



CITY OF SURREY

# SALMON HABITAT RESTORATION PROGRAM

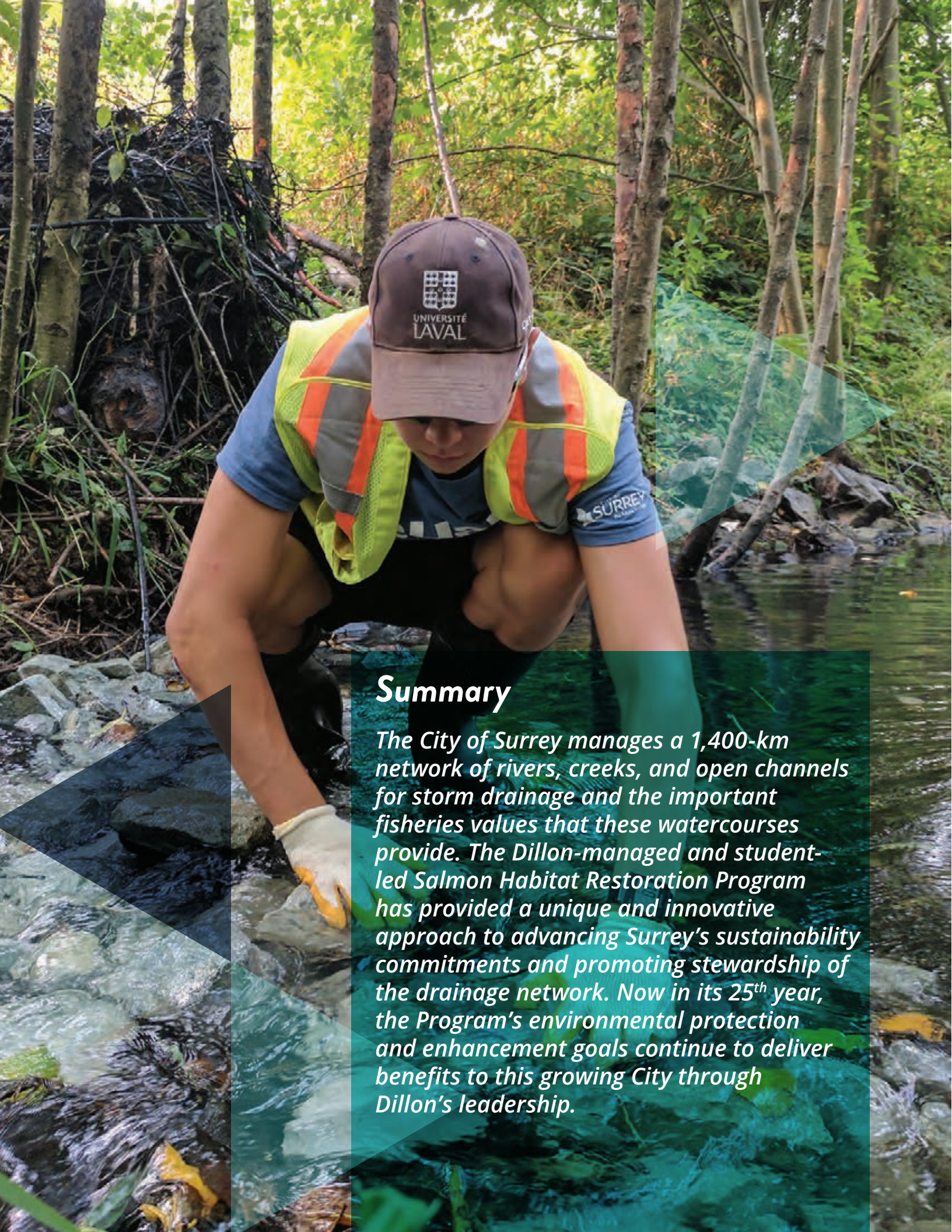
CATEGORY E:  
NATURAL RESOURCES, MINING,  
INDUSTRY, ENERGY

CANADIAN CONSULTING  
**engineer**



ASSOCIATION OF CONSULTING  
ENGINEERING COMPANIES | CANADA  
ASSOCIATION DES FIRMES  
DE GÉNIE-CONSEIL | CANADA





## Summary

*The City of Surrey manages a 1,400-km network of rivers, creeks, and open channels for storm drainage and the important fisheries values that these watercourses provide. The Dillon-managed and student-led Salmon Habitat Restoration Program has provided a unique and innovative approach to advancing Surrey's sustainability commitments and promoting stewardship of the drainage network. Now in its 25<sup>th</sup> year, the Program's environmental protection and enhancement goals continue to deliver benefits to this growing City through Dillon's leadership.*

## Innovation

In 1996, the Salmon Habitat Restoration Program (SHaRP) was initiated as a unique and innovative approach to contributing to the management of Surrey's open channel drainage infrastructure. Rapid urbanization throughout the City was challenging conveyance capacity of the drainage network and the integrity of its salmon-bearing reaches. Traditional responses, including enclosure and armouring, conflicted with City sustainability goals and fish habitat protection legislation. A broader, more natural, ecosystem approach to basic management actions was identified to support conventional engineering solutions to peak attenuation, channel restoration and fish habitat management, with implementation delivered annually by teams of post-secondary and Surrey secondary school students under the management of a Consulting Engineering firm (Dillon Consulting Limited).

As a summer student program, SHaRP is considered particularly innovative given its reliance on a workforce of post-secondary (Team Leaders) and local secondary students (Crew Members) employed by a third party to deliver a key component of the City's environmental enhancement program. Also novel is the City's fundamental requirement that all students employed be provided with technical training and career-oriented experience to build capacity and establish stewardship principles of local youth. Since 1996, teams ranging from 8 to 40+ students have participated in the annual

Program with over 665 students hired to-date. Positions on the annual Program continue to be highly sought after.

Early objectives of SHaRP focused on traditional channel restoration techniques using riprap but quickly expanded to incorporate innovative and forward-thinking approaches such as bioengineering and watershed-level perspective. With Surrey's progressive leadership, components of SHaRP evolved to address watershed restoration on a holistic level including agricultural stewardship, riparian zone management and the engagement and education of the community including local industries. Further innovation has come with the addition of a Media and Public Relations team charged with heralding the events and good works of SHaRP through local media outlets and formats and involved in the development of educational materials for distribution through SHaRP. Importantly, the City has established a sustainable source of internal funding that is annually supplemented by external Partners to ensure the Program's continuance.

Surrey's SHaRP Program is widely recognized by British Columbia and Canadian municipalities as a unique and innovative approach to successfully promoting and achieving environmental stewardship and management of the City's natural assets. Dillon has had the sincere pleasure of serving as the Program Manager and the City's Partner for the delivery of SHaRP since 1996.







Complexity

SHaRP addresses the complexity of managing Surrey’s open channel drainage network in several ways. Many of these channels continue to provide productive spawning and rearing habitat for species of Pacific salmon and other fish and aquatic life. As such, federal and provincial legislation and regulations apply to proposed interventions required to maintain the City’s drainage standards. In-water drainage works are typically subject to regulatory review and, often, approval which can add to a project’s timeline and cost. SHaRP has provided a unique and effective delivery option for the City’s annual routine instream works program by streamlining regulatory demands. Through SHaRP, the City relies on Dillon’s technical and regulatory expertise to secure appropriate project approvals from environmental regulators and to guide and oversee the implementation of riparian and

instream habitat creation and enhancement by student labour forces. Approvals are streamlined, temporal and financial costs are minimized, technically-appropriate solutions are effectively constructed, and environmental regulators are supportive of SHaRP’s capabilities and track record.

The locations of channel reaches and fish habitat impacted by aggressive flow conditions from Surrey’s urbanization are often challenging to access. Operating as an extension of the City’s Works Department, the SHaRP team regularly undertakes channel works in ravines and other sensitive areas where access is difficult and where significant habitat and private property impacts would result if traditional restoration approaches were used. The small army of the SHaRP Team’s hands-on manual labour force provides a less invasive and very effective means to restoring channels in these “hard-to-get-to” places.



Social and/or Economic Benefits

Since its inception, a principal goal of SHaRP has been the creation of employment and career-oriented training for Surrey youth. Now entering its 25<sup>th</sup> year, SHaRP has provided direct employment to over 665 students with the majority of those students being City of Surrey residents. The SHaRP Program’s important element of career-oriented training and experience in environmental management and community stewardship creates both direct social and economic benefits through the promotion of higher education and pursuit of careers as professionals. Over the years, 10 former SHaRP students have secured full-time employment with Dillon and we are aware that many other Program Alumni have leveraged their SHaRP experience for careers in professional services, government, education, and other environmental industries.

With environmental stewardship also at the heart of SHaRP’s goals, Program participants, their school peers, their teachers and their families have embraced ownership of the stewardship principle as their fundamental responsibility as a Surrey resident or business owner. Annual community and industrial awareness and education campaigns delivered with assistance from the Program’s Media and Public Relations team have succeeded in highlighting the City’s key environmental management concerns and changing the perspectives and actions of Surrey residents and businesses. Over the past 24 years, SHaRP has hosted or participated in over 1000 community based events, day camps, library programs, and school presentations. Over 24,200 educational brochures and flyers have been distributed and over 9,000 businesses and homeowners contacted directly. A staggering 254,000 stewardship hours have been invested through SHaRP since 1996.





## Environmental Benefits

Significant environmental benefits of SHaRP to Surrey watersheds have been realized by City residents, businesses, visitors, environmental regulators, and City Management. Since 1996, “hands on” restoration and revitalization of natural areas has occurred at over 2,625 locations across the City including:

- ▶ The collection and removal of hundreds of truckloads of garbage and debris;
- ▶ Removal of thousands of truckloads of invasive plants and replacement with over 99,700 native plants;
- ▶ Fencing projects completed in collaboration with dozens of local farmers to manage livestock access to watercourses;
- ▶ Stabilization and replanting of multiple kilometres of streambanks; and
- ▶ Construction of over 140 in-stream weirs and placement of over 130 tonnes of spawning gravel.

Additionally, environmental stewardship has been firmly planted in the psyche of many Surrey residents and business owners through SHaRP’s commitment to community engagement and education. The marking of 5,500 storm drains throughout the City, the distribution of over 24,000 brochures to home owners and businesses, and the annual collection of workers sporting SHaRP’s hallmark shirts with yellow fish provide ongoing reminders of the Surrey public’s responsibility to manage and protect the environmental health of the City’s open water channels.

By aligning SHaRP’s unique assets with the City’s economic, social and environmental goals, the City has established a sustainable funding source for SHaRP that advances their corporate commitments to sustainability. Capital dollars that previously may have been directed to contractors are now invested into the community through the employment of Surrey youth engaged in long-term environmental stewardship.

## Meeting Client’s Needs

Twenty-five years ago this month, Surrey Engineering Department staff challenged Dillon engineers and biologists to embark on a unique journey with them in delivering a new and innovative approach to managing the harmful impacts of urbanization on their drainage network. That year, Dillon hired and managed a team of eight students to stabilize eroding channel banks and restore degraded fish habitat in two Surrey creeks. From those humble beginnings, the program has thrived and evolved into a City-wide, watershed-based initiative delivered by over 665 students that promotes environmental sustainability and generates invaluable economic, social, and environmental benefits to the City and its residents.

Dillon has provided crucial management and diverse technical expertise for the effective and safe delivery of the annual program over all 25 years. Through learning and continuous improvement, Dillon’s Program Management

team have sought out, hired, and supervised cohorts of talented post-secondary and secondary school students. Dillon’s technical teams have developed and delivered diverse career-oriented training programs to meet the City’s unique priorities of each annual program. In close collaboration as the City’s Program-delivery Partner, Dillon has pursued innovative approaches to apply each year to improve project quality, enhance participant experience, and increase value to the City and its residents. Now in its 25<sup>th</sup> year, SHaRP continues to be resoundingly supported by Surrey Mayors and Councils and the model, longevity, and legacies of the Program continue to be unique to Canadian municipalities with Dillon continuing to lead and be recognized for the ongoing success of Program delivery.







CANADIAN ■ CONSULTING  
engineer



ASSOCIATION OF CONSULTING  
ENGINEERING COMPANIES | CANADA  
ASSOCIATION DES FIRMES  
DE GÉNIE-CONSEIL | CANADA