raising awareness of hatchery fish production impacts – work with stakeholders involved;
 - Embark on a multi-stakeholder watershed management planning process;
 - Map environmentally sensitive areas along the corridor; and
 - Revise the sediment control bylaw.
- Finalize a water use plan increasing water flow and volume;

- Promote awareness and education by:
 - Production of brochures;
 - Develop a visual identity/logo, and mascot;
 - Present ideas to council; and,
 - Include material at front desk for developers.

2001 - Watershed Planning in the Coquitlam River Watershed, Project Final Report (on behalf of CRWS)

Recommendations

- Examining funding initiatives;
- Define key players in the decision-making process;
- Creation of a watershed assessment profile;
- The production of a watershed atlas largely for public education purposes;
- Creation of an environmental report card; and,
- Consolidated watershed team including community groups, First Nations, government, academia, and business/industry.

2001 - Clear Water Initiative for the Coquitlam River Watershed

This Coquitlam River water quality assessment study was undertaken by Douglas College in 2001. Funding was provided by Environment Canada's EcoAction Program. Seven sites were monitored for temperature, pH, dissolved oxygen, Total Dissolved Solids, Conductivity, Turbidity, nitrates, phosphates, and pollutants over the course of a year. Recommendations from the report are as follows:

- Monitor plantings from the CWI to determine long-term benefits on water quality;
- In-depth water quality monitoring at Goodyear and Hoy Creeks to determine impacts of urban development;
- Encourage residents to take action on non-point source pollution from yards;
- Grass seed vacant lots to mitigate run-off; and,
- Compare similar studies in other watersheds to determine relative impacts of development.

2001 - Working Together for the Coquitlam River Watershed – Workshop Proceedings

This document was prepared with the support of CRWS, the Urban Salmon Habitat Program (USHP), and the City of Coquitlam. It summarized recommendations which were generated from the above-mentioned workshop. These recommendations included:

- Issues should be sent to city councils and discussed;
- Engage city councillors;
- Groups should be kept in the loop via e-mail;

- Create a list-serve for transferring communications between groups/individuals;
- Send proceedings to news media;
- Engage young people;
- A representative from the watershed initiative should phone each group and start working together on moving forward on advocacy ideas;
- Organize walks to introduce new MLAs to watershed issues; and,
- Communicate with Kwikwetlem on proceedings.

2002 - Coquitlam-Buntzen Water Use Plan: Report of the Consultative Committee⁵

In 1999 a Consultative Committee (CC) was formed on behalf of BC Hydro in order create a Water Use Plan (WUP). The Water Use Planning process was designed to recommend a preferred operating strategy by use of a public participatory process. In 2002, the CC published this technical document with future recommendations for the preferred operating strategies. A Water License was then granted by the Comptroller of Water Rights stipulating that BC Hydro must deliver on operational changes, and an extensive monitoring program and physical works proposed.

A fundamental objective of the WUP was to assess fish habitat benefits associated with two flow treatment regimes. The first was to monitor existing flow conditions which were under agreement with GVRD: two fish valves always open. This regime was to occur from 2001 to the end of 2006. Dam modifications were proposed (and are currently underway) from 2004 to the end of 2006. Finally, the second flow regime to be tested and monitored was to occur from 2007 until the end of 2015. This flow regime was termed ‘Sharing the Pain 6’ (STP6)⁶. The idea was to prioritize flow allocation when flow was limited based upon target flows, seasonal priorities and annual rainfall. The contenders competing for flow were domestic water, water for fish down the Coquitlam River, and water for power.

Additional provisions under the Coquitlam/Buntzen Water License included the following:

- An opportunistic flushing flow of a release of up to 50 cm during inflow events towards improving substrate conditions;
- An absolute minimum of 0.8 cm during water shortage periods;
- Eight monitoring programs to be conducted; and,
- Physical work requirement to modify Coquitlam Release facilities to provide for Treatment #2 (STP6) flows.

The 15-year monitoring program was the first of its kind and BC Hydro was noted to have raised the bar for other resource extractors of the community. Monitoring was to include the following parameters (and has been underway since 2001):

⁵ This section is summarized by use of recent presentations to complement the WUP of 2002, as changes have been made and new information is known.

⁶ This was initially STP5 and later confirmed to be STP6. Refer to Water Use Plan for details.

- Fish Productivity
 - Smolt outmigration (coho, steelhead)
 - Fry outmigration (pink and chum)
 - Adult salmon escapement (weekly)
 - Adult steelhead redd surveys
 - Fry and juvenile stock assessment;
- Substrate Quality Assessment (photo and sieve analysis)
- Periphyton and Benthic Invertebrate Monitoring
- Temperature Monitoring
- Pink Salmon Passage
- Interim Ramping Rate Monitoring

BC Hydro is actively presenting monitoring results to the WUP Committee. Conclusive findings will not be made, however, until the completion of the monitoring program (this may extend to 2016/2017).

2002 - Watershed Management Plan - Metro Vancouver (the Greater Vancouver Regional District (GVRD))

A primary jurisdiction of Metro Vancouver is to manage the reservoirs which provide municipalities with drinking water. The goal of the 2002 Watershed Management Plan was ‘Watersheds that provide clean, safe water and are managed and protected as natural assets of the highest importance to the Greater Vancouver Region.’ Principles fundamental to the management strategies in the plan were:

- Primary purpose of Metro Vancouver’s watersheds is to provide clean, safe water;
- Watersheds will be managed to reflect and advance the region’s commitment to the environmental stewardship and protection of those lands and their biological diversity;
- Management plans will be based upon minimum intervention absolutely necessary to achieve the Board’s objectives;
- The management plan will contain policies to return areas disturbed by human activity as close as possible to the pre-disturbance state consistent with the primary goal of protecting water quality; and,
- Decision making processes will be transparent and open to the public.

Programs and their respective activities/recommendations planned for implementation from the Watershed Management Plan included the following:

- Water monitoring and forecasting
 - a series of hydrometric, weather, and sediment monitoring stations;
- Forest ecosystem management
 - increased level of monitoring of a potential disturbance
 - planting of deciduous and coniferous trees species to establish diverse healthy stands following a disturbance
 - intensive insect trapping to control and monitor populations;

- Fire Management
 - calculation of fire weather indices and monitoring of ventilation indices
 - prevention and detection of fires
 - suppression of fires when and where appropriate
 - monitoring wildfire activity and potential effect on water quality
 - evaluation and development of fire management strategies;
- Erosion Control
 - the excavation of landslide deposits containing fine textured material that have the potential to be carried into the water supply reservoirs
 - stabilization of stream banks where appropriate to minimize the rate of bank erosion;
 - re-vegetation of landslide scars, gully sidewalls and reservoir drawdown zones to minimize surface erosion
 - evaluation and development of erosion control strategies;
- Road Network – Essential roads will provide vehicle access to:
 - Water supply and water quality monitoring sites
 - Site developments for water infrastructure
 - Natural gas right-of-way and BC Hydro facilities in the Coquitlam River watershed;
- Water System Infrastructure – watershed uses to include the following activities:
 - Construction staging areas
 - Constructing dams, water intakes, pipelines, water treatment facilities, and buildings
 - Seismic upgrades
 - Aggregate use
 - Providing road, helicopter, and trail access to facilities
- Communication and Education will include:
 - Public tours of watersheds
 - Public review and input on implementation plans
 - Field trips to view proposed management activities
 - Participation of community watershed stewardship groups
 - Guidelines to facilitate research in the watersheds
 - Watershed data and information website
 - GVRD education resources and programs
- Emergency Preparedness Program.

2003 - Kwikwetlem Salmon Restoration Program (KSRP)

This multi-stakeholder committee, formed in 2003, was initiated by BC Hydro to determine the scientific feasibility of returning sockeye salmon to their original spawning grounds in the Coquitlam Lake reservoir. In 2007, two female sockeye were observed returning from thousands of kokanee smolts released from the lake to the river.

Currently Metro Vancouver is conducting a three year study in the reservoir in order to assess potential limitations to drinking water quality as a result of restoring sockeye populations in the reservoir. Additional studies have also been recently conducted to further examine spawning capacity in the Coquitlam Lake. In the meantime, any observed sockeye will be salvaged and trucked up to the reservoir.

2005 - Review of Flooding at Cemetery and Stormwater Flow Regimes

Kwikwetlem First Nation has had re-occurring flooding issues on the reserve, particularly in the immediate vicinity of the cemetery. It is clear that the water table has risen in this area and members of Kwikwetlem have had to fight with this increase in water when burying their loved ones. This study was conducted for the Kwikwetlem First Nation with the following objectives:

- To identify the causes for the increased water table on the IR#1 and IR#2; and,
- To identify the storm water inputs flowing into IR#2.

It was considered plausible that the increase in water level is due to the increase in Coquitlam riverbed levels. This has likely arisen from a combination of the cessation of dredging in the 1950s, and urban and industrial development. Options were given in regards to the management of the immediate flooding problems at the cemetery on the reserve land. The seemingly most viable option was to leave the existing cemetery in place, and create a new one, with raised land, on an expanded area north of the cemetery.

2006 - Coquitlam River Aggregate Committee Annual Report 2006⁷

Recommendations

- Support from all three levels of government to carry out a Coquitlam River Watershed Strategy;
- Continual monitoring and analysis of the overall health of the river;
- Ongoing review and implementation of best practices in overburden management and on-site sediment control;
- Assessment of best solutions of disposable or unusable overburden and limitations to these solutions;
- Developing a framework for the ongoing monitoring of the health of the river;
- Assessment of the process of measuring watershed health;
- Improving and implementing bank stabilization and riparian planting strategies;
- Reviewing stormwater issues and solutions surrounding the aggregate lands; and,
- Examining alternative uses for high fines.

⁷ Previous annual report recommendations are available from the City of Coquitlam. For reporting purposes, the most recent have been discussed in this report.

2007 - Mundy Creek Watershed Assessment

Mundy Creek is a tributary to both Leeder Creek (west of Mundy) and Coquitlam River (east of Mundy) and it drains approximately 2.8m² of southwest Coquitlam. Leeder Creek has, over recent years, been overgrown and has filled thus blocking flows and creating flood stress toward the Coquitlam River. DFO (and other organizations) has engaged in fisheries enhancement works in this area in recent years also, as tributaries of the Coquitlam River are prudent for fish habitat in this area. The study was intended to examine existing flood protection and recent breaching activities concurrent with the fisheries enhancement works. Conclusions from the report were in the form of circumstantial recommendations (i.e. in the event that the floodbox was opened or removed, if the non-standard dykes are overtopped, flood protection could be adversely impacted by the breaching of the dyke). A definitive recommendation/conclusion included the following:

‘The additional storage that becomes accessible with the breach slightly improves water levels in the Mundy Creek drainage system during local storm events. However, to increase flood protection south of the slough with the breach [breach of the northeast dyke in the CP Rail Slough to facilitate fish habitat] in place, would require upgrading of the Coquitlam River Dykes north of slough in addition to the dykes to the south of the slough.’

The fisheries enhancement works undertaken in the Mundy Creek Watershed from 2004 forward were a joint initiative. Mundy Creek is said to be the most important spawning stream for coho salmon and coastal cutthroat trout within the watershed. It is also known to provide high quality rearing habitat for both coho and cutthroat trout smolts.

2007 - Lower Coquitlam River Fish Habitat and Flooding Assessment

Prepared on behalf of Kwikwetlem First Nation and Watershed Watch Salmon Society with funding provided by the Bridge Coastal Restoration Program (BC Hydro), this study intended to accomplish the development of working relationships and restoration prescriptions. The project was initiated in response to both the degrading mainstem habitat, as well as the ongoing flooding problems encountered at IR#2, specifically at the cemetery. Recommendations from this study included the following items:

- Completion of tidal channels in the Sheep Paddocks (Colony Farms);
- Construct tidal channels on upper Wilson Farm;
- Conduct wildlife and vegetation monitoring at the Sheep Paddocks Phase I project;
- Improve instream complexity;
- Monitor and assess the oxbow on IR#2, remove constriction;
- Consider non-standard dike maintenance – cost vs. benefit;
- Investigate water quality;
- Reduce and control invasive species;
- Take a watershed approach to stream health;
- Work with Riverview property owner to conserve and improve habitat;
- Take a closer look at fish-bearing channels and ditches in southern Colony Farm;
- Examine fish bearing channels and ditches in southern Colony Farm;
- Review the fish habitat compensation project to identify room for improvement of mainstem access;
- Create outreach and educational opportunities; and,
- Work with the gravel operators to reduce sediment inputs;

2007 - Coquitlam River Aggregate Committee Accomplishments⁸

Accomplishments

- Completion of the 2006 Annual Report;
- Received presentation on the Chilliwack River Watershed Strategy from the Fraser Valley Regional District;
- Consideration of the Coquitlam River Watershed Study to look at the overall health of river (Phase I of a proposed four phase project is underway);
- Works on The Green Design Guidelines Manual of the Master Municipal Construction Documents Association (MMCD) were completed. The review of the use of fines is now a supplementary specification in the MMCDs platinum edition manual, as well as in the Green Design Manual;
- Have formed relationship with The British Columbia Transmission Corporation (BCTC). Council recommended that the BCTC review outstanding storm water management issues negatively impacting CR water quality and future transmission lines in Coquitlam. The BCTC gave council a presentation on the ILM project. The BCTC has been receptive to discussions regarding the installation of an interceptor ditch between their upcoming works and the gravel pit operations.

Recommendations

- Recommendations were made to City Council to endorse the funding proposal for the Coquitlam River Watershed Strategy. Phase I, the research phase has been underway since January, 2008;
- Examine the marketing of cyclone sand;
- Examine the potential for progressive restoration and potential impacts – possible partnership with Douglas College;
- Examine the possibility of permanently capping areas affected by drainage issues;
- Continue to build on rapport with BCTC;
- The continuation of water quality monitoring of the Coquitlam River; and,
- Examining alternative issues for high fine sands i.e. part of dyke construction.

⁸ The CRAC 2007 Annual Report is in progress

8.0 2008 – Living Rivers Project: Phase I Research and Stakeholder Engagement

In January of 2008, the City of Coquitlam and Kwikwetlem First Nation partnered in the first Phase of a proposed four phase Watershed Management Plan Initiative. Funding was received primarily from the Pacific Salmon Foundation under the Fraser Salmon Watershed Program. The scope of Phase I included:

- Developing an accountability framework looking at the many stakeholders and the various legislation and mandates;
- Researching and summarizing the many documents relevant to overall health of the river; and,
- Identifying watershed interests; building an understanding of their interests/perspectives; establish a dialogue.

During this process interviews were conducted with various levels of government, steward groups, and industry, from which issues, concerns, and recommendations have re-surfaced from previous environmental initiatives. A contact list was established for those with a vested interest in the health of the river. The majority of the players on the list engaged in introductory meetings, interviews, and/or telephone conversations with the watershed coordinator. Although a standard interview questionnaire was established prior to the meetings, it was found to be most effective to allow those interviewed to ‘tell their story.’ From these stories, the interview questions could be answered. The following section examines those interviewed and a summary of the outcomes of the interviews. Copies of the contact list and the standard interview template followed are included in Appendix D. A summary of the interviewees is provided at the end of this report.

From discussions with those listed above, the following issues, concerns and/or recommendations have surfaced and/or re-surfaced:

- The need for every level and relevant agency of government to be working on a watershed initiative, if one is underway;
- A definition for an ‘Urban River’;
- The need for enforcement for the effective management of the health of the watershed;
- Continual effort for mitigating erosion/sedimentation in Or Creek;
- The installation of an interceptor ditch upgradient of the gravel pit operations;
- Where development is proposed, vegetation should be salvaged for re-planting elsewhere;
- The re-evaluation of cultivating steelhead trout and stocking tributaries with them;
- A tighter, more consistent and long-term water quality monitoring regime along the Coquitlam River is required in order to identify point-source pollution;

- An informal evening symposium with environmental stewards to discuss outcomes of the Phase I of this project;
- A workshop including stakeholders and community groups to discuss a future watershed plan initiative – Phase II;
- Poor funding for the Oxbow Lake Area – additional funding is required;
- A communication strategy between all stakeholders and community is required for future progress i.e. - there are individuals who will not be present at the same function as others;
- Continued involvement with First Nations;
- The conducting of a recent watershed study including all of the environmental stressors on the river i.e. golf course fertilizers, residential septic tanks, dumping, landfill leachates, urban runoff, etc.; and,
- The installation of a fish ladder at the dam of the Coquitlam reservoir.

Stakeholder Perspectives

A discrepancy remains over the objectives, mandates, and concerns amongst the parties listed above. From interviews and research conducted, it is clear, however; that we have entered a time of a paradigm shift in thinking from an environmental standpoint. This transition, however, will not happen overnight. We have seen real progression in the last decade, and hopes for the Living Rivers Project on the Coquitlam River watershed are to promote continual effort where the effective management of the health of the watershed is concerned.

Environmental Legislation and the Coquitlam River Watershed

In the examination of existing legislation as it pertains to the management of the Coquitlam River watershed, it is apparent that there is a lot of overlap and some gaps. Firstly in this examination, a governance flow chart was created to generate a visual breakdown and relationship between existing legislation under various levels of government. This governance flow chart can be found in Appendix A. Table 1, also found in Appendix A of this document, examines management issues across government legislation. The immediately noticeable items from this framework include the following:

- The lack of legislation where monitoring and enhancement requirements are concerned;
- The lack of legislation surrounding environmental concerns where agencies which govern utilities are concerned;
- The significant legislation from a municipal standpoint in managing various environmental issues; and,
- The lack of legislation from a provincial standpoint where water quality and flow are concerned.

Where there appears to be ample legislation, one can next examine the enforcement component of this legislation. The flowchart and framework are intended to be used as working documents to assist all concerned with the management of the watershed in assessing future legislative requirements in political agendas. As legislation is continuously being amended, similarly such a framework would be as well. Included in Appendix C is a document entitled, “Environmental Legislation and the Coquitlam River Watershed.” This document was the basis for the flowchart and framework in Appendix A. It discusses mandates and visions of various departments within various levels of government. It also provides a brief summary of the jurisdiction of all legislation as they pertain to the management of the CR watershed.

There have been additional documents or deliverables prepared as a component of Phase I of the project. A visual ‘Chronology of the Coquitlam River’ has been prepared in efforts to cross-reference available fish escapement data with various events on the Coquitlam. This document is intended to be used as a presentation figure in future engagements. A smaller version can be found in Appendix B. Upon the launching of Phase II of the project, the City of Coquitlam and Kwikwetlem First Nation plan to present this material to the community of Coquitlam in the form of a workshop or symposium with hopes to promote discussion on future watershed management ideas. Phase II is intended for kick-off early fall 2008.

9.0 Conclusion

It is obvious that we are moving forward not backward. With a combination of technical expertise, funding allocated to various studies, and environmental policy, complexities of some of the issues in the river are much better understood than in previous years.

The results from the review of relevant documents and stakeholders perspectives highlight a number of considerations for the future of the Coquitlam River.

- The need for a definition of an urban river. The Coquitlam River is part of a growing urban region. Through a community based watershed planning process, there needs to be a common definition, vision and principles established and agreed to by all stakeholders – government, community and industry.
- Through this process we need to build a community coalition. Currently there is a lack of communication and mistrust between the many stakeholders – government, community and industry – this had made collaborative engagements, such as meetings and workshops, difficult.
- There exists a complexity of government jurisdictions and competing mandates as demonstrated in Appendices A and C.

- For a healthy Coquitlam River there needs to be:
 - A continuum of funding and coordination – historically, where efforts are started, they are discontinued primarily due to funding limitations, and another effort is later initiated which can result in redundancy, lost information, and frustration from the community;
 - Effective fish passage at the dam, and throughout the watershed;
 - various levels of government committed to play a role in watershed management and/or legislation and enforcement;
 - Ongoing mitigation of sediment loading to the Coquitlam River from natural erosion and industry processes, and continued implementation of best practices at the aggregate mines;
 - Consistent long-term water quality and fish count data; recognizing the monitoring and analysis of the overall health of the river needs to be done as part of a coordinated and integrated Coquitlam River corridor strategy;
 - Effective enforcement across all environmental legislation and all levels of government;
 - Continued collaboration of stakeholders, such as the City’s Coquitlam River Aggregate Committee; and,
 - A better understanding and mitigation of the impacts of past decisions on hydrology and water flow in the upper Crown Lands which negatively impact the aggregate mining industry along Coquitlam River.

Some of the lessons learned from previous watershed initiatives include the following:

- The importance of keeping community and stakeholders ‘in the loop’;
- Consulting community and stakeholders in decision-making processes;
- Developing a continuum of funding for projects on the river;
- Having a consistent team or committee to consult with for report submissions (planning for implementation of recommendations); and,
- Involving all levels of government in initiatives.

The recommendations that have been produced over previous decades reinforce the need for decisive action. It has been documented that the most successful environmental strategies are the ones that regularly engage all levels of government. Although there remains a division of objectives, mandates, and concerns amongst the parties listed above it is clear that we have entered a time of a paradigm shift in thinking from an environmental standpoint.

Many more issues exist, however, the ones mentioned above stand out amongst others. There have been ample recommendations produced through studies, workshops, and even interviews to overcome these issues. Case studies have shown that the most successful environmental strategies are the ones that regularly engage all levels of government. In turn, stakeholders and community interest groups must come together to facilitate a similarly successful and exemplary watershed management plan.

We have seen real progress in the last decade, and the hope is for the Living Rivers Project on the Coquitlam River watershed will promote the continual effort for the effective management of the watershed.

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11.0 Interviews⁹

The following individuals were met with and interviewed as a preliminary engagement strategy of Phase I of the Living Rivers Project

George Turi – Jack Cewe Ltd.
Tom Vanichuk – Coquitlam Sand and Gravel/Lafarge
Jim Allard – Allard Contractors
Elaine Golds – Colony Farm Park Association, Burke Mountain Naturalists
Niall Williams – Hatchery Coordinator Hoy/Scott Creek Watershed Society
Don Gillespie – Burke Mountain Naturalists
Dianne Ramage – Maple Creek Streamkeepers, Pacific Salmon Foundation
Tony Matahlija – North Fraser Salmon Assistance Project
Tim Tyler – President, Hoy/Scott Watershed Society/Hatchery
John Jakse – River Springs Hatchery
Vance Reach – Poco Hunting and Fishing Club Hatchery
Sherry Carroll – Coquitlam River Watershed Society
Fin Donnelly – Rivershed Society of British Columbia; City of Coquitlam Councillor
George Chaffee – Kwikwetlem First Nation
Glen Joe – Kwikwetlem First Nation
Maurice Coulter-Boisvert – Community Advisor, DFO
Matt Foy – Habitat Partnership Coordinator, DFO
Derek Bonin – Metro Vancouver
Charlotte Bemister – BC Hydro
Alf Leake – BC Hydro
Dave Hunter – BC Hydro
Melony Burton – Engineering, City of Coquitlam
Hagen Hohndorf – Environmental Services, City of Coquitlam

In addition, the following individuals have provided continuous insight through out the duration of Phase I. They have kindly acted as an informal advisory committee for the watershed coordinator.

Tom Cadieux – Habitat Partnership Coordinator, DFO
Dr. Craig Orr – Watershed Watch, representative of Kwikwetlem First Nation
Dave Palidwor – Parks and Environmental Services, City of Coquitlam
Jennifer Wilkie – Corporate Planning, City of Coquitlam
Mike Carver – Engineering, City of Coquitlam
Margaret Birch – Environmental Services, City of Coquitlam

⁹ There have been additional key players whom the watershed coordinator has met, but has not had a chance to interview. These include government representatives from MOE, MoEMP, and City of Port Coquitlam.

Figures

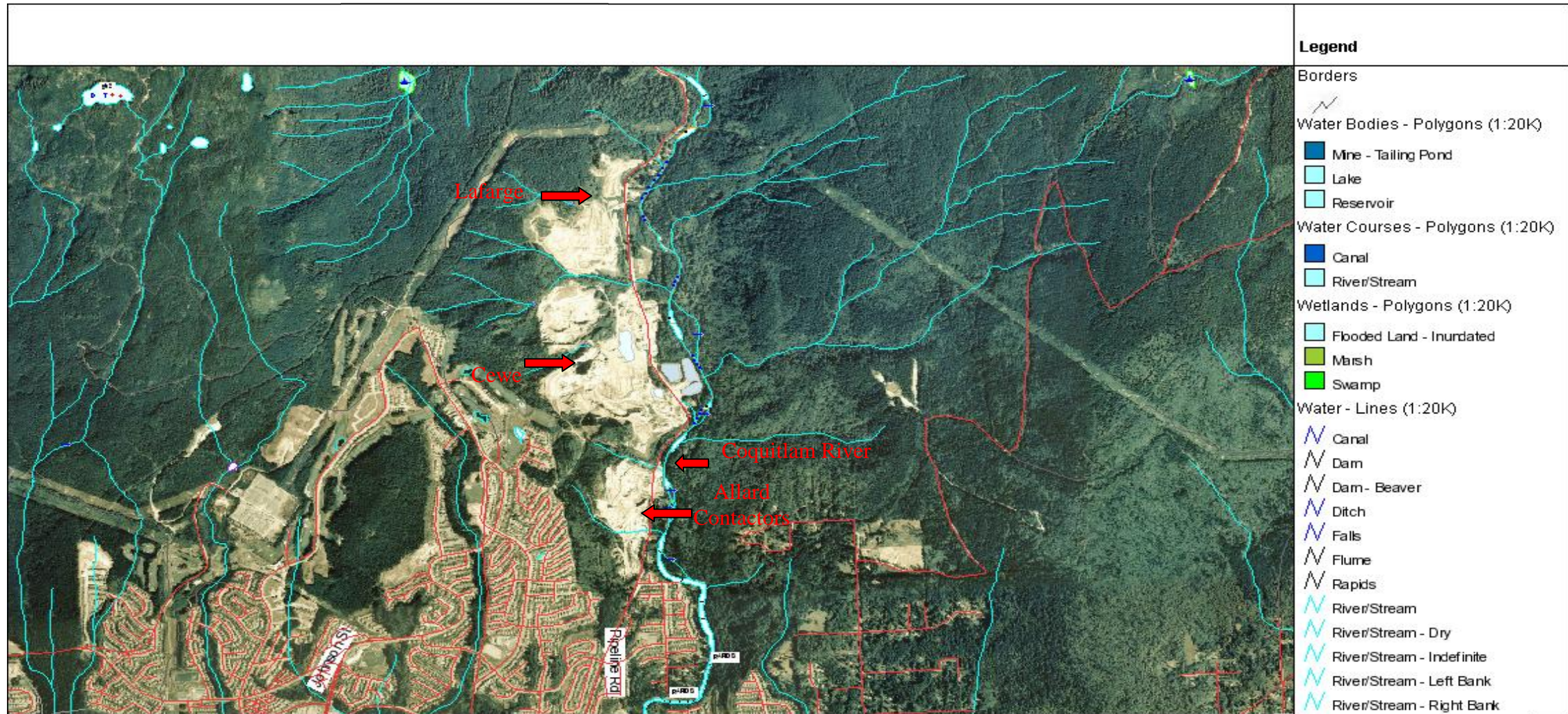
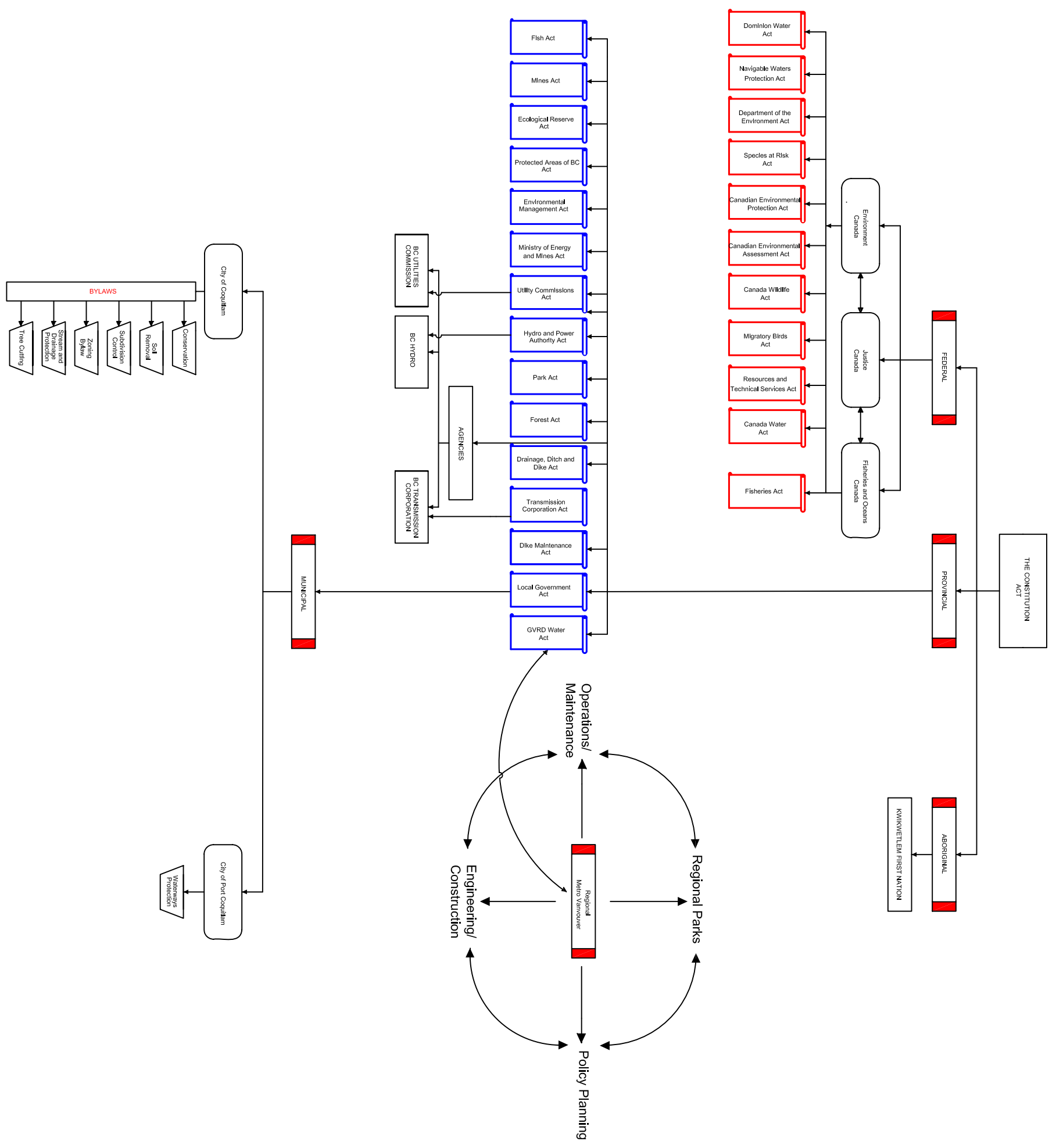


Figure 2. Location of present day mining operations. Referenced from Mapster (DFO) - Aerial Photograph 1999.

Appendix A



TITLE	GOVERNANCE ACCOUNTABILITY FRAMEWORK
PROJECT	LIVING RIVERS - COQUITLAM RIVER RESEARCH & STAKEHOLDER ENGAGEMENT
CLIENT	CITY OF COQUITLAM - KWIKWETLEM FIRST NATIONS
PROJECT NO.	0100
DATE	APRIL 2008
DRAFT	MB
DESIGN	
CHECK	JH
DWG	JH
REVISIONS	
	1 OF 1



CITY OF COQUITLAM



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Table 1
Management Issues Framework Chart: Coquitlam River Watershed

			Water Quality	Flow	Rec. Boat Use	Rec. Fish Use	Development	Mining	Transportation	Dike Mngmt.	Monitoring	Fish/Fish Habitat	Wildlife	Forest/Vegetation	Enhancement	Enviro Protection
Municipal	City of Port Coquitlam	Waterways Protection Bylaw														
	City of Coquitlam	The Conservation Bylaw														
		The Soil Removal Bylaw														
		The Subdivision Control Bylaw														
		The Stream and Drainage Protection Bylaw														
		The Tree-cutting Bylaw														
Regional	Metro Vancouver	Water Act														
		Local Government Act														
Provincial	Ministry of Energy and Mines	Ecological Reserve Act														
		Protected Areas of British Columbia Act														
		Environmental Management Act														
		The Ministry of Energy and Mines Act														
		Fish Protection Act														
	Ministry of Environment	Mines Act														
		Forest Act														
		Park Act														
	Ministry of Transportation	Utilities Commissions Act														
		Drainage, Ditch, and Dike Act														
	Ministry of Forests	Local Government Act														
		Transmission Corporation Act														
Hydro and Power Authority Act																
Federal	Fisheries and Oceans Canada	Constitution Act														
		Fisheries Act														
		Canada Water Act														
	Environment Canada	Dominion Water Power Act														
		Navigable Waters Protection Act														
		Species at Risk Act														
		Canadian Environmental Protection Act														
	Justice Canada	Canada Wildlife Act														
		Migratory Birds Convention Act														
		Resources and Technical Surveys Act														
		The Department of the Environment Act														
Aboriginal	Kwkwetlem First Nation	The Constitution Act														
Agencies	BC Hydro	Hydro and Power Authority Act														
	BC Utilities Commission	Utilities Commissions Act														
	BC Transmission Corporation	Transmission Corporation Act														

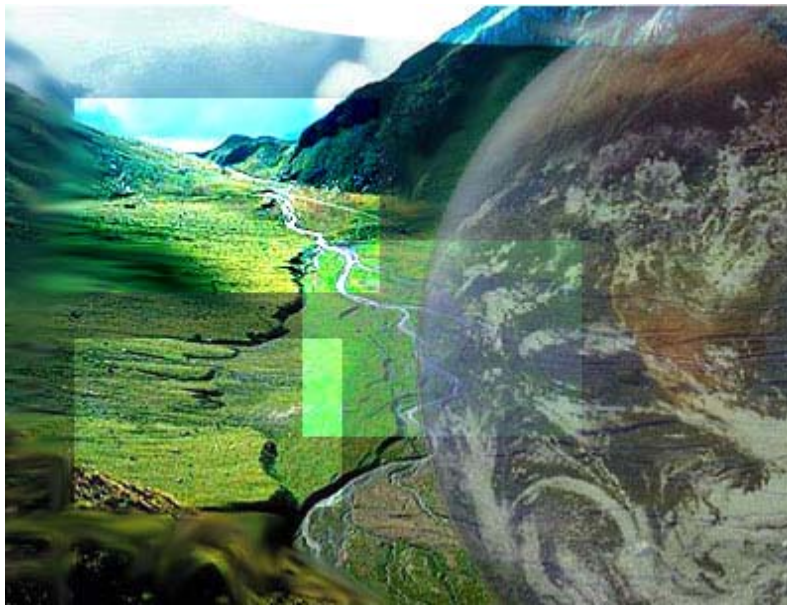


Appendix B

Appendix C

*Fraser Salmon and Watersheds Program – Living Rivers
Project
Coquitlam River Stakeholder Engagement Phase I*

Environmental Legislation and the Coquitlam River Watershed



Prepared for: The City of Coquitlam and Kwikwetlem First Nation

**Funding provided by: The Pacific Salmon Foundation
Additional funding provided by Fisheries and Oceans Canada**

Prepared by: Jahlie Houghton, JR Environmental

April 2008



Oceans, Habitat
and Enhancement



THE CITY OF COQUITLAM



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Preface

This document has been prepared to provide a foundation upon which a governance and accountability framework structure can be based, in relation to the management of the Coquitlam River watershed. It is intended to be a tool and a working document for those who seek insight on government legislation as it pertains to the watershed, and not as a literal and/or legal reference. Most legislations overlap in one form or another, and some are more relevant than others. We hope this can assist in the clarification of what are often ambiguous jurisdictions and statutes. As the latter are continuously being amended, this document will also be subject to amendments.

The Federation of Canada

Departments of Environmental Jurisdictions

There is seemingly ample federal legislation pertaining to the management of our environment, some of which pertains directly to the management of the Coquitlam River watershed. The departments that share responsibility (not necessarily equally) for jurisdictions overseeing the latter, are discussed below.

Fisheries and Oceans Canada¹

Mandate:

On behalf of the Government of Canada, DFO is responsible for developing and *implementing policies and programs* in support of Canada's scientific, ecological, social and economic interests in oceans and fresh waters.

DFO is a national and international leader in marine safety and in *the management of oceans and freshwater resources*. Departmental activities and presence on Canadian waters help to ensure the safe movement of people and goods. As a sustainable development department, DFO will integrate environment, economic and social perspectives to ensure Canada's oceans and freshwater resources benefit this generation and those to come.

¹ [Welcome to Fisheries and Oceans, Pacific Region | Bienvenue au Pêches et Océans Canada, Région du Pacifique](#)

The Department's *guiding legislation includes* the Oceans Act, which charges the Minister with leading oceans management and providing coast guard and hydrographic services on behalf of the Government of Canada, and *the Fisheries Act*, which confers responsibility to the Minister for the management of fisheries, habitat and aquaculture.

Vision:

Excellence in service to Canadians to ensure the *sustainable development and safe use of Canadian waters*.

Mission:

The mission of DFO employees is to deliver to Canadians the following outcomes:

- Safe and Accessible Waterways;
- Healthy and Productive Aquatic Ecosystems; and
- Sustainable Fisheries and Aquaculture.

In working toward these outcomes, the Department will be guided by the principles of sound scientific knowledge and effective management.

Justice Canada²

Mandate:

The Department of Justice has a dual mandate. This mandate derives from the dual role of the Minister of Justice who is also the Attorney General of Canada.

In support of the Minister of Justice, the Department is responsible for providing *policy and program advice and direction through the development of the legal content of bills, regulations and guidelines*. In support of the Attorney General, the Department is responsible for *prosecuting federal offences* across Canada, including drug offences, litigating civil cases by or on behalf of the federal Crown, and for providing legal advice to federal law enforcement agencies and other government departments.

Vision:

The Mission of the Department of Justice is to:

- support the Minister of Justice in working to *ensure that Canada is a just and law-abiding society* with an accessible, efficient and fair system of justice;

² [Department of Justice - The Department](#)

- provide *high-quality legal services and counsel to the government* and to client departments and agencies; and
- promote *respect for rights and freedoms*, the law and the Constitution.

Environment Canada³

Mandate:

Environment Canada's mandate is to *preserve and enhance* the quality of the natural environment, *including water, air and soil quality; conserve* Canada's *renewable resources*, including migratory birds and other non-domestic flora and fauna; conserve and protect Canada's *water resources*; carry out meteorology; enforce the rules made by the Canada - United States International Joint Commission relating to boundary waters; and *coordinate environmental policies and programs* for the federal government (Department of Environment Act).

Vision:

Environment Canada's vision is to see a Canada where people make *responsible decisions about the environment*, and where the environment is thereby sustained for the benefit of present and future generations

Mission:

Environment Canada's mission is to make *sustainable development a reality* in Canada by helping Canadians live and prosper in an environment that needs to be respected, protected and conserved.

Federal Legislation

The health of the Coquitlam River watershed relies upon the proper management of many elements that come together to create both a vital ecosystem, as well as a sustainable community. Due to the complex interconnectivity of these elements and their reliance upon one another for success, it is not only water quality that requires attention, but also socio-economics and politics on which a community is founded; plant, fish, and wildlife ecology; and mineralogy and hydrogeology. The enactments summarized below allow for an examination of legislation pertaining to these elements.

³ [The Green Lane: Mandate, Vision and Mission](#)

The Constitution Act, 1982

Constitutional Act, 1982

The purposes of the Constitution Act as it relates to the management of the Coquitlam River watershed, is to elucidate the rights of the Aboriginal peoples, specifically Kwikwetlem First Nation, and integrate their authoritative position into a governance framework. As such, the Constitution Act discusses the following:

- Commitment to participation in constitutional conference;
- Aboriginal and treaty rights are guaranteed equally to both sexes;
- Land Claim Agreements;
- Definition of "aboriginal peoples of Canada"; and
- Recognition of existing aboriginal and treaty rights.

Fisheries Act (R.S., 1985, c. F-14)

Fisheries Act

The Fisheries Act as it pertains to the Coquitlam River's siltation issues, states that, "a person shall not deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water. The enactment provides information on sustainable fishing techniques, further prohibitions, and the rights of a fishery officer.

The Canada Water Act (R.S., 1985, c. C-11)

Canada Water Act

The Canada Water Act as it pertains to the environmental issues on the Coquitlam River, speaks largely to the prohibition of the deposition of waste of any type in any type of waters. It also provides that it is under the minister's jurisdiction to assist with the promoting of the formation of committees, policies, and programs at the intergovernmental level.

Dominion Water Power Act (R.S., 1985, c. W-4)

Dominion Water Power Act

The Dominion Water Act speaks to the legal land ownership rights of a public area used for water power. This may be indirectly correlated with land ownership rights and rights of way implications at the Coquitlam River Reservoir (Coquitlam River Lake and home of BC Hydro Dam).

Navigable Waters Protection Act (R.S., 1985, c. N-22)

[Navigable Waters Protection Act](#)

The Navigable Waters Act speaks largely to obstruction of a watercourse by a vessel, as well as safety of a watercourse, where the passing of watercrafts in a watercourse is concerned. In this respect, giving notice to the Minister and signalling appropriately is the legislated procedure.

Species At Risk Act (2002, c.29)

http://www.sararegistry.gc.ca/approach/act/sara_e.pdf

The purposes and/or potential duties of the Minister of this Act are to:

- prevent Canadian indigenous species, subspecies, and distinct populations from becoming extirpated or extinct;
- provide for the recovery of endangered or threatened species;
- encourage the management of other species to prevent them from becoming at risk;
- create prohibitions which protect listed threatened and endangered species and their critical habitat; and
- recognize that compensation may be needed to ensure fairness following the imposition of the critical habitat prohibitions.

Canadian Environmental Protection Act (1999)

http://www.ec.gc.ca/CEPAREgistry/the_act/Download/cepa99_0307.pdf

The purposes, and/or potential duties of the Minister, of this Act are to:

- provide for research and the creation of inventories of data;
- provide for new powers for enforcement officers and analysts appointed by the Ministry of Environment to enforce the law;
- provide mechanisms for the resolution of a contravention through compliance orders;
- provide specifics regarding criteria in order to determine an offence; and
- enable rights for Canadians to participate in the decision-making on environmental matters where federal government is not enforcing the law.

Canada Wildlife Act (R.S., 1985, c. W-9)

[Canada Wildlife Act](#)

The purposes and/or potential duties of the Minister of this Act are to:

- Allow for the creation, management, and protection of wildlife habitat for the conservation of wildlife, the interpretation of wildlife, and associated research activities.
- Allow for preservation of habitats that are critical to migratory birds and other wildlife species, particularly those that are at risk;
- Impart prohibitions on all activities that could be harmful to species and to their habitat, unless a permit is issued indicating the permitted activity.

Migratory Birds Convention Act, 1994 (1994, c. 22)

[Migratory Birds Convention Act, 1994](#)

The purpose of this act is to:

- protect and conserve migratory birds — as populations and individual birds — and their nests.

Prohibitions of this act include:

- possession of a migratory bird or nest;
- the purchasing, selling, or trading of a migratory bird or nest;
- the deposition of a substance in waters or areas which are frequented by migratory birds;
- the deposition of a substance in waters or areas which are frequented by migratory birds that could become harmful to migratory birds;
- destroying of documentation regarding an issue which falls under this Act; and
- the provision of false statements regarding issues which fall under this Act.

Resources and Technical Surveys Act, R.S.C. 1985, c. R-7

[CanLII - Fédéral - R.S.C. 1985, c. R-7 - Resources and Technical Surveys Act](#)

The purposes and/or potential duties of the Minister of this Act are to:

- collect and publish statistics of the mineral exploration, development and production and of the mining and metallurgical industries of Canada, and such data regarding the economic minerals of Canada as relate to the processes and activities connected with their utilization, and collect and preserve records of mines and mining works in Canada;
- make the chemical, mechanical, metallurgical and other researches and investigations that are necessary or desirable to carry out the purposes and

provisions of this Act and particularly to aid the mining and metallurgical industry of Canada;

- prepare and publish the maps, plans, sections, diagrams, drawings, documents and data that are necessary to illustrate and elucidate any reports of investigations and surveys made pursuant to this Act;
- be responsible for the coordination, promotion and recommendations of national policies and programs with respect to energy, mines and minerals, water and other resources;
- formulate plans for the conservation, development and use of the resources specified in this Act by the following methods:
 - cooperating with the provinces and with municipalities.
 - entering into agreements with any person or body, including the government of any province or any department, branch or agency of such a government, and
 - making grants and contributions and providing other forms of financial assistance.

Canadian Environmental Assessment Act (1992, c. 37)

[Canadian Environmental Assessment Act](#)

The purposes and/or potential duties of the Minister of this Act are to:

- ensure that projects are considered in a careful and precautionary manner before federal authorities take action in connection with them, in order to ensure that such projects do not cause significant adverse environmental effects;
- encourage responsible authorities to take actions that promote sustainable development and thereby achieve or maintain a healthy environment and a healthy economy;
- ensure that responsible authorities carry out their responsibilities in a coordinated manner with a view to eliminating unnecessary duplication in the environmental assessment process;
- promote cooperation and coordinated action between federal and provincial governments with respect to environmental assessment processes for projects;

- promote communication and cooperation between responsible authorities and Aboriginal peoples with respect to environmental assessment;
- ensure that projects that are to be carried out in Canada or on federal lands do not cause significant adverse environmental effects outside the jurisdictions in which the projects are carried out; and
- ensure that there be opportunities for timely and meaningful public participation throughout the environmental assessment process.

The Department of the Environment Act (R.S., 1985, c. E-10)

Department of the Environment Act

The purposes, and/or potential duties of the Minister, of this Act are to:

- Preserve and enhance quality of the natural environment, including water, air and soil quality, renewable resources, migratory birds and other non-domestic flora and fauna;
- Facilitate the coordination of policies and programs of the Government of Canada respecting the preservation and enhancement of the quality of the natural environment. This is to include the initiation of, recommendations for, and the undertaking of such programs; the promotion and encouragement of the institution of practices and conduct leading to the better preservation and enhancement of environmental quality, and cooperation with provincial governments or agencies thereof, or any bodies, organizations or persons, in any programs having similar objects; and the advising of the heads of departments, boards and agencies of the Government of Canada on all matters pertaining to the preservation and enhancement of the quality of the natural environment.

Programs discussed above are designed to:

- promote the establishment or adoption of objectives or standards relating to environmental quality, or to control pollution;
- ensure that new federal projects, programs and activities are assessed early in the planning process for potential adverse effects on the quality of the natural environment and that a further review is carried out of those projects, programs, and activities that are found to have probable

significant adverse effects, and the results thereof taken into account;
and

- provide to Canadians environmental information in the public interest.

Kwkwetlem First Nation⁴

The following introduction to The Kwkwetlem First Nation and their objectives can be found on their website (refer to footnote 4).

“Kwkwetlem First Nation, in respect of our traditional territory, culture and our membership, are creating the environment that promotes a higher quality of life for our membership. We are committed to transparency, responsibility, financial accountability, and social, health, education, and economic development.”

For legislative information regarding rights of Kwkwetlem First Nation, and their standing on the management of the Coquitlam River watershed, refer to The Constitution Act, 1982 S.35, discussed under *Federal Legislation*. Kwkwetlem has not signed a treaty agreement with the federal government of Canada.

The Province of British Columbia

Provincial legislation pertaining to the management of our environment, in particular the Coquitlam River watershed, include many jurisdictions. The departments who oversee these jurisdictions are examined below.

Ministry of Environment⁵

Mandate:

Legislation is the foundation upon which government delivers its programs and services. Significant legislation that drives the ministry’s mission and programs includes:

- the *Environmental Assessment Act*;

⁴ [Home-Kwkwetlem](#)

⁵ [Environment - Province of British Columbia](#)

- the *Protected Areas of British Columbia Act*;
- the *Environmental Management Act*;
- the *Integrated Pest Management Act*;
- the *Wildlife Act*;
- the *Water Act*; and
- the *Park Act*.

Vision:

A clean, healthy and naturally diverse environment.

Mission:

Lead, inform, involve and support British Columbians to achieve the best environmental stewardship and sustainability.

Ministry of Energy, Mines and Petroleum⁶

Vision:

Thriving, safe, environmentally responsible and competitive energy, mining and petroleum resource sectors, which contribute to the economic growth and development of communities in British Columbia.

Mission:

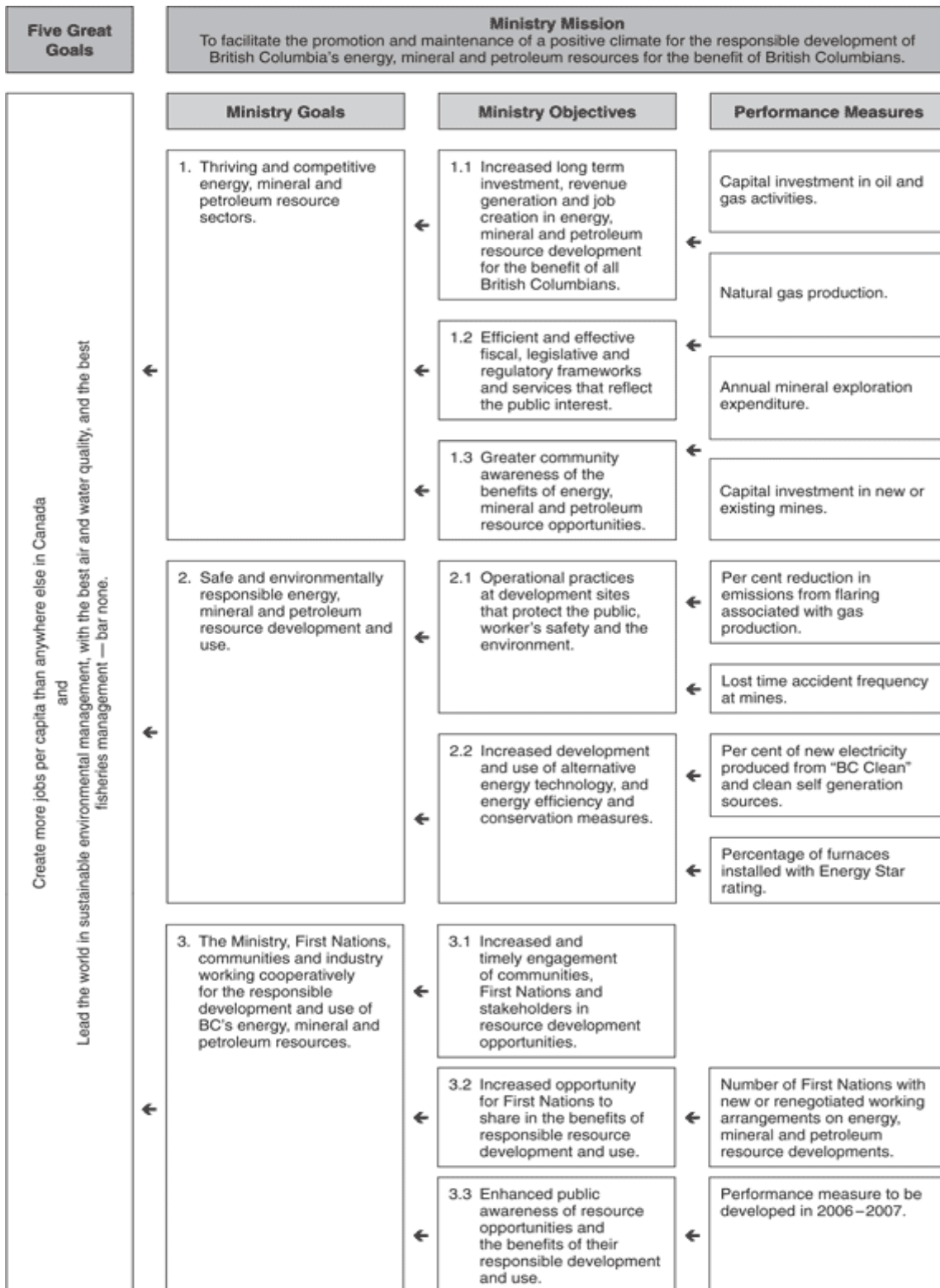
To facilitate the promotion and maintenance of a positive climate for the responsible development of British Columbia's energy, mineral and petroleum resources for the benefit of British Columbians.

Values:

The following values define the Ministry of Energy, Mines and Petroleum Resources' corporate culture and position it to achieve its Service Plan goals and objectives.

The Ministry of Energy, Mines and Petroleum has created a Ministry Performance Plan Summary Table (2006/7-2008/9) which summarizes their current goals, objectives, and measures (Refer to Table 1).

⁶ [Energy, Mines and Petroleum Resources - Province of British Columbia](#)



Ministry of Transportation⁷

Mandate:

The Ministry of Transportation plans transportation networks, provides transportation services and infrastructure, develops and implements transportation policies, and administers many transportation-related acts and regulations.

Vision:

The Ministry's vision is a fully integrated transportation system that advances environmental, economic and social objectives, and moves goods and people safely within British Columbia and to markets beyond.

Mission:

The Ministry's mission is to:

- Create an integrated and safe transportation network that incorporates all modes of transport, reflects regional priorities and provides a strong foundation for economic growth; and
- Maintain and improve the provincial highway system, ensuring the safe and efficient movement of people and goods provincially, nationally and internationally.

Ministry of Forests⁸

Mandate:

Building a strong and diverse forest sector through revitalization, while maintaining high environmental standards, will help ensure long-term jobs and economic benefits.

The Ministry of Forests 2008/09 Service Plan and Accountability Statement of the Minister speaks to the mitigation of environmental and economical impacts of the mountain pine beetle on forests and communities. It further discusses the addressing of climate change by the reduction of emissions and the increase of energy efficiency. Refer to the footnote and link for the detailed Service Plan.

⁷ [Transportation - Province of British Columbia](#)

⁸ [Forests and Range - Province of British Columbia](#)

Provincial Agencies

BC Utilities Commission⁹

Mandate:

The British Columbia Utilities Commission is an independent regulatory agency of the Provincial Government that operates under and administers the Utilities Commission Act. The Commission's primary responsibility is the regulation of British Columbia's natural gas and electricity utilities. The Commission also regulates intra-provincial pipelines and universal compulsory automobile insurance.

BC Hydro¹⁰

Water and Fish Habitat

BC Hydro is committed to protecting fish and their habitat through initiatives that limit the impact of our operations near reservoirs, rivers and streams.

The organization uses a strict set of operating and reporting rules called an environmental management system to reduce impacts on fish and wildlife. They also identify, monitor and record the impacts on fish throughout the hydroelectric system and work to limit these.

With a hydroelectric-based system, a number of factors can affect fish in their natural habitats that BC Hydro mitigates through various programs.

At Reservoirs

At our reservoirs, changes in water levels can affect the spawning cycles of certain species of fish. As well, changes in plant life and nutrient levels can have an impact on the food chain. Typically, the slower moving water found in reservoirs can trap nutrients important to fish survival. To mitigate this, BC Hydro has used fertilization programs to help maintain the production of fish food and sustain fish populations.

At Dams

Dams can also alter the natural habitat of fish by stopping them from moving upstream to reach their spawning grounds. Fish moving downstream can be drawn through water intakes that also put their survival at risk. BC Hydro uses different

⁹ [Welcome to the British Columbia Utilities Commission](#)

¹⁰ [BC Hydro - For Generations](#)

methods to help fish safely bypass our installations. Fish ladders and screens have been built at certain facilities to allow fish to travel upstream or downstream of dams. Where water flows affect fish, we undertake downstream enhancement projects, such as placing gravel in riverbeds to avoid fish strandings, creating spawning areas, and installing woody debris to help to improve fish habitat. The Upper Columbia White Sturgeon Recovery Initiative is just one example of a collaborative venture involving BC Hydro and other concerned groups working together to research and monitor the Columbia white sturgeon, and protect its habitat.

Near Power lines

Where vegetation near streams must be cleared to ensure the safety and reliability of power lines, fish living in these areas are impacted by the decrease in shade and cover which are important for their survival. Using a comprehensive vegetation management process, BC Hydro considers terrain, climate and soil stability to prescribe a method to clear vegetation effectively which will protect fish and their spawning, resting and hiding areas.

Water Use Planning

The Water Use Planning process helps us take many of these fish and habitat concerns into account when deciding how to find a balance between competing uses of water that is environmentally, socially, and economically acceptable to all British Columbians. BC Hydro also sponsors three fish and wildlife programs for the Columbia, Peace-Williston and Bridge Coastal watersheds.

BC Transmission Corporation (BCTC)¹¹

Vision:

As an independent electric transmission company, BCTC is globally recognized for the innovative and sustainable approach to serving their customers.

Mission:

BCTC is BC's independent electric transmission company, ensuring fair and open access to the grid and creating value and new opportunities for their customers and stakeholders by providing safe, reliable and cost-effective transmission services.

¹¹ [Welcome to BCTC: British Columbia Transmission Corporation](#)

Provincial Legislation

Ecological Reserve Act [RSBC 1996] CHAPTER 103

[Ecological Reserve Act](#)

The purposes, and/or potential duties of the Lieutenant Governor in Council, of this Act are to:

- Reserve Crown land for ecological purposes, including the following areas:
 - areas suitable for scientific research and educational purposes associated with studies in productivity and other aspects of the natural environment;
 - areas that are representative examples of natural ecosystems in British Columbia;
 - areas that serve as examples of ecosystems that have been modified by human beings and offer an opportunity to study the recovery of the natural ecosystem from modification;
 - areas where rare or endangered native plants and animals in their natural habitat may be preserved;
 - areas that contain unique and rare examples of botanical, zoological or geological phenomena.
- Establish an area of Crown land as an ecological reserve;
- declare the name by which the ecological reserve is to be known;
- add to, cancel in its entirety or delete any portion of an ecological reserve;

- The Lieutenant Governor in Council may, by order, add to an ecological reserve referenced in Schedule A or B of the Protected Areas of British Columbia Act;
- Except as permitted by subsection (4), the boundaries of an ecological reserve referenced in Schedule A or B of the *Protected Areas of British Columbia Act* must not be affected except by an Act of the Legislature.

Protected Areas of British Columbia Act [SBC 2000] CHAPTER 17

[Protected Areas of British Columbia Act](#)

The primary purpose of this Act is to distinguish between the protected areas in British Columbia including parks, ecological reserves, conservancies, and to delineate boundaries.

Environmental Management Act [SBC 2003] CHAPTER 53

Environmental Management Act

The purposes and/or potential duties of the minister of this Act extend to any matter relating to the management, protection and enhancement of the environment including, but not limited to, the following matters:

- planning, research and investigation in relation to the environment;
- development of policies for the management, protection and use of the environment;
- planning, design, construction, operation and maintenance of works and undertakings for the management, protection or enhancement of the environment;
- providing information to the public about the quality and use of the environment;
- preparing and publishing policies, strategies, objectives, guidelines and standards for the protection and management of the environment;
- preparing and publishing environmental management plans for specific areas of British Columbia which may include, but need not be limited to, measures with respect to the following:
 - flood control, flood hazard management and development of land that is subject to flooding;
 - drainage;
 - soil conservation;
 - water resource management;
 - fisheries and aquatic life management;
 - wildlife management;
 - waste management;
 - air management.

Prohibitions related to the mismanagement of the above-mentioned are legislated in this enactment.

The Ministry of Energy and Mines Act [RSBC 1996] CHAPTER 298

Ministry of Energy and Mines Act

The purpose and/or duties of the Ministry are:

- to prepare and develop comprehensive policies on energy, mineral and petroleum resources in British Columbia, and to make reports and recommendations for their implementation;
- to initiate and carry out any investigation, research, study or inventory respecting mineral and petroleum resources, and on energy facilities and future requirements for British Columbia;
- to collect and circulate the information acquired;
- to administer Acts and regulations discharge other duties assigned to the minister by the Lieutenant Governor in Council;
- to regulate all mining activity;
- to establish energy services for ministries of the government, and for that purpose to obtain from them information about their projects, programs and requirements involving energy.

Mines Act RSBC [1996], CHAPTER 293

Mines Act

The Mines Act speaks specifically to the management of mines. Relevant pieces of this enactment to the management of the Coquitlam River watershed include, but are not limited to, the following:

- Compliance and enforcement protocol;
- The responsibility to adhere to inspection rights of the Minister; and
- The mandatory production of mine plans that are updated every three months.
- It is the responsibility of the owner, agent or manager to ensure compliance with this Act, orders issued under it, the regulations and the **code**.

Forest Act [RSBC 1996] CHAPTER 157

[Table of Contents - Forest Act](#)

The Forestry Act regulates the management of BC's forests and imposes various cutting thresholds, without which nearby environment could be adversely impacted. Offences and penalties are issued for infractions.

Park Act [RSBC 1996] CHAPTER 344

[Park Act](#)

The Park Act regulates the management of BC Parks and imposes restrictions and prohibitions to mitigate both the mis-management of, as well as the preservation of, a park area.

Utility Commissions Act [RSBC 1996] CHAPTER 473

[Utilities Commission Act](#)

The Utilities Act speaks to right of ways where utility development may intersect or run along municipal points of interest. Environmental jurisdictions are not discussed in this enactment.

Drainage, Ditch and Dike Act [RSBC 1996] CHAPTER 102

[Drainage, Ditch and Dike Act](#)

This act serves to discern duties of governing bodies and staff involved; identify tax allocation; and largely govern all legalities concerning drainage, ditch and dike right of ways.

Dike Maintenance Act [RSBC 1996] CHAPTER 95

[Dike Maintenance Act](#)

The purpose of this Act is to regulate the authority of a dike inspector, the dike maintenance, and the protocol for undertaking dike maintenance.

Local Government Act [RSBC 1996] CHAPTER 323

Local Government Act

The purposes of this Act are:

- to provide a legal framework and foundation for the establishment and continuation of local governments to represent the interests and respond to the needs of their communities;
- to provide local governments with the powers, duties and functions necessary for fulfilling their purposes;
- to provide local governments with the flexibility to respond to the different needs and changing circumstances of their communities.

Transmission Corporation Act, Bill 39 – 2003

BILL 39 -- 2003: TRANSMISSION CORPORATION ACT

This enactment speaks largely to the differentiating of and between closely related enactments and jurisdictions (Utilities Commission, Hydro and Power Authority, etc) where the authority lies with overlapping statutes, as well as the designation of agreements.

Hydro and Power Authority Act [RSBC 1996] CHAPTER 212

Hydro and Power Authority Act

This enactment speaks largely to where authority lies with the government agent and overlapping statutes. It also discusses the designation of agreements and resolutions, as well as land access rights and/or expropriation.

Fish Protection Act

BILL 25 -- 1997: FISH PROTECTION ACT

The Fish Protection Act focuses on four major objectives. These include the following items:

- ensuring sufficient water for fish;
- protecting and restoring fish habitat;
- improved riparian protection and enhancement; and
- and stronger local government powers in environmental planning.

The Region of Greater Vancouver

The Coquitlam River watershed falls within the regional boundary Lower Fraser Basin that is managed on a regional scale by Metro Vancouver. Two significant components of the watershed that Metro Vancouver oversees are the Colony Farm Park (located at the mouth of the Coquitlam River) and the Coquitlam Lake Reservoir (located approximately 18 kilometres upstream of the Fraser River and provides Greater Vancouver with its drinking water supply).

Metro Vancouver¹²

Metro Vancouver oversees 21 municipalities and Electoral Area A, otherwise known as Greater Vancouver. Their commitment is to:

- delivering essential utility services, such as drinking water, sewage treatment, recycling and garbage disposal, economically and effectively on a regional basis
- maintaining and enhancing the quality of life in our region by managing and planning growth and development and protecting air quality and green spaces.

Through Metro Vancouver, each member municipality has a say in how the region is run. The GVRD, GVWD and GVSDD Boards of Directors comprise mayors and councillors from the member municipalities on a “representation by population” basis.

Regional Legislation

Part I, Section 5 of the Local Government Act illustrates the purposes of a regional government as follows:

- providing good government for its community;

¹² [Metro Vancouver - Welcome!](#)

- providing the services and other things that the board considers are necessary or desirable for all or part of its community;
- providing for stewardship of the public assets of its community; and
- fostering the current and future economic, social and environmental well-being of its community.

Refer to the Local Government Act for regional government jurisdiction.

Water Act

Water Act

Under the *Water Act* the province owns, and has the right to use and to receive the flow of, all water flowing in a natural watercourse (ie. rivers, streams, lakes, swamps, etc.) anywhere in the province.

Water Licences are required for just about any use of water, including but not limited to:

- Storing and diverting water for irrigation purposes;
- Construction and operation of hydro-electric power generation projects;
- Construction and maintenance of dams for any purpose;
- Collection and sale of water; and
- Diversion of water for industrial purposes.

The Water Act, in addition to regulating water use, places restrictions on any actions that alter the water body in some significant way, even if the water is not actually “used”. Examples might include culverts, bridges, shoring up of stream banks, removing vegetation inside the stream or stream channel, etc.

Engineers appointed under the Water Act can (amongst other powers):

- Order any person to remediate changes made to a stream;
- Regulate and make orders regarding the use of water;

- Order a person not to put (or to cease putting) any thing into water; and
- Order a person to remove from a stream any thing he or she has permitted to enter the water.

This enactment oversees offences and violations pertaining to the latter. Appeals are accepted for government decisions regarding any items related to the Water Act.

Municipal Government

City of Coquitlam¹³

Vision:

Coquitlam's goal is to build a City of Choice, where people choose to live, work and play, and it has developed strategic plans to help achieve this vision.

These plans include the Citywide Official Community Plan, the Financial Plan and the Corporate Strategic Plan. The Corporate Strategic Plan has identified 17 goals which contribute to the City's vision.

Mission (By Department):

- Provide exceptional service to enable Council, staff and the public to achieve their goals;
- Provide corporate leadership and service realize organizational values and support to Council's vision for the community;
- Provide a wide scope of emergency services, fire prevention and educational programs designed to protect lives and property from the adverse effects of fire, sudden medical emergencies or exposure to dangerous conditions created by people or nature;

¹³ [City of Coquitlam](#)

- Work with the community to create and support leisure and parks opportunities that encourage healthy lifestyles;
- Committed to excellence in public works;
- Working together to plan and develop a safe and desirable community; and
- The Coquitlam RCMP Detachment, proud of its traditions and confident in its ability to meet future challenges, is committed to preserving the peace, upholding the law and providing quality police service in partnership with our communities.

Bylaws

The Conservation Bylaw No. 2454, 1994

The purpose of this bylaw is to:

- regulate or prohibit, or require the holding of a permit for the removal of soil from, and the deposit of soil or other material on, any land in the municipality or any area of the municipality; and
- impose rates or levels of fees for the removal or deposit of soils or the application and issuance of a permit.

The bylaw discusses the enforcement rights of a municipal bylaw officer. Refer to the Soil Removal Bylaw.

The Soil Removal Bylaw No. 1914, 1988

The purpose of this bylaw is to regulate the application/approval process for permitting where soil removal is concerned by imposing permitting stipulations.

Subdivision Control Bylaw No. 3558, 2003

This bylaw stipulates design criteria for construction. As they pertain to the health of the Coquitlam River watershed, included in the criteria are *storm water design* and *sediment control plans* as regulated by the Storm Water Manual and the Stream and Drainage System Protection Bylaws, respectively. Federal and provincial permitting prerequisites are discussed.

Stream and Drainage System Protection Bylaw No. 3447, 2001

This bylaw:

- prohibits the discharge of any substance which is a "hazardous product", "contaminant", "toxic substance", "deleterious substance", "special waste", "dangerous good" or "reportable substance" that is identified or described in or

defined by any applicable statute, regulation or law, including the Fisheries Act R.S.C. 1985 or the Waste Management Act R.S.B.C. 1996, c.482, which, if introduced into the drainage system, would foul it; or

- any sediment, rock, gravel, sand, clay, silt, sediment, earth, construction or excavation wastes, cement, concrete, or other substances which, when introduced into the drainage system, will at the entry point, result in *total suspended solids in excess of 75 mg/L above background levels or a pH value outside of the range 6.5 to 8.0*.
- Stipulates that a developer follow the development guidelines of Schedules A and B of this bylaw.
- Stipulates erosion and Sediment control Plan criteria.

Tree-cutting Bylaw No. 3855, 2007

This bylaw is to regulate the conservation, removal and replacement of trees in the City of Coquitlam.

City of Port Coquitlam¹⁴

Mission:

Our Mission is to work with our citizens to create a healthy, vibrant and caring community through:

- Visionary leadership and accountable governance.
- Citizen involvement.
- Balancing the expectation for services with available resources.
- Decision-making that integrates the social, economic and environmental interests of the community.
- Quality in customer service.

Vision:

Port Coquitlam will aspire to be a complete community, unique because of its traditional, small-town atmosphere and its strong sense of pride, and where:

¹⁴ [City of Port Coquitlam Official Website](#)

- Citizens have a collective sense of belonging and contribute to the quality of life in the community.
- The community celebrates a vibrant culture and heritage.
- The environment is nurtured for present and future generations.
- A dynamic economy contributes to prosperity and the opportunity to work close to home.
- Planned development strengthens the character of the community, helping to create safe and affordable neighbourhoods.

Waterways Protection Bylaw No. 917¹⁵

A bylaw to prohibit the fouling, obstructing or impeding the flow of any stream, creek, waterway, watercourse waterworks, ditch, drain or sewer within the City. The bylaw discusses offences and penalties.

¹⁵ http://www.portcoquitlam.ca/_shared/assets/0917 - Water Ways Protection56.pdf

Appendix D

Coquitlam River Research and Stakeholder Engagement: Government, Steward, and Stakeholder Contact List

GOVERNMENTAL ORGANIZATIONS				
Fisheries and Oceans: Oceans, Habitat and Enhancement Branch				
Division/Branch	Name/Title	Address	Contact Info	Involvement
Oceans, Habitat and Enhancement Branch	Tom Cadieux Habitat Partnership Coordinator	100 Annacis Parkway, Unit 3 Delta, BC V3M 6A2	Cell: 604-220 3455 Fax: 604-666-6627 E-mail: tom.cadieux@dfo-mpo.gc.ca	Sits in Phase I & II Group; Stakeholder; Steward; Funding, Managed Chilliwack Initiative
	Matt Foy Community Advisor/Support Biologist		Cell: 604-329-1194 Work: 604-666-3678 E-mail: matt.foy@dfo-mpo.gc.ca	
	Maurice Coulter-Boisvert Community Advisor - North Side North Fraser		Cell: 604-690-1870 Work: 604-666-2870 E-mail: coulter-boisvertm@pac.dfo-mpo.gc.ca	
	Dale Patterson, Manager		Work: 604-666-0315 E-mail: dale.patterson@dfo-mpo.gc.ca	Sits on CRAC
	Al Jonson, Habitat Engineer			Sits on CRAC
	Corino Salomi Section Head		Work: 604-666-8712 E-mail: corino.salomi@dfo-mpo.gc.ca	Sits on CRAC
Kwikwetlem First Nations:				
<i>Key Contact</i>	Craig Orr, Environmental Advisor	2-65 Colony Farm Road Coquitlam, BC V3C 5X9	Cell: 604-809-2799 Work: 604-936-9474 Fax: 604-936-5150 E-mail: corr@telus.net	PhD; Watershed Watch Founder; Sits on Phase I Group; Represents Kwikwetlem
<i>Additional Contacts</i>	Nancy Joe Archaeologist		Work: 604-540-0680 E-mail: George and Nancy - jam_jam60@hotmail.com Glen Joe - ggkway@shaw.ca General - kwikwetlem@shaw.ca	Members of the Kwikwetlem First Nation
	George Chafee Councillor			
Glen Joe, Fishery Resource Manager				

Ministry of Environment (MOE): No Key Contact at this Time				
	Ross Neuman Section Head Ecosystems Environmental Stewardship	10470 – 152 Street Surrey, BC V3R 0Y3	Work: 604-582-5229 Fax: 604- 930-7119 E-mail: Ross.Neuman@gov.bc.ca	Sits on CRAC
	Brian Clark			
	Rob Knight		Work: 604-582-5317	USHP Coordinator (Funding for CR Atlas)
BC Hydro				
	Dave Hunter Alf Leake	6911 Southpoint Drive 12 th Floor Vancouver, BC V3N 4X8	E-mail: Dave.Hunter@bhydro.com Alf.Leake@bhydro.com	Involved in the Water Use Plan (WUP)
	Charlotte Bemister Community Relations Coordinator	6911 Southpoint Drive 12 th Floor Vancouver, BC V3N 4X8	Work: 604-528-2354 Fax: 604-528-362 E-mail: Charlotte.Bemister@bhydro.com	Sits on CRAC
Ministry of Energy, Mines and Petroleum Resources				
Mining and Minerals	Ed Taje, Health and Safety		Bus: 250-952-0732 Fax: 250-952-0491 Eddy.Taje@gov.bc.ca	Sits on CRAC
Metro Vancouver				
Regional Utility Planning	Derek Bonin, Superintendent Watershed Planning	4330 Kingsway Burnaby, BC V5H 4G8	derek.bonin@metrovancover.org Bus.:604-432-6415 Fax: 604-436-6970	WUP
Utility Analysis and Environmental Management Division	Andrew Marr Senior Engineer	4330 Kingsway Burnaby, BC V5H 4G8	Bus: 604- 436-6807 andrew.marr@metrovancover.org	Sits on CRAC
City of Coquitlam				
Corporate Planning	Jennifer Wilkie, Manager	3000 Guildford Way Coquitlam, BC V3B 7N2		Funding Coordinator; Project Manager for Phase I – until July 2008

Parks and Environmental Services	Dave Palidwor, Park Planning Design and Construction Manager		Bus: 604-927-3546 Fax: 604-927-3545 dpalidwor@coquitlam.ca	Sits on Phase I & II Work Group;
Parks and Natural Areas	Lanny Englund, Urban Forestry Operations Manager		Bus: 604-927-3661 Fax: 604-927-6589 lenglund@coquitlam.ca	Sits on Phase I & II Work Group;
Planning and Development	Margaret Birch, Environmental Services Coordinator		Bus: 604-927-3483 Fax: 604-927-3405 mbirch@coquitlam.ca	Sits in Phase I & Work Group; Project Manager for Phase II
Utility Operations	Dana Soong, Manager		Bus: 604-933-6207 Fax: 604-933-6229 dsoong@coquitlam.ca	Phase II Group Member
Utility Operations	Mike Carver, Manager		Bus: 604-933-6203 Fax: 604-933-6229 mcarver@coquitlam.ca	Phase I Group Member
City of Port Coquitlam				
	Allen Jensen	2580 Shaughnessy St Port Coquitlam, BC V3C 2A8	Bus: 604-927-5424 JensenA@portcoquitlam.ca	Sits on CRAC
INDUSTRY				
Allard Contractors				
	Jim Allard	PO Box 47 Port Coquitlam, BC V3C 3V5	Bus: 604-944-2556 Fax: 604-464-7794 jtallard@telus.net	Local Gravel Mine Representative ;Sits on CRAC
Jack Cewe Ltd.				
	George Turi, General Manager	Box 1100 1850 Hillside Ave Coquitlam, BC V3J 6Z7	Bus: 604-523-3277 Fax: 604-526-4296 gturi@cewe.com	Local Gravel Mine Representative ;Sits on CRAC
Coquitlam Sand and Gravel/Lafarge				
	Tom Vanichuk	3239 Lancaster Street, Port Coquitlam, BC V3C 3J9	Bus: 604-941-5701 Fax: 604-941-6502 vantom@telus.net	Local Gravel Mine Representative ;Sits on CRAC
ENVIRONMENTAL STEWARDS				
Burke Mountain Naturalists	Ian McArthur, President;	940 Stanton Avenue, Coquitlam	Ian – 604-939-039 imcart@telus.net Elaine: 604-937-3483	

	Elaine Golds, President, Colony Farm Park Ass.	V3J 4V2	egolds@sfu.ca normadk@telus.net	
Como Watershed Group	Pamela Zevit, Director	PO Box 47531, 236- 9855 Austin Ave., Port Coq V3K 6T3	604.939.0523 cwg@vcn.bc.ca	
Coquitlam River Watershed Society	Eunice Hodge, Co-chair Sherry Carroll	Suite 508- 34A-2755 Lougheed Hwy, POCO, V3B 5Y9	604-464-0004 eholdge@shaw.ca	Sherry Carroll, is CRWS representative on CRAC
Coquitlam River Watch	Ian McArthur, Director (Above)	940 Stanton Avenue, Coquitlam V3J 4V2	Ian – 604-939-4039 imcart@telus.net	
Hoy/Scott Watershed Society (Fish Hatchery)	Tim Tyler, President Niall Williams	Princess Crescent, Coquitlam V3E 1R7	tdtoolman@shaw.ca 604-927-6536	
Hyde Creek Watershed Society	Ted Wingrove, President	1091 Spruce Avenue, POCO V3B 5T9	604-941-2176 hydecreekws@telus.net	
Institute of Urban Ecology	Tracy Vleeming, Education Coordinator	PO Box 2503 New Westminster V3L 5B2	604.527.5522 iue@douglas.bc.ca	
Maple Creek Streamkeepers	Dianne Ramage, Chair	2714 Goldstream Crescent, Coquitlam V3C 5G5	604-464-1099 dramage@shaw.ca	
North Fraser Salmon Assistance Project	Tony Matahija, President	#502-1199 Eastwood Street, Coquitlam, V3B 7W7	604-710-0581 antonm@smart.com	Past president of CRWS, WUP, NFSAP
Port Coquitlam and District Hunting and Fishing Club (Hatchery)	Vance Reach	Box 78051 Pipeline Road, POCO V3B 7H5	604-464-3371 vance.reach@telus.net	
River Springs Hatchery	John Jakse	1269 River Drive Coquitlam V3H 1N7	604-464-4179 jjakse@shaw.ca	
Rivershed Society of BC	Fin Donnelly, Executive Director	#201 – 1190 Pipeline Road, Coquitlam, V3B 7T9	604-941-5937 fin@rivershed.com	Councillor City of Coquitlam

**Coquitlam River Watershed Research and Community
Interest Group Initiative:**
Government, Steward, and Community Interest Questionnaire:

- 1) How long have you been associated with this group? What has your involvement been with the group?
- 2) What are the key contributions your group has offered, past and/or present, in regards to the community and/or ecosystem which fall within the Coquitlam River Watershed?
- 3) Is there documentation from your group that would be critical to the greater understanding of your position, and thus, to the project?
- 4) What are the key issues that concern your group at this time? What are the major obstacles to these issues?
- 5) What do you think are viable solutions to these concerns?
- 6) Would you say you are optimistic or not that we will be able to achieve our project goal - that is - governance structure to improve decision making in the watershed?
- 7) Would a representative from your group be willing to participate content, research and dialogue on a Coquitlam River website?

THE COQUITLAM RIVER – YOUR RIVER – MOVING FORWARD

Our mandate would go here and be as long as we need it to be. It could be a couple of lines or even just one line. Whatever it needs to be.

[Home](#) [The CR Watershed](#) [Watershed Atlas](#) [Events](#) [Community Groups](#) [Contact Us](#)

- References
- Communication Blog
- Photos
- Links



WATERSHED NEWS

Some example text.

The Jackson Zoo has a new baby.

An 87-pound female giraffe was born Monday before an audience of schoolchildren on field trips.

She was born to parents Diamond and Casper and was almost immediately diagnosed with weak flexor tendons in both hind legs.

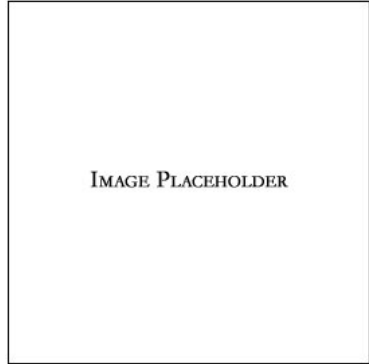
"We were very concerned when we noticed how the calf was standing," said Animal Curator Dave Wetzel in a news release. "It looked very odd, but she did not seem to be in any pain."

The infant has undergone a thorough veterinary exam with lab work and x-rays. Her hind legs have been bandaged to prevent abrasions and infection.

"The keeper staff has truly rallied around our new bundle of joy," said Zoo Director Beth Poff. "They are doing absolutely everything possible to give her the best possible chance to remain healthy and to develop properly."

She is Diamond's sixth offspring.

All three giraffes are on exhibit now.



THE COQUITLAM RIVER – YOUR RIVER – MOVING FORWARD

Our mandate would go here and be as long as we need it to be. It could be a couple of lines or even just one line. Whatever it needs to be.

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IMAGE PLACEHOLDER

WATERSHED NEWS

Some example text.

The Jackson Zoo has a new baby.

An 87-pound female giraffe was born Monday before an audience of schoolchildren on field trips.

She was born to parents Diamond and Casper and was almost immediately diagnosed with weak flexor tendons in both hind legs.

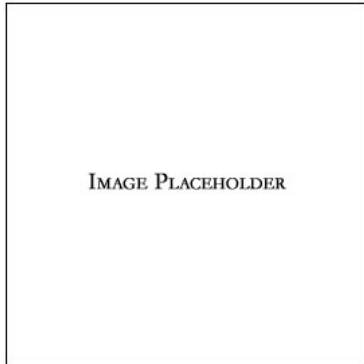


IMAGE PLACEHOLDER

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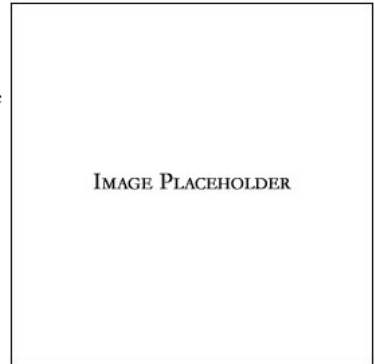


IMAGE PLACEHOLDER