

File No.: 04-1000-20-2024-125

June 18, 2024

s.22(1)

Dear s.22(1)

Re: **Request for Access to Records under the Freedom of Information and Protection of Privacy Act (the "Act")**

I am responding to your request of February 23, 2024 under the ***Freedom of Information and Protection of Privacy Act*** for:

Record of all proposals that the City received in response to RFP PS20220102-VBPR-RFP ("Consulting Service for Stanley Park Forestry Initiatives" opened on April 10, 2022), including the successful proposal from B.A. Blackwell & Associates Ltd. Date range: April 10, 2022 to December 31, 2022.

All responsive records are attached. Some information in the records has been severed (blacked out) under s.13(1), s.15(1)(l), s.21(1), s.22(1), and s.22(3)(d) of the Act. You can read or download these sections here:

http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/96165_00.

Under section 52 of the Act, and within 30 business days of receipt of this letter, you may ask the Information & Privacy Commissioner to review any matter related to the City's response to your FOI request by writing to: Office of the Information & Privacy Commissioner, info@oipc.bc.ca or by phoning 250-387-5629.

If you request a review, please provide the Commissioner's office with: 1) the request number (#04-1000-20-2024-125); 2) a copy of this letter; 3) a copy of your original request; and 4) detailed reasons why you are seeking the review.

Yours truly,

Kevin Tuerlings, FOI Case Manager, for

[Signed by Kevin Tuerlings]

Cobi Falconer, MAS, MLIS, CIPP/C
Director, Access to Information & Privacy
cobi.falconer@vancouver.ca
453 W. 12th Avenue Vancouver BC V5Y 1V4

If you have any questions, please email us at foi@vancouver.ca and we will respond to you as soon as possible. Alternatively, you can call the FOI Case Manager at 604-871-6584.

Encl. (Response package)

:pm



WORKING TO MAKE A DIFFERENCE

Assessment Department	Location	Clearance Section
Mailing Address	6951 Westminster Highway	Telephone 604 244 6380
PO Box 5350	Richmond BC	Toll Free within Canada
Station Terminal	V7C 1C6	1 888 922 2768
Vancouver BC V6B 5L5	www.worksafebc.com	Fax 604 244 6390

City of Vancouver
453 West 12th, Ave.
VANCOUVER, BC V5Y 1V4

October 31, 2022

Person/Business : B.A. BLACKWELL & ASSOCIATES LTD
Account number : 459893

This letter provides clearance information for the purposes of Section 258 of the Workers Compensation Act.

We confirm that the above-referenced firm is active, in good standing, and has met WorkSafeBC's criteria for advance clearance. Accordingly, if the addressee on this letter is the prime contractor, the addressee will not be held liable for the amount of any assessment payable for work undertaken by the above-referenced firm to January 01, 2023.

This firm has had continuous coverage with us since July 01, 1991.

Employer Service Centre
Assessment Department

Clearance Reference # : C133503416
CLRAAA

For more information about Section 258 and clearance letters visit WorkSafeBC.com

Please refer to your account number in your correspondence or when contacting the Assessment Department.
To alter this document constitutes fraud.

DECLARATION OF SUPPLIER CODE OF CONDUCT COMPLIANCE

Complete this Declaration of Supplier Code of Conduct Compliance in the form set out below.

All proposed suppliers are to complete and submit this form to certify compliance with the supplier performance standards set out in the Supplier Code of Conduct.


The City of Vancouver expects each supplier of goods and services to the City to comply with the supplier performance standards set out in the City's Supplier Code of Conduct (SCC) <<https://policy.vancouver.ca/AF01401P1.pdf>>. The SCC defines minimum labour and environmental standards for City suppliers and their subcontractors.

Suppliers are expected to comply with the aforementioned standards upon submitting a tender, proposal, application, expression of interest or quotation to the City, or have a plan in place to comply within a specific period of time. The City reserves the right to determine an appropriate timeframe in which suppliers must come into compliance with these standards. To give effect to these requirements, an authorized signatory of each proposed vendor must complete the following declaration and include this declaration with its submission:

As an authorized signatory of B.A. Blackwell & Associates Ltd. (*vendor name*), I declare that I have reviewed the SCC and to the best of my knowledge, B.A. Blackwell & Associates Ltd. (*vendor name*) and its proposed subcontractors have not been and are not currently in violation of the SCC or convicted of an offence under national and other applicable laws referred to in the SCC, other than as noted in the table below (*include all violations/convictions that have occurred in the past three years as well as plans for corrective action*).

Section of SCC / title of law	Date of violation /conviction	Description of violation / conviction	Regulatory / adjudication body and document file number	Corrective action plan

I understand that a false declaration and/or lack of a corrective action plan may result in no further consideration being given to the submission of B.A. Blackwell & Associates Ltd. (*vendor name*).

Signature:  _____

Name and Title: Bruce Blackwell, Principal

**CONSULTING SERVICES FOR STANLEY PARK
FORESTRY INITIATIVES
TECHNICAL PROPOSAL**

Request for Proposals No. PS20220102-VBPR-RFP

Due: November 1, 2022, 3:00 pm PDT

Submitted by:

**Bruce Blackwell
B.A. Blackwell & Associates Ltd.
270 – 18 Gostick Place
North Vancouver, BC V7M 3G3
Ph: 604-986-8346 ext. 201 (o)/ 604-351-1876 (c)
Email: bablackwell@bablackwell.com**

Submitted to:

**Jing Fan, Buyer and Members of the Evaluation
Committee
City of Vancouver
Submitted via City of Vancouver Supplier Portal**

B.A. BLACKWELL AND ASSOCIATES LTD.

270 – 18 Gostick Place, North Vancouver, B.C. V7M 3G3

Telephone: (604) 986-8346 Fax: (604) 986-8246

www.bablackwell.com

November 1, 2022

Jing Fan and Members of the Evaluation Committee

City of Vancouver

453 West 12th, Ave.


Vancouver, B.C.

Dear Jing Fan and members of the Evaluation Committee,

Please accept our proposal to provide consulting services for Stanley Park Forestry Initiatives. We have carefully read and examined the Request for Proposal (RFP) PS20220102-VBPR-RFP and have conducted such other investigations as were prudent and reasonable in preparing this proposal. We have prepared our technical and price proposals using best estimates given numerous unknowns and are committed to working with the Park Board as the project develops to meet their requirements.

Thank you for your consideration of our proposal. Elements of this proposal are negotiable so please do not hesitate to contact us to discuss adjustments to the methodology, schedule, or proposed budget, or if you require further information. We look forward to hearing from you.

Sincerely,



Bruce A. Blackwell, M.Sc., R.P. Bio, R.P.F.

Principal, B.A. Blackwell & Associates Ltd. and Primary Contact Person

bablackwell@bablackwell.com



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1.0 EXECUTIVE SUMMARY

B.A. Blackwell & Associates Ltd. (Blackwell) provides the necessary breadth and depth of experience to deliver the range of services required to assess and mitigate the impacts of the current and projected hemlock looper infestation in Stanley Park, working in collaboration with the City of Vancouver Park Board. We have proposed a highly qualified team with expertise in wildfire management, urban forestry and urban forest planning, arboriculture and tree risk, forest health, silviculture, urban forestry operations and site supervision, and geomatics. Our team includes eight Registered Professional Foresters, a Registered Professional Biologist, two ISA Certified Arborists, and three individuals with TRAQ endorsement. Subconsultant Chartwell Resource Group Ltd. is included on our team exclusively to deliver visual impact assessment services. Blackwell is the lead proponent and all other services will be completed in-house by Blackwell.

We have a history of working successfully with the City of Vancouver and have a broad portfolio of project work that demonstrates our expertise in managing projects of similar scope and complexity. This includes our contributions to the success of the Stanley Park windstorm restoration and development of a wildfire response plan for the park. We have also completed recent and highly relevant work in other areas of Metro Vancouver to assess and mitigate hemlock looper impacts and associated wildfire risk in areas with high public use and complex site considerations. This is complemented by extensive related project work in wildfire risk reduction, restoration/forest health management, tree risk assessment and mitigation in BC municipalities, in all project stages, from assessment and treatment planning, through management of treatment contracts and works completion in urban green spaces and parks.

In our proposal, we outline a work plan to complete the project in three stages within the two-year contract term, with completion of the final report in stage 1 by the Park Board's preferred timeline (end of March 2023). Our proposed work plan and approach will address project challenges, some unique to Stanley Park. Additionally, our familiarity with the advanced progression of the hemlock looper infestation on the North Shore, our experience developing and applying effective assessment methodologies and treatment strategies, as well as past work on the Stanley Park wildfire response plan and related modeling will provide efficiency and add value to our approach. Our team is committed to an iterative process and open communication lines to ensure project success.



2.0 PROPONENT OVERVIEW

B.A. Blackwell and Associates Ltd. (Blackwell) was established in 1988 and incorporated in BC in 1991. The firm provides integrated forestry and environmental consulting services to a wide range of government, First Nation, and private sector clients. Consulting services are provided in wildfire management, forest health, ecological mapping and classification, forest development planning, silviculture, strategic planning, urban forestry and urban policy, research, and education. The firm has been involved in a wide range of complex and integrated projects over the past 34 years. Bruce Blackwell (owner and principal of the firm) and Blackwell's five professional associates form the core management team supported by over 20 professional and technical staff, including a highly experienced administrative team.

Blackwell has been working with communities and municipal governments to manage urban forests and develop strategic plans for the last twenty-five years. Blackwell's urban forestry expertise includes site-level operations to high level strategic planning. Our firm has completed operational tree inventories and arborist assessments, management plans for green spaces and parks, restoration planning and planting strategies, canopy cover analyses, reviews and development of municipal bylaws, policies and procedures, and has reviewed and advised on urban forest operations delivery. Blackwell's Project Team includes members with extensive operational experience in many aspects of urban forest management. We have applied expertise in tree removals, urban tree establishment, tree maintenance, tree protection, tree health care and risk management, urban trees and municipal/utilities infrastructure, park and natural areas management, and asset and workflow management to develop practical, integrated, and science-based management solutions grounded in the current best management practices.

Blackwell's urban forestry expertise is complemented by our three decades of industry leading experience in wildfire management, silviculture, forest health, and forest ecology. We have successfully planned and delivered multi-year wildfire risk reduction, silviculture (including reforestation), restoration, and terrestrial ecosystem mapping programs, including extensive work for municipal clients. Through past and ongoing work in assessing hemlock looper (and phantom hemlock looper) including annual surveys for the Ministry of Forests, recent assessments in Metro Vancouver regional parks and watersheds, and past assessments of historic outbreak in a Metro Vancouver watershed, we are intimately familiar with the cycle of the infestation (current and historic), treatment options (including mitigation of wildfire risk), and current and past successes. In short, Blackwell provides the necessary expertise to integrate tree risk, and forest, and fire management to support the Park Board in managing the impacts of the hemlock looper and associated wildfire risk in Stanley Park.

Blackwell played a major role in the high-profile restoration of Stanley Park following the 2006 windstorm in assessment, planning, and mitigation phases of the project. Blackwell contributed to the Stanley Park Windstorm Restoration Plan and developed the 2007 Wildfire Response Plan. We coordinated operations for blowdown cleanup and park restoration, developed prescriptions and planting plans and coordinated multidisciplinary consultants. Additional responsibilities included coordination of meetings and workshops with staff and complex stakeholder groups consisting of expert committee, Park Board and Council; coordination of public consultation and approval of the plan; on-site post-windstorm and post-



restoration information tours; and pre- and post-treatment monitoring based on defined criteria and indicators developed through stakeholder and expert consultation. Our proposed Project Team includes several individuals who contributed to the windstorm restoration. This corporate and individual experience and familiarity with Stanley Park's forest and unique management considerations add value to the services we can provide.

Following is a summary of our history of successes as they relate to this RFP (including our past successes in working with the City of Vancouver):

- **Over 120 community wildfire protection and wildfire resiliency plans** (CWPPs and CWRPs) completed throughout BC, from field assessment of wildfire risk to strategic recommendations for prevention, mitigation, and response. Recent examples include plans for the Tsawwassen First Nation, City of Coquitlam, and Resort Municipality of Whistler (2021), City of North Vancouver and District of Mission (2020), and District of North Vancouver, District of West Vancouver and City of Maple Ridge (2019). Blackwell has provided ongoing implementation of plan recommendations for several of these clients.
- **Wildfire risk modeling and mitigation strategies from the site level to provincial level** for government, utilities and private clients. Examples include wildfire risk assessment for the Stanley Park wildfire response plan; wildfire risk assessment and management frameworks for Metro Vancouver regional parks, BC Hydro's provincial transmission and distribution system (2004 and 2019); and development of a provincial wildfire risk assessment and management framework in collaboration with the Ministry of Forests and BC Wildfire Service building on a pilot study (2021-present).
- **Wildfire risk reduction treatment planning, prescriptions, and implementation** - Project work has been completed in highly complex and/or high use urban interface environments including municipal parks and regional parks, Burns Bog, and BC Parks. At the site-specific level, our firm has completed fuel management prescriptions in all types of ecosystems and varied terrain and has dealt with complex overlapping and often conflicting values and environmental considerations (i.e., wildlife habitat, species at risk, forest health, windthrow hazard, geotechnical issues, sensitive areas, cultural resources, riparian sites, sensitive soils, high public use, etc.). We have also developed and implemented operational fuel management programs on small to large scales for communities/sites across BC, including a \$1.6 million tri-regional fuel management program in the west Kootenays, from planning and prescription development to fuel treatment project management and contract administration. Blackwell has managed or is currently managing multi-year wildfire risk reduction programs for several municipalities including the Resort Municipality of Whistler, District of Squamish, District of West Vancouver, District of North Vancouver, and District of Mission.
- **Urban forest strategies** (UFS) have been developed for the Village of Harrison Hot Springs (2022), City of Kelowna (2013), and City of London, ON UFS (2104). Preliminary analysis, background review and advisory services were provided in support of the City of Penticton UFS (2015). Additionally, in 2013 through 2014, Blackwell led a multidisciplinary team to support development



of the City of Vancouver Urban Forest Strategy recommendations and goals and additional related work tasks (phase 1 of the UFS).

- **Urban forest policy review** and expert advisory services have been provided to the City of Vancouver, City of Coquitlam, City of Maple Ridge, and Resort Municipality of Whistler regarding tree risk policy, tree cutting bylaws and/or environmental management in natural areas and environmentally sensitive areas. In 2014 Blackwell conducted a review and developed recommendations for Vancouver’s tree risk management policy, program, procedures and practices. This project included a gap and workflow analysis to ensure an efficient and effective system in achieving risk management objectives on City properties.
- **Urban forest operations** – through our work on Stanley Park windstorm restoration combined with work on the City of Vancouver’s geospatial street tree inventory, phase 1 of the UFS, and associated consultation with Park Board staff and senior leadership, we have a good understanding of Vancouver Park Board urban forest operations. Blackwell conducted a review of urban forestry operations for the City of London, ON (2014) including extensive staff interviews and developed recommendations for a viable and cost-efficient delivery of municipal forestry operations services. We have worked with a wide range of BC municipal urban forestry departments over the past several decades.
- **Tree inventories and arborist/tree risk assessments and management.** Assessments have been completed for municipalities, utilities, BC Parks, and private clients, including for popular trail systems. Examples include:
 - City of Colwood i-Tree Eco analysis (2022);
 - Inventory/tree risk assessments along Whistler’s Valley Trail network, the Village Stroll, and other areas in the community including categorization of trees by risk class, providing recommendations and treatments for each tree, and layout and supervision of danger tree treatments as required (annually or biannually 2007-2021);
 - Tree Risk and Windthrow Assessment for the Austin Works Yard Expansion project for the City of Coquitlam. Work included tree protection recommendations along forest edges, and alignment of a new pathway network to retain as many new trees as possible (2022);
 - Windthrow hazard assessment utilizing formal ISA tree risk assessment (TRAQ) of City of Coquitlam-owned Streamside Protection and Enhancement Areas (SPEAs) and development of mitigative action/restoration recommendations and operational cost projections (2017-2020);
 - Advanced Level (Level 3) Tree Risk Assessment for an Aerial Adventure Ropes course on Grouse Mountain (2017). Environmental monitoring and site supervision were performed through all phases of construction;
 - Grouse Grind trail tree risk/danger tree assessments for Metro Vancouver Parks (Grouse Mountain Regional Park) and Grouse Mountain Resorts including layout and supervision of tree falling activities including liaison with Metro Vancouver, Grouse Mountain, RCMP and the District of North Vancouver as required (2005-2008, 2014, 2015);
 - Tree inventory and arborist and tree risk assessments and reporting in BC Hydro’s Buntzen Lake and Hayward Lake Recreation Areas (2015);



- Greenway and parkland urban forest field inventories and assessments for municipal, utility and transportation group clients including TransLink, BC Hydro and Metro Vancouver; and
- City of Vancouver Geospatial Street Tree Inventory (2016) – development of the GIS-based tree inventory database incorporating and transitioning the existing non-spatial database to a GIS platform including LiDAR interpretation and field truthing. Recommendations were developed to integrate asset management.
- **Forest health and resilience management plans and restoration** – examples include the Regional District of Central Okanagan urban forest health strategy (2007), Lynn Headwaters Regional Park hemlock looper impact assessment, treatment plan, and prescriptions (2022); Stanley Park post-windstorm restoration planning and oversight of restoration activities; and a forest resilience plan and hemlock looper assessment (2019-2022), post-fire restoration plan (2019-2022), and restoration prescriptions on Fromme Mountain and in Cates Park for the District of North Vancouver.
- **Forest health assessments** –Blackwell has completed aerial overview assessments with ground checks annually for the Coast forest region since 2007, for Metro Vancouver parks and watersheds in 2019-2020, and in 2004 we assessed hemlock looper impacts and associated fuel loading in the Coquitlam watershed. We have conducted forest health assessments in support of municipal and provincial parks management including a recent laminated root rot assessment in Sunnyside Acres Park for the City of Surrey (2022) in addition to the recent hemlock looper assessments described above.
- **Silviculture and reforestation** – Blackwell has managed comprehensive operational silviculture programs and contracts from assessment, planning, and prescription development to treatment implementation. Project work has included tree removals, reforestation, brushing, invasive plant species management, planting (including sowing requests), spacing, thinning, and fertilization activities. In the urban context, Blackwell developed recommendations for planting strategies for the City of Vancouver’s green spaces (UFS phase 1) and developed unique planting plans for Stanley Park windstorm restoration as well as site specific planting plans and reforestation strategies for District of North Vancouver (Fromme Mountain and other locations) and Coquitlam Streamside Protection Environmental Areas.
- **Urban forest ecology** – ecology is the basis of our work. Blackwell has completed terrestrial mapping, ecosystem integrity analysis and fuel assessments, and analysis of species at risk for Metro Vancouver’s regional parks. We also conducted ecological inventories of several District of North Vancouver parks and developed a framework for ecosystem-based management.

Through our past and ongoing project work we have demonstrated our ability to work collaboratively with diverse stakeholders, land managers (including municipal, regional, provincial, and federal government staff) and First Nations representatives to create solutions to mitigate identified hazards, protect values at risk, and manage for sustainable, resilient forests.

The firm is SAFE certified with the BC Forest Safety Council and implements a comprehensive safety program including a robust Communicable Disease Prevention Plan. Blackwell holds current and active



WorkSafeBC coverage (#459893) as well as Comprehensive General Liability (\$5,000,000), Professional Liability (\$2,000,000) and vehicle insurance (\$10,000,000 liability). Blackwell possesses all of the state-of-the-art field and office equipment, licensed software and hardware to complete the assessment, mapping and GIS, and reporting for this project efficiently and to a high standard. This includes *GoToMeeting* and *Zoom* licenses/accounts.

3.0 KEY PERSONNEL

The proposed Project Team and individual roles and responsibilities are summarized in Table 1. The team's organization is illustrated in the organization chart in Appendix A. Individual personnel resumes are provided in Appendix B. Further information on the organization of our team and areas of responsibility is provided in Section 5.0 (Project Management and Quality Control). **Blackwell is the lead proponent. Chartwell Resource Group Ltd. is included on our team as a subconsultant solely to provide visual impact assessment services. All other services will be provided in-house by Blackwell.**

Our team includes eight Registered Professional Foresters (RPFs) in good standing with the Association of BC Forest Professionals with specializations in urban forestry, urban forest planning, forest health, wildfire risk reduction, silviculture including reforestation, and tree removals and fuel treatments in complex environments. Our team also includes a Registered Professional Biologist (RPBio), two International Society of Arboriculture (ISA) Certified Arborists, both with Tree Risk Assessment Qualification (TRAQ) endorsement, an urban forestry technician with TRAQ endorsement, and a Geomatics Professional. Our team also includes Local FireSmart Representatives (LFRs) with the provincial FireSmart Program. All professionals are in good standing with their respective registering bodies.

Blackwell has the capacity to provide the required services to the City of Vancouver given our existing workload and known commitments. Our internal capacity includes a highly experienced administrative team. In addition to the proposed key personnel, additional qualified staff are available to support this project if/when required and with the approval of the City. Blackwell's base of operations is North Vancouver with convenient access to Stanley Park and Park Board offices.

CHARTWELL RESOURCE GROUP LTD.

Chartwell Resource Group Ltd. (Chartwell), united in 2021, is the collaboration of Hedberg and Associates, established in 2004, and Chartwell Consultants, established in 2000. Together the group provides natural resource management consulting services to a wide range of clients in government, industry and First Nations. Chartwell offers a broad spectrum of natural resource management consulting services from four offices in BC, including an office in North Vancouver. The interdisciplinary services offered by Chartwell's team combine experience in forest management, resource and land management, road and bridge engineering, GIS and mapping, LiDAR, asset inventory, environmental science, planning, ecology, and recreation. Chartwell possesses state of the art visibility monitoring capabilities and has extensive experience producing high quality digital terrain representations and visual assessments, from data capture to the transformation of vector data into photo-realistic visualizations. Visual impact assessment services have been delivered for a range of clients and applications including municipal level land use planning.



Table 1. Summary of proposed key personnel, roles and responsibilities

Team Member	Role	Responsibilities
B. A. Blackwell & Associates Ltd.		
Bruce Blackwell , RPF, RPBio, MSc	Project Manager and Wildfire Expert	<ul style="list-style-type: none"> • Project management and contract point of contact • Oversight of all project phases and deliverables and lead report development • Wildfire expert and lead wildfire risk assessment • Senior urban forestry and urban forest planning advisor • Lead presentations, field tour, and meetings • Peer review of prescriptions • On-site meetings and oversight of treatment project management/contract administration focused on high level decisions
Jeff McWilliams , BSF, RPF	Silviculture Specialist	<ul style="list-style-type: none"> • Support mitigation planning and implementation with a focus on reforestation plans • Peer review of prescriptions • Support management of planting contracts including onsite meetings
Jeff Fisher , BSF, RPF	Forestry Operations Specialist	<ul style="list-style-type: none"> • Support mitigation planning and implementation with a focus on tree removal plans, and operational and environmental considerations • Peer review of prescriptions • Lead treatment project management/contract administration and weekly on-site supervision
Aaron Bigsby , BSF, RPF	Forest Health Specialist	<ul style="list-style-type: none"> • Support development of hemlock looper response strategies • Advise on hemlock looper infestation trends and projections



Team Member	Role	Responsibilities
Judith Cowan , RPF, MBCSLA, ISA Cert. Arb., TRAQ, WDTA - Parks & Recreation, Riparian Area Protection Regulation QEP, FireSmart LFR	Lead Urban Forester and Arborist/ Tree Risk Assessor	<ul style="list-style-type: none"> • Technical lead for hemlock looper assessment and response plan and tree risk assessments, prescriptions development • Co-lead and support presentations, field tour, meetings and progress reporting • Support treatment project management, supervision, and QA of recommendations for trees with unacceptable levels of risk
Ali Rahi , PhD; RPF, ISA Cert. Arb., TRAQ, WDTA - Parks & Recreation, FireSmart LFR	Urban Forester and Arborist/ Tree Risk Assessor	<ul style="list-style-type: none"> • Hemlock looper data collection and tree risk assessments • Compilations and support report and deliverables development
Valentine Lynch , MSFM, FIT, TRAQ	Technical Support/ Tree Risk Assessor	<ul style="list-style-type: none"> • Hemlock looper data collection and tree risk assessments • Compilation, geospatial, reporting, and meeting/presentation support
Debrah Zemanek , BScH, MASc, MSFM, RPF, LFR	Project Forester- Wildfire	<ul style="list-style-type: none"> • Technical lead, supporting Bruce Blackwell, for wildfire risk assessment and mitigation planning and prescriptions including engagement with Park Board and Vancouver Fire Department staff • Report/deliverables preparation • Support treatment project management, supervision and QA
Quentin Schmidt , BSF, FIT, LFR	Technical Support - Wildfire	<ul style="list-style-type: none"> • Technical support for wildfire risk assessment and mitigation plan and prescriptions • Support report/deliverables development • Support treatment project management, supervision and QA
Brin Farrell , FIT, B.Tech, DipTech	Technical Support – Wildfire and GIS	<ul style="list-style-type: none"> • Technical support for wildfire risk assessment and mitigation plan and prescriptions, and GIS support • Support report/deliverables development
Elizabeth Panozzo , BSF, RFP, LFR	Administrative and Technical Support	<ul style="list-style-type: none"> • Support reporting and project management processes
Avram Sandor , BSc, Advanced DipGIS	GIS Lead	<ul style="list-style-type: none"> • GIS analysis, production of maps and graphics • Wildfire risk modeling under the direction of Bruce Blackwell



Team Member	Role	Responsibilities
Chartwell Resource Group Ltd.		
John Arnett, MSc, BSF	Visual Impact Assessment	<ul style="list-style-type: none">• Visual impact assessment following guidance of Bruce Blackwell in collaboration with Park Board



3.1 **B.A. BLACKWELL & ASSOCIATES LTD. (LEAD PROPONENT)**

BRUCE BLACKWELL, MSC, RPF, RPBO –PROJECT LEAD/ MANAGER

s.22(3)(d)



JEFF MCWILLIAMS. BSF, RPF - SILVICULTURE SPECIALIST

s.22(3)(d)





JEFF FISHER, BSF, RPF – FORESTRY OPERATIONS SPECIALIST

s.22(3)(d)



AARON BIGSBY, BSF, RPF – FOREST HEALTH SPECIALIST

s.22(3)(d)





s.22(3)(d)

JUDITH COWAN, RPF, ISA CERT. ARB., TRAQ, MBCSLA – LEAD URBAN FORESTER AND ARBORIST

s.22(3)(d)

ALI RAHI, PHD-FORESTRY, RPF, ISA CERT. ARB., TRAQ – URBAN FORESTER AND ARBORIST/ TREE RISK ASSESSOR

s.22(3)(d)



s.22(3)(d)



VALENTINE LYNCH, FIT, MSFM, TRAQ – TECHNICAL SUPPORT (HEMLOCK LOOPER)/ TREE RISK ASSESSOR

s.22(3)(d)



DEBRAH ZEMANEK, BSCH, MASC, MSFM, RPF, LFR – PROJECT FORESTER (WILDFIRE)

s.22(3)(d)





s.22(3)(d)



QUENTIN SCHMIDT, BSF, FIT, LFR – TECHNICAL SUPPORT (WILDFIRE)

s.22(3)(d)



BRIN FARRELL, BTECH, DIPTECH, FIT, LFR – TECHNICAL SUPPORT (WILDFIRE AND GIS)

s.22(3)(d)





s.22(3)(d)



ELIZABETH PANOZZO, BSF, RPF – ADMINISTRATIVE AND TECHNICAL SUPPORT (OFFICE)

s.22(3)(d)



AVRAM SANDOR, BSC FORESTRY, ADVANCED DIPLOMA GIS – GEOMATICS PROFESSIONAL

s.22(3)(d)



3.2 CHARTWELL RESOURCE GROUP LTD.

JOHN ARNETT, MSC

s.22(3)(d)





s.22(3)(d)

4.0 EXPERIENCE AND QUALIFICATIONS

4.1 B.A. BLACKWELL & ASSOCIATES LTD. (LEAD PROPONENT)

Our experience and successes as they relate to this project have been described in Section 0 (Proponent Overview). The following projects completed by Blackwell within the last five years further illustrate our relevant experience and accomplishments.

METRO VANCOUVER HEMLOCK LOOPER IMPACT STUDY AT LYNN HEADWATERS REGIONAL PARK (2022)

Robyn Worcester, Natural Resource Management Specialist, Parks and Environment, Metro Vancouver Regional District, Ph: 604-224-5739/ E: Robyn.Worcester@metrovancouver.org

Tyler Langeloo, Supervisor, Parks Operations, Metro Vancouver Regional District, West Area, Ph: 604-250-8396 (c); E: Tyler.Langeloo@metrovancouver.org

Blackwell assessed the impact of hemlock looper damage for Metro Vancouver, conducted hazard tree assessments, and prescribed a set of monitoring and treatment prescriptions to address the multiple issues identified (i.e., slope stability, tree risk and health including current and anticipated future tree mortality, and wildfire hazard and risks to park infrastructure, homes, and the utility corridor). Blackwell assessed crown defoliation and established three levels of impact based on thresholds for the likelihood of tree recovery (in one or more years) or tree mortality. Tree risk assessments were complex in that assessors had to reconcile and differentiate hemlock looper defoliation effects from any external visual (structural) defects to make determinations of hazard tree classification in the field on a tree-by-tree basis. Assessments were targeted based on risk management priorities for public high use areas and focused on trees that would strike a target if they failed (roads, trails, buildings, and parking lots). Deliverables included an inventory of individual trees rated by the consequences of part- or whole-tree failure (within the defoliation thresholds), priority for mitigation, and associated mapping. Treatment plans and prescriptions were developed to address unacceptable levels of tree risk, fuel management and restoration/reforestation. Plans and prescriptions also incorporated strategies to address slope stability issues integrating the recommendations of a Professional Geoscientist.

The Blackwell team was very sensitive to public concerns and perceptions regarding the danger of dead trees and expectations for prompt mitigation, while also recognizing the need for a biotic management response. Consequently, tree risk mitigation was staged, with first year high priority removals based only on tree risk assessment for structural defects. Second year removals are to be based on the level to which defoliated trees have recovered (following annual monitoring). Risk mitigation treatments include



pruning, disbursed tree removals, and patch removals with retention of living and other species and wildlife treatments to address terrain stability issues, protect biodiversity, water courses, and other environmental values. Restoration planting plans will be developed as part of scope of work.

Blackwell is currently managing and administering the danger tree treatment phase of the project and has contracted a Certified Utility Arborist to complete the interim removal of high priority hazard trees. Blackwell has also developed the budget for subsequent broader removal of trees in early 2023 with consideration of complex operational requirements. The significant slope stability issues, proximity to homes, a public road and trail, water courses, and a distribution line involve complex logistics (i.e., conventional and helicopter tree removals, coordination with BC Hydro to have a distribution line taken down, traffic and neighbourhood control and notifications).

DISTRICT OF NORTH VANCOUVER FOREST RESILIENCE PLAN AND HEMLOCK LOOPER ASSESSMENT (2019 - 2022)

Guy Exley, Community Forester, District of North Vancouver. Ph: 604-990-2350/ E: ExleyG@dnv.org

This draft forest resilience plan was originally developed with the primary goal of increasing wildfire resilience of the District's contiguous forest management areas beyond the urban interface. Due to changes in higher level objectives and priorities, the scope of the project evolved and was refined in collaboration with the District with the goal of strategizing to manage for overall forest resilience in response to climate change using a science-based approach. This includes establishing a baseline of forest condition.

In 2022, the project was expanded again to include a hemlock looper and wildfire risk assessment of Mountain View Park and Mountain Highway which experienced heavy defoliation. Blackwell conducted a vegetation inventory and assessments of forest health, tree risk, and wildfire risk, including establishing baseline sample plots to compare stand structure and components for treated and untreated areas. Similar to the Hemlock Looper assessment conducted in Lynn Headwaters Park, Blackwell assessed crown defoliation using three levels of impact based on thresholds for the likelihood of tree recovery (in one or more years) or tree mortality. Individual hazard tree classifications/determinations were complex, with the overlapping and separate effects of hemlock looper defoliation and external visual (structural) defects not related to Hemlock Looper. Assessments were targeted based on risk management priorities for public high use areas and focused on trees that would strike a target if they failed (roads, trails, buildings, and parking lots). Blackwell identified fuel types and calculated fuel loading. Data collection was designed to determine the fuel loading resulting from expected hemlock looper mortality and to determine if hemlock looper or any other forest health factors (i.e., dwarf mistletoe) will be contributing to future fuel loading to inform the District's planning for future mitigation/restoration. Deliverables included an inventory of single trees identified by level of impact and priority for mitigation (and associated mapping), and analysis and assessment of the current level of damage and relationships between level of crown defoliation and mortality for the study area. Treatment recommendations were developed to address the dual priorities of removing danger trees and minimizing fuel buildup to mitigate risk in the immediate-short term. Blackwell developed treatment options and site-specific strategies for both sites including tree removal



based on expected tree mortality, wildlife tree/snag creation options, site-specific reforestation possibilities and strategies for management of invasive plant species and shrub understory cover as well as existing forest fuel accumulations and estimated contributions over time.

CITY OF COQUITLAM TREE RISK AND WINDTHROW HAZARD ASSESSMENTS, PLANTING PRESCRIPTIONS, AND TREATMENT SUPERVISION IN STREAMSIDE PROTECTION ENVIRONMENTAL AREAS (SPEAS) (2017-2020)

Lanny Englund, Urban Forestry & Park Services Manager, City of Coquitlam, Ph: 604-927-3549 / E: lenglund@coquitlam.ca

Blackwell conducted windthrow and hazard tree assessments (including forest health assessment), developed planting restoration prescriptions, supported the City's procurement process, and supervised tree removal and restoration planting operations. This project involved approximately 900 tree removals to address forest health concerns (i.e., hemlock mistletoe), blowdown and associated fire hazard, and restoration of ecosystem attributes. The project demonstrates operational experience in planning and supervising tree removals and restoration planting in highly sensitive riparian sites (legislated through the Riparian Area Protection Regulation) with high fisheries values; ensuring public safety and protecting numerous other values such as adjacent homes/high value real estate and public infrastructure (including utilities, roads and bridge infrastructure). Prescriptions included strategies for vegetation management (competing brush and invasives) including guidance for the City's brushing program. Senior members of the project team delivered workshops and site visits to Council and senior management to define the objectives of the future stand (a resilient, windfirm stand) and inform the site-specific reforestation plan as opposed to a tree-for-tree reforestation strategy. As a result of this project work and identified management challenges associated with SPEAs, the City of Coquitlam engaged Blackwell to review the policy and make recommendations.

DISTRICT OF WEST VANCOUVER COMMUNITY WILDFIRE PROTECTION PLAN AND WILDFIRE PROGRAM IMPLEMENTATION (2019-2022)

Dave Clark, Fire Chief, District of West Vancouver, Ph: 604-925-7396/ E: dclark@westvancouver.ca

Blackwell developed a comprehensive Community Wildfire Protection Plan (CWPP) for the District of West Vancouver (the District) and was subsequently engaged to support the District in ongoing implementation of recommendations. Key activities in developing the CWPP included:

- Consultation with key local government representatives, structural and wildfire specialists, and stakeholders regarding available resources and training, critical infrastructure, water resources, fire, and response history and processes;
- Identification of values at risk (including critical infrastructure, public safety, environmental, and cultural values) and assessment of the local wildfire threat with consideration of the natural fire regime and ecology, forest health factors, Provincial Strategic Threat Analysis, ground-truthing, fuel type assessment/verification, completion of Wildland Urban Interface Threat plots, and GIS wildfire threat analysis.



- Developed a risk mitigation strategy, including prioritization of fuel treatments, FireSmart activities, and wildfire response.

Since 2019, Blackwell has supported implementing the plan recommendations. This has included FireSmart activities such as Home Ignition Zone assessments and developing and delivering a range of public education materials (presentation/workshop, display boards, social media content). In 2019-2020, Blackwell completed four fuel management prescriptions for high priority interface areas in the District. The prescriptions were developed in consideration of areas with high-recreational traffic, steep and challenging terrain, and with established conservation objectives implemented by the District. The prescriptions were complex and addressed all the values at risk, while mitigating the risk from wildfire, and ensuring stable forest stand conditions in the future. Blackwell is also overseeing the implementation of a highly visible fuel management unit this fall in the Cypress Mountain area above the British Properties residential area. The prescription for this treatment area incorporated feedback from the Musqueam, Squamish and Tsleil-Waututh Nations (MST) whose representatives attended a Preliminary field Reconnaissance (to assess cultural/archaeological values). Treatment project management and administration has included pre-treatment activities (consultation and information sharing with First Nations and stakeholders; tender development and selection of a qualified contractor, and pre-work activities including cutting authorizations and approvals). Blackwell will conduct treatment supervision and quality assurance, and post-treatment assessment this fall. The treatment area is adjacent to a BC Hydro distribution line and overlaps high-traffic recreation trails (including the Baden Powel and Trans-Canada trails). Public safety and public access control has been a large part of planning with the District and the contractor. Blackwell has facilitated and supported extensive public communications and engagement including the development of video content and facilitation of a public information session and been on call to the District to answer questions and address concerns from the public and municipal council.

DISTRICT OF NORTH VANCOUVER FUEL MANAGEMENT PRESCRIPTIONS AND OPERATIONAL FUEL TREATMENT IMPLEMENTATION PROGRAM (2007-2021) – CLIFFORD AND MCCARTNEY PARKS FUEL MANAGEMENT PRESCRIPTION (2021)

Guy Exley, Community Forester, District of North Vancouver. Ph: 604-990-2350/ E: ExleyG@dnv.org

Blackwell has developed fuel management prescriptions for over 100 ha in the District of North Vancouver since 2007. Covering a diverse range of residential and commercial adjacency, forest types, steep slopes, and potential impacts from operational disturbance from treatments, the prescriptions were complex in order to address all the values-at-risk, while mitigating the risk from wildfire, but also projected future stable forest stand conditions. Blackwell has supervised treatment in some of the prescription areas. During operations, Blackwell demonstrated the capacity to adapt to emerging situations, and address sensitive environmental issues such as species-at-risk, wind, snow, and rainfall events. The most recent contract was to develop a fuel management prescription for Clifford and McCarney Park, including considerations for multiple creeks, steep slopes and slope stability, adjacent residences and continuous forest land, and the presence of high-traffic recreational trails. Input from



the Musqueam, Squamish, and Tsleil-Waututh Nations (and other First Nations) was integrated in the prescription.

ENVIRONMENTAL ASSESSMENT AND TREE CLEARING PLAN FOR THE GROUSE MOUNTAIN GONDOLA PROJECT (2020-2022)

Michael Cameron, President, Grouse Mountain Resort. Ph: 604-984-0661/ E: mcameron@grousemountain.com

Blackwell has completed multiple phases of project work for a development project to replace the Grouse Mountain Resort's blue tram. We provided a preliminary environmental and feasibility assessment with consideration of the ecological values and processes inherent in the proposed project location in 2020 and have completed and coordinated subsequent assessments to secure permitting with local governments. Blackwell completed environmental assessments for rare and sensitive species and ecosystems, wildlife trees, wildfire hazard, forest health, and conducted arborist assessments to meet the District of North Vancouver's Environmental Development Permit Areas and tree permit requirements. Deliverables in support of permitting included a fuel management implementation plan, and comprehensive fuel management prescription, a hemlock looper occurrence map (including potential danger tree locations), and sensitive ecosystems assessment report. Blackwell also conducted an assessment of at-risk ecological communities and plants in a portion of Grouse Mountain Regional Park that is impacted by the project. Blackwell coordinated right of way layout and legal surveys and other Qualified Professionals (QPs) for terrain stability and hydrology assessments. We completed a detailed implementation plan for fuel management and right of way clearing, and are the acting prime contractor overseeing these activities currently underway. This includes coordination and on-site supervision of tree removals (including danger tree falling, helicopter and cable yarding from sensitive sites, trucking and off-site removals, and managing access and public safety (including temporary public closures) around complex worksites involving trails, roads, and transmission lines in liaison with property owners (Metro Vancouver Parks and District of North Vancouver) and Grouse Mountain Resorts. This project demonstrates our operational experience in planning, managing, and supervising concurrent tree removal and fuel management operations in a highly constrained area that was also impacted by the hemlock looper.

FOREST HEALTH ASSESSMENTS OF METRO VANCOUVER REGIONAL PARKS AND WATERSHEDS (2019-2020)

Markus Merkens, Natural Resource Management Specialist, Parks and Environment, Metro Vancouver, Ph: 604-520-6442/ E: Markus.Merkens@metrovancover.org

Judith Wheeler, Watershed Operations Assistant, Metro Vancouver, Ph: 778.452.4598/ E: Judith.Wheeler@metrovancover.org

Blackwell conducted aerial overview surveys of Metro Vancouver's regional parks and watersheds due to significant incidence of western hemlock looper. Our team subsequently conducted forest health ground surveys to verify causal agents and provide recommendations for management for identified forest health



factors in Colony Farm, Aldergrove Regional Park, Campbell Valley Regional Park, Pacific Spirit Regional Park, and Lynn Headwaters Regional Park.

MINISTRY OF FORESTS ANNUAL FOREST HEALTH AERIAL OVERVIEW SURVEYS (2007-2022)

Babita Bains, Provincial Forest Entomologist, Ministry of Forest, Ph: 236-468-2295/ E: Babita.Bains@gov.bc.ca

Blackwell has conducted annual forest health aerial overview surveys (biotic and abiotic forest health agents) including ground checks and reporting for the Ministry of Forests Coast Forest Region. This includes the entire Coast of British Columbia from the Washington State Border to Prince Rupert.

4.2 CHARTWELL RESOURCE GROUP LTD.

The following three project examples illustrate Chartwell's recent experience in completing visual impact assessments for government, First Nation, and private clients.

CHINOOK MULTIPHASE CONTRACT - CONNOR CREEK BLOCK PLANNING FOR MINISTRY OF FORESTS, BC TIMBER SALES (MAY 2020 – ONGOING)

A landscape level visual impact assessment was performed to model proposed block development in the Connor Creek area. Planned modifications were built into the 3D model to render what the proposal will look like from a variety of viewpoints in a photo-realistic manner. Deliverables included viewpoint and visibility maps, percentage alteration calculations and RPF report with sign-off.

KATZIE AND KWANTLEN FIRST NATIONS WOODLAND LICENSE (FEBRUARY 2022 – ONGOING)

A landscape level visual impact assessment was performed to model proposed block development for the First Nations woodlot license N2Z. Planned modifications were built into the 3D model to render what the proposal will look like from a variety of viewpoints in a photo-realistic manner. Deliverables included viewpoint and visibility maps, percentage alteration calculations and RPF report with sign-off.

WOODLOT 1699 FORESTRY OPERATIONS (2014 – ONGOING)

A landscape level visual impact assessment was performed to model proposed block development in Woodlot 1699 in the Harrison Hot Springs area. Planned modifications were built into the 3D model to render what the proposal will look like from a variety of viewpoints in a photo-realistic manner. Deliverables included viewpoint and visibility maps, percentage alteration calculations and RPF report with sign-off.

5.0 WORK PLAN

OVERVIEW

Blackwell's proposed work plan assumes a two-year contract (with option to renew at the City's discretion) and a two to five-year treatment planning and implementation timeline. In the following sections we outline how we propose to undertake the work in the first two years (contract term) to achieve the milestones listed in the RFP Scope of Work in a logical, risk-based progression. Our approach is informed by our recent experience with hemlock looper assessments, observations of tree mortality



and recovery, response planning, and implementation in North Vancouver (for District of North Vancouver and Metro Vancouver Parks). Our approach is also informed by our past experience and successes in planning and implementing windstorm restoration and wildfire risk reduction in Stanley Park, which provides us with a good understanding of the unique challenges that may be encountered in the park. Blackwell has outlined a work plan for the first two years of the project as follows¹:

- **Stage 1 - Year 1 (December 2022 – March 2023)**
Assessment and Mitigation and Response Plan
 - includes the majority of the RFP Scope of Work, excluding formal tree risk assessments, which are proposed to be completed in Stage 2. Completion of a detailed inventory and assessments in Stage 1 will identify target areas for TRAQ Rationale for completing the TRAQ assessments and VIA in Stage 2 are provided in Section 7.0.
- **Stage 2 - Year 1 (April – December 2023)**
Detailed Treatment Prescriptions and Year 1 Treatments (immediate risk in spring, highest priority in fall)
 - Tree Risk Assessment (TRAQ) of priority trees/polygons to commence immediately (April 2023) following final report completion,
 - Spring 2023 treatment of immediate priority (imminent risk/danger) areas requiring immediate treatment,
 - Development of detailed, highest priority treatment prescriptions including reforestation, invasive plant species management, and brushing plans for both wildfire risk and hemlock looper mitigation concurrently (or separately) as applicable,
 - Treatment of highest priority areas in the fall of 2023 (outside of breeding bird season).
- **Stage 3 – Year 2 (December 2023 – December 2024)**
Year 2 Treatments, Planting of Year 1 Treatments, Residual Treatment Prescriptions
 - Plant 2023 treatment areas, and plan for next year’s planting and implement next priority treatments through fall and winter of 2024,
 - A formal schedule of treatment activities is difficult to estimate at this time (see Section 6.0 for a discussion of potential project challenges). Scheduling and treatment timing can all be impacted by considerations for Species at Risk, requirements for specific biological assessments, archaeological assessments, geotechnical assessments, and consultations with MST and potentially other stakeholders.

PROJECT MANAGEMENT AND QUALITY CONTROL

Blackwell maintains a high standard by utilizing project management procedures throughout the life of each project to facilitate project communications and status reporting, and to engage a thorough quality management process.

¹ The contract terms is assumed to be two years. As stated in the City of Vancouver Supplier portal “Description”: *The term of any Agreement is expected to be a 2-year period, with 2 possible 1-year extensions, for a maximum total term of 4 years.*



A workplan in alignment with the proposed work schedule and milestone dates stipulated within the RFP will be submitted for review and approval following the kick-off meeting, and will identify critical milestones/deliverables and activities. This workplan may be revised in consultation with the Park Board as needed and as the project evolves. We engage in ongoing scope verification and provide regular status updates to ensure that all aspects of a project are being completed to the client's satisfaction. We have a highly experienced administrative team, and the firm's Deltek Enterprise Resource Planning (ERP) system enhances our ability to create a project work breakdown structure with the capability to generate instant financial progress reports and provide daily diarizing of work tasks by individual as/if required. Invoicing will include a breakdown of major tasks and team member to track budget expenditure against project progress.

Progress reports will be provided on a monthly basis (or as requested) in the form of emailed progress memos, including any project constraints and corrective actions that will be implemented to ensure completion to schedule. This is in addition to scheduled meetings and a field trip (discussed below).

Blackwell's team has extensive experience delivering projects of comparable scope and complexity (including the Stanley Park windstorm restoration and other projects outlined in Section 4.0 of our proposal). We recognize the importance of building an administrative and staffing structure that lends itself the flexibility to intensify efforts when required. Our strong corporate capacity allows us to manage large and small projects, encompassing all aspects of contracting, administration, safety, quality assurance, and project management planning. Our project and resource management processes, combined with comprehensive and efficient data collection, data management, and internal quality assurance processes will ensure completion of the project on time and to a high standard.

Blackwell performs extensive peer reviews of project tasks and deliverables to ensure they maintain a consistent, high standard. Field work and data collection and compilation will be overseen by both Bruce Blackwell who will supervise the Technical Leads. All GIS and mapping (Blackwell), visual impact assessment (Chartwell), and report development (Blackwell) will be led by Bruce Blackwell, who will coordinate and oversee report contributions by Technical Leads, and Senior Advisors who in turn, will supervise others providing technical support. Bruce Blackwell will liaise with Chartwell and the Park Board to coordinate a visual impact assessment that meets the Park Board's requirements, within an acceptable budget. Bruce Blackwell with the support of Judith Cowan will lead and facilitate all meetings with the Park Board working group, field tour, and presentations to senior leadership.

COMMUNICATIONS AND MEETINGS:

We recognize that good communication with the Park Board is critical to ensuring project success. Blackwell will maintain open communication lines with Park Board contacts that facilitate collaboration and ensure our team is readily accessible to respond to information requests and discuss issues as they develop. The format and schedule of progress reporting and meetings deemed necessary during the term of the Agreement will be determined in consultation with the Park Board. We have proposed Park Board working group meetings be scheduled at key milestones (at completion of Phase 2, 3, and 4, see Table 2 – project timeline). These meetings will facilitate Park Board input and review of project progress, results,



and next steps. Minutes and action items will be recorded to ensure a comprehensive record of outcomes. Meetings may be conducted in person or via teleconference, or virtual meeting technology (i.e., GoToMeeting or Zoom), subject to Park Board requirements. We have also proposed a field tour as discussed in our work plan (Section 5.3.2) and are open to facilitating additional Park Board site visits.

STAGE 1 (DECEMBER 2022 – MARCH 2023)

5.1 PHASE 1: PREPARATION AND ONBOARDING

5.1.1 BACKGROUND REVIEW

Blackwell will thoroughly review relevant Board of Parks and Recreation (Park Board) and City of Vancouver (City) plans, policies, relevant reports, data and mapping, including but not limited to all provided documents and information listed in the RFP Scope of Work. This will ensure the Hemlock Looper Response Plan and Wildfire Mitigation Plan will align with related strategies (i.e., urban forest, bird, biodiversity, and climate change adaptation), higher level plans, and the Park Board’s reconciliation mission, vision and values, as well as other municipal policy and plans. Any other relevant data, documents, maps, and site-specific information, as available, will be acquired from the Park Board during this phase.

Spatial data which helps to inform the Wildfire Risk Mitigation Plan will be gathered from a variety of sources (such as BC Wildfire Service, DataBC) in addition to the Park Board and will provide the basis for portions of the mapping and office analysis. This will include the original desktop wildfire risk assessment Blackwell completed for Stanley post windstorm. Locations of water sources and hydrant location, access and egress routes, critical infrastructure, values at risk (structures), archaeological values, species at risk, hazardous values, fire history, and other resource values within Stanley Park will be identified spatially as necessary.

5.1.2 KICK-OFF MEETING

At project initiation, Blackwell will conduct a kick-off meeting with Park Board staff to discuss overall project goals and objectives, approach and work plan, timelines, invoicing and reporting requirements, available data, and other information required to inform the project management framework and ensure a shared understanding of the project. The project work plan and schedule will be finalized in collaboration with the Park Board Project Manager following this meeting.

5.2 PHASE 2: HEMLOCK LOOPER AND WILDFIRE RISK ASSESSMENT

Field assessments are proposed to commence in December with completion by the end of January; dependent upon weather (see Section 6.0 for a discussion of weather-related challenges).



5.2.1 HEMLOCK LOOPER ASSESSMENT

ASSESSMENT AREA

Detailed field assessments will be focused in the potential hemlock looper impacted area delineated in the map (Stanley Parks Park Map - RFP.pdf) identified in the RFP and provided by in an email from Jing Fan, October 11, 2022. We assume this to be “the study area”.

While assessment for “all areas excluding forest trails” and “only forest trails” has been separated for pricing purposes, in application, Blackwell proposes to conduct the field assessment for both assessment areas in tandem for efficiency, to accommodate buffering, and to provide a comprehensive overview of the infestation impacts and effectively inform response planning. Our proposed 75m (1.5 tree lengths) buffering of trails and other targets which is the bounds of future tree risk assessments (by assessors who are Tree Risk Assessment Qualified (TRAQ)) will result in overlaps between the two areas (Figure 1). Furthermore, the Hemlock Looper impact over the entire study area must be assessed in order to establish prioritization of mitigation for both Hemlock Looper impacts and the resulting fuel hazard impact and associated human safety risks throughout the entire study area. Assessment of the entire study area will identify both patch and disbursed mortality due to Hemlock Looper, targets, and risk to public safety, including homeless encampments. Blackwell could stratify the study area by “all areas excluding forest trails” and “only forest trails” if desired by the Park Board post assessment (i.e., in the reporting phase).



Figure 1. Potential hemlock looper infested area and proposed assessment area ('study area').

DETAILED INVENTORY ASSESSMENT METHOD

Blackwell proposes to conduct a detailed inventory using plot sampling. The sampling intensity will be confirmed in consultation with Park Board staff (we estimate 1 plot/2 ha).

Plot data collection will include tree and site attributes (and supporting georeferenced photographs) to provide an overview of the existing conditions and specifically, provide the following information:

- Extent of the infestation including levels of western hemlock mortality and defoliation ranked by established defoliation thresholds (i.e., percentage of western hemlock in polygons, percentage impacted by the hemlock looper, with gradients of damage and impact and risk ranking)
- Level of damage due exclusively to hemlock looper (i.e., not structural defects resulting from other causes such as dwarf mistletoe that require a formal tree risk assessment)
- Extent of remaining western hemlock that may be attacked in future growing seasons (i.e., potential for expansion of the infestation) to support projections on future hemlock looper levels



- Identify priority stand-alone trees and patches for tree risk assessment (TRAQ) in spring 2023, (based on mortality, targets, etc.)
- Impact of hemlock looper to other coniferous tree species, specifically western red cedar and Douglas-fir (to inform the reforestation strategy)
- Current extent of invasive plant species and potential for expansion (to inform invasive plant management strategies)
- Biogeoclimatic Ecosystem Classification (BEC) site series and productivity (to inform reforestation planning).
- Mortality of understory regeneration (to inform potential recruitment, particularly of western red cedar vs western hemlock, or shade intolerant Douglas-fir) and mortality of historic plantings to evaluate success in surviving the hemlock looper and drought
- Inform the creation of a risk assessment framework to guide timing of TRAQ assessments and tree removals.

Gradients of damage can involve multiple factors. We propose to rank stand-alone trees and polygons using the following gradients (to be confirmed in consultation with Park Board staff) which are based on prior work in Lynn Headwaters Regional Park and the District of North Vancouver:

- Level of defoliation following the criteria below;
- Progress of wood decay (stem and branches); and
- Pre-existing structural and biotic defects (i.e., mistletoe, root disease, damaged crown, etc.).

The following crown defoliation thresholds are and will be confirmed and/or adjusted in consultation with Park Board staff:

- Retention of < 30% of crown foliage remaining – mortality is probable
- Retention of 30-75% of crown foliage remaining – mortality is uncertain, depending on future growing season condition and/or site productivity
- Retention of > 75% crown foliage retained – mortality is unlikely.

Stand-alone trees in the plots will be ranked and mapped according to the gradients of damage described above. This approach will identify general areas of both dispersed and patch mortality. Polygons will be mapped based on plot data and existing 2022 orthoimagery and LiDAR imagery.

Crown defoliation thresholds and decay class and associated assumptions and ranking will be refined in consultation with Park Board staff. Assessment methods could be calibrated with on-site demonstration with Park Board staff.

Blackwell proposes an additional walk-through survey along all forest trails and major roads and adjacent to infrastructure and other targets (tourist destinations, parking lots and other high traffic areas). This modified survey will collect locations and counts for the number of hemlock looper affected trees with less than 30% crown foliage retention (these trees will likely not recover). This survey will capture what is visible from the trail, roadway, or target. This survey will identify stand-alone trees in proximity to targets



that are a high priority for tree risk assessment. This will also serve to flag and identify any areas that may need to be closed temporarily until risk mitigation can be undertaken. Blackwell proposes to conduct Level 1 tree risk assessments (TRAQ), for the identified priorities following completion of the final draft report. The tree risk assessment methodology is described in Section 5.5. The benefits and rationale for our proposed process and timeline for tree risk assessments is provided in Section 7.0.

Blackwell also proposes to conduct a higher-level reconnaissance in unaffected areas of the park outside of the study area in order to estimate the potential for the infestation to spread beyond the delineated area, but also to identify any other hazards which will be brought to the attention of the Park Board working group for further direction on planning and response.

The detailed plot inventory will include an Excel summary table of key attributes for stand-alone trees and polygons with ranking by gradients of damage. The walk-through survey inventory will include an Excel summary of stand-alone trees with <30% live crown foliage in proximity to targets (within visual distance) identified and mapped as priority trees for hazard assessment. Maps of existing forest patches or polygons and stand-alone trees affected by the hemlock looper will be created to Park Board specifications.

5.2.2 WILDFIRE RISK ASSESSMENT

The assessment of wildfire risk will be a combination of field assessment and desktop analysis and modeling.

ASSESSMENT AREA

While the hemlock looper defoliation will contribute to fuel loading, which will grow over time, wildfire can occur anywhere in the park. Consequently, a wildfire risk assessment will be conducted for the entire park area and not just the hemlock looper affected area (the study area for the hemlock looper assessment).

FIELD ASSESSMENT

Field assessment of wildfire risk will be conducted separately from but concurrently with the hemlock looper assessment and will consist of two parts; a reconnaissance survey of unaffected areas of the park (outside of the hemlock looper study area) and detailed plot assessment in the impacted hemlock looper study area. A qualitative walk-through reconnaissance outside of the hemlock looper study area will be conducted to inform the wildfire risk assessment and assess fuel types. Detailed plot field assessment in the hemlock looper impacted area will be conducted at an estimated plot sampling intensity of 1 plot/2 ha (to be confirmed with Park Board staff). Data collection will include georeferenced photographs. The wildfire risk field assessment will be completed by a highly experienced team led by Bruce Blackwell, a provincially recognized wildfire expert with over 30 years of experience. We are intimately familiar with wildfire risk assessment best practices and contributed to development of the draft provincial fuel data and survey collection standard for BC Wildfire Service. Our team also includes numerous Local FireSmart Representatives with extensive experience in formal assessment of structures and mitigation following the latest FireSmart and fuel management principles.



Data will be collected to quantify a range of wildfire risk factors including but not limited to stand attributes (species mix, age, density, crown closure, live crown ratio and structure – understory/ladder fuels,) and surface fuel loading (fine fuels <12.5 cm in diameter, medium <30 cm, and coarse fuels). Ladder fuels assessment (understory trees and live canopy ratios) will inform requirements for small tree removal and pruning, and overstory (% crown closure) is associated with crown fire potential. All these elements will be used to assign Canadian Forest Fire Danger Rating System (CFFDRS) benchmark fuel types which will be used to model key fire behaviour elements (i.e., rate of spread, crown fraction burning, and Head Fire Intensity) which will enable assignment of potential fire behaviour and rating of suppression difficulty.

Assessment will be focused on quantifying surface fuel and overstory dead fuel that will contribute to future hazard to provide a sound basis for determining the appropriate fuel mitigation strategies. Fuel changes leading to elevated wildfire risk in hemlock looper affected areas will grow over time as dead material (i.e., fine branch debris) falls to the ground and accumulates where it will be both an ignition and fire spread hazard; however, this will occur over several years post mortality.

In addition to fuel typing, homeless encampments and other potential ignition sources and public safety concerns will be identified and/or confirmed. Environmental and climatic factors will be addressed and incorporated during the wildfire risk modeling phase.

5.2.3 CONSULTATION WITH STAKEHOLDERS

Our Project Team will consult with Park Board staff and Vancouver Fire Department staff to determine existing wildfire response plans, critical infrastructure, fire-fighting resources and processes (i.e., water resources, equipment, training, communication protocols, existing thresholds for levels of response, procedures and protocols to engage BC Wildfire Service support), access/egress routes, any known vulnerabilities, and history of response and fire causes in Stanley Park, among other questions. The appropriate staff to be consulted will be determined in consultation with the Park Board Project Manager. Staff may be engaged in a group or individually subject to availability and preference. This may be conducted via a questionnaire and working group presentation in a live meeting format or via remote meeting as preferred by the stakeholders. Blackwell will also engage with BC Wildfire Service personnel regarding procedures and protocols to engage aerial support. Blackwell will also consult with Park Board staff regarding operational procedures and plans that contribute to wildfire risk management.

Additionally, Blackwell will engage with other stakeholders with an interest in providing input to the project as arranged and invited by the Park Board, including but not limited to the Stanley Park Ecology Society.

5.3 PHASE 3: DRAFT REPORT

The draft interim report will be a single comprehensive, multi-part report including: 1) the hemlock looper assessment summary and response plan and 2) the wildfire risk assessment summary and mitigation plan with relevant supporting information, photographs, maps, and data summaries in appendices. The report outline, format, and content will be determined in consultation with the Park Board. The key objectives



outlined in the RFP Scope of Work will be addressed in preliminary form for both the hemlock looper response plan and the wildfire mitigation plan.

The draft interim report will be submitted to the Park Board working group (and others as prescribed by the Park Board) for review and comment prior to presenting the report to senior leadership. Blackwell assumes that the Park Board will facilitate obtaining feedback on the draft report from MST. We are committed to an iterative process for review and feedback of the draft report.

5.3.1 DRAFT INTERIM REPORT

The first steps in developing the draft interim report will include data compilation for both the hemlock looper and wildfire risk assessments, and integration of relevant Park Board data and any discussions with internal and external stakeholders as well as integrating any MST feedback received to date.

All mapping will be created in ArcGIS10.x. Our Geomatics Professional Avram Sandor played a key role in developing spatial deliverables for the City of Vancouver including the City's Geospatial Street Tree Inventory as well as mapping and wildfire risk modeling for the 2007 Stanley Park Wildfire Response Plan and will ensure compatibility of all spatial deliverables with the Park Board's GIS software.

HEMLOCK LOOPER ASSESSMENT SUMMARY AND RESPONSE PLAN

The hemlock looper assessment will be summarized to provide an overview of the scale and extent of the outbreak, supported by a tabular and spatial inventory of impacted areas with gradients of damage, and a tabular summary and spatial inventory of hazard trees in proximity to specified targets (based on level of defoliation and current or imminent mortality) that require tree risk assessment and potential mitigation. Interim priority ranking of affected stand-alone trees and forest patches for mitigation will be derived from these summaries. Affected stand-alone trees in close proximity to targets and affected patches (polygons) will be mapped to Park Board specifications and requirements. High, medium, and low priority areas for risk mitigation (tree removal, pruning) will be identified based on the combined gradients of damage as they relate to the progression of deterioration and tree failure post-defoliation. Stand-alone trees in proximity to defined targets will be identified as a high priority (requiring further tree risk assessment) based on a defoliation threshold of <30% live crown retention. Formal tree risk assessment will subsequently determine the required mitigation and prioritization.

Blackwell, in collaboration with Park Board staff, will identify any immediate measures and/or mitigation required. This may include temporary closures that are required based on mortality, targets, and weather (i.e., measures required in the event of wind or precipitation events). This may also include immediate treatments (spring of 2023) required to address tree and/or fuel hazards.

Blackwell will develop a Standard Operating Procedure (SOP) for inclusion in the report to guide Park Board staff in ongoing assessment of hemlock looper impacts and mitigation needs. The SOP will outline the gradients of damage, including defoliation and other thresholds (as outlined in Section 5.2.1 above), and associated assumptions. Blackwell's team can facilitate a site visit as/if required to demonstrate



aspects of the SOP. Risk assessment will likely need to be staged as the hemlock looper infestation runs its course and past and new defoliation impacts progress and manifest.

Projections on future hemlock looper levels will inform recommendations for ongoing assessment and mitigation. Blackwell will rely on our team's observations and unparalleled experience on the North Shore and throughout coastal BC in assessing the progression of the hemlock looper, combined with consultation with the Provincial regional pathologist to develop projections. Projections will consider changing environmental factors, most notably the following key driving factors: potential ongoing drought complications, overwintering success of the hemlock looper, as well as the percentage of unaffected western hemlock remaining in Stanley Park (informed by a reconnaissance survey outside of the affected area). Specific site and micro-climate conditions in Stanley Park will be another important consideration.

Blackwell will work in collaboration with the Park Board working group and incorporate input and traditional knowledge from MST and stakeholder input as applicable to develop treatment options and a preliminary response plan for mitigation of risk from hazard trees with the additional goals of enhancing forest health and resilience in the short and long term, protecting park values, and enhancing the visitor experience. Blackwell anticipates the hemlock looper impacts will range from mixed, dispersed mortality with no targets to 100% mortality in patches. Our team will work with Park Board staff to determine treatment priorities, with recognition of budget constraints and targets of greatest concern.

Our recent experience on the North Shore, with an earlier infestation, has shown us the importance of a conservative, biologically driven approach to tree removals, that emphasizes safety and protection of environmental and cultural values within the park. A conservative approach to removals is warranted given that tree mortality due to hemlock looper defoliation will be variable and subject to environmental factors in the coming growing seasons, in combination with other factors.

Treatment options will be supported by a decision matrix and risk analysis of options. Mitigation plans for preferred treatment options (as determined in consultation with the Park Board working group) will include recommended timing, duration, and priority-sequence of tree removal and/or pruning activities, and timelines for follow-up activities including planting, brushing, and invasive plant species management. The mitigation plan will include class C budget estimates for implementation. Additional report content will address all key objectives in section 4.2.1 of the RFP Scope of Work.

Reforestation plans in the draft interim report will provide high level guidance regarding areas for complete and partial reforestation, species mix required, target density, and guidance on reforestation principles and practices for Stanley Park. This will include an evaluation of historic reforestation practices in the park and any impacts due to recent drought and hemlock looper impacts. This will inform the detailed work required in each priority area and the detailed planning for site-specific reforestation plans that will be developed as part of detailed site-specific prescriptions (described in Section 5.6).

Visual Impact Assessment

We propose to complete a visual impact assessment (VIA) following compilation of an inventory of hemlock looper impacted areas with gradients of damage. This VIA may be used to visually demonstrate



impacts of the hemlock looper and inform treatment staging and prioritization. In collaboration with Chartwell, we propose to offer two VIA options for consideration by the Park Board. These options are based on desired quality and purpose of renderings, software and process to be used, and the associated price. The first option (lower cost option) will use Visual Nature Studio, to produce typical forest industry quality renderings, including:

- 10 viewpoints (two renders per location);
- Incorporating and tweaking the custom inventory (collected as part of the hemlock assessment data collection);
- Processing the LiDAR inputs to the model (roughly 400 ha);
- Photo splicing to place the renders into photos taken from the viewpoint. This will avoid modeling the city skyline in the background; and
- Viewpoint map.

The second option (higher cost option) is recommended if the intended end product will be part of a public display or review and is more suitable for site-specific projects. Two different software options can be selected from. Both involve starting with orthoimagery that is draped on top of a Digital Elevation Model (DEM), then placing a colourized LiDAR point cloud on top of that. This will allow modeling of tree removal and give a better representation of what the park actually looks like, as it is based off of photographs. This method is twice the cost of option 1 as it is not a common workflow and requires more manual data manipulation. The cost implications are outlined in Section 7.0 (Innovative and Alternative Approaches).

WILDFIRE RISK ASSESSMENT SUMMARY AND MITIGATION PLAN

Blackwell completed a desktop wildfire risk assessment and wildfire risk modelling for the Stanley Park Wildfire Response Plan in 2007 (a PowerPoint illustrating the spatial outputs of the model can be viewed here: <https://www.bablackwell.com/Documents/StanleyParkFireProtectionPlan.pdf>). This process is referred to as Blackwell's Wildfire Risk Management System (or WRMS). The WRMS has been used successfully and refined over the years to guide priority mitigation and prevention actions for municipal and provincial government, and utility clients, from the site to provincial level. Blackwell proposes to update the 2007 Stanley Park WRMS, using the same framework with enhancements, or will look at alternate approaches with Park Board input. The updated WRMS would be based on the detailed inventory to provide better metrics. Fuel, stand, ignition risks, suppression response, key values at risk (focused on public safety), and other data will be integrated into this GIS modelling framework. The WRMS will identify wildfire probability and consequence to identified values (including people, property, and infrastructure), and ultimately identify the overall risk ratings throughout the park to guide the development of mitigation strategies.

We recognize that the blowdown in 2006 affected a much smaller area and created immediate surface fuel, while the hemlock looper impact has affected a larger area and fuel loading will accumulate over time. Climate impacts can also be incorporated into our modelling approach by looking at climate induced changes in Fire Weather Index, as has been included in wildfire risk modeling for other clients such as BC Hydro and the Ministry of Forests.



The wildfire risk assessment incorporating field data, Park Board and fire department input, MST input and traditional knowledge, and modeling will be synthesized to inform the current wildfire risk in Stanley Park as well as trends into the future, and will inform the development of mitigation options and strategies focused on hemlock looper impacted areas but with consideration of the risk of ignition and wildfire spread from other parts of the park into impacted areas. These strategies may include: surface fuel removal, ladder fuel removal (i.e., removal of trees <15cm) pruning, and overstory thinning, as well as FireSmart activities around important infrastructure (utilities, roads, Lion's Gate bridge) and identified facilities, and along trails. Sustainable mitigation solutions will follow an ecosystem-based approach (as was done for Stanley Park windstorm restoration), recognizing other objectives in addition to wildfire risk reduction, including enhancing forest health and long-term resilience, and protection of environmental (wildlife, habitat) and cultural values.

Immediate mitigation priorities and treatments that can be staged in the short (2 years) to long term (10 years) will be identified in a mitigation plan, with timelines and class C budgets for implementation. Potential consequences of not implementing recommendations will be outlined as well. Immediate treatments may include accumulations of fuel adjacent to trails, infrastructure, and of immediate ignition risk in high use areas and selected low use areas (i.e., homeless encampments). Short to long term wildfire risk mitigation areas will more effectively and logically be treated at the same time as hemlock looper treatments. We recognize that, unlike the 2006 windstorm blowdown in Stanley Park where there were immediate accumulations of fuel adjacent to trails, current and future overall wildfire risk will depend on mortality levels, the estimated number of trees affected, and timing of fuel moving to ground. All attempts will be made to stage these mitigation treatments concurrently. Identified areas of immediate wildfire or safety concern will not fall into this schedule, as they will need to be addressed prior to longer term work.

The wildfire risk assessment and mitigation plan will also address Park Board operational procedures and plans that contribute to risk management and provide recommendations to enhance existing response plans as required. We will work with the Park Board to understand current operational procedures including timing, identification of high-risk activities, work shut-down procedures, and other relevant procedures and plans with a focus on both fire prevention consistent with provincial legislation, and any identified need for mitigation of practices or activities that contribute to wildfire hazard and risk. Additional report content will address all key objectives in section 4.2.2 of the RFP Scope of Work. All mapping will be completed to Park Board specifications and will include spatial wildfire risk ranking (and associated WRMS model component maps) and identification of affected polygons.

5.3.2 FIELD TOUR

Blackwell is prepared to offer a field tour/site visit with Park Board staff and others as advised and invited by the Park Board (e.g., MST representatives, stakeholders, senior Park Board leadership). This field tour will follow completion of the assessment summaries and maps to discuss issues, review treatment options and response plan strategies, and to contribute to finalizing the report recommendations. It may be offered in conjunction with a formal project update meeting.



5.3.3 PRESENTATION OF DRAFT INTERIM REPORT

Blackwell will present the draft interim report and recommendations to the senior leadership team. We propose to deliver a PowerPoint presentation and facilitate a question-and-answer session to effectively communicate key assessment outcomes and recommendations, provide opportunity for discussion, address any questions, and obtain feedback. This will be led by Bruce Blackwell supported by Judith Cowan, in collaboration with the Park Board Project Manager. Blackwell's team will set an agenda, and record and distribute meeting minutes.

5.4 PHASE 4: FINAL REPORT

5.4.1 DRAFT FINAL FINDINGS REPORT AND DELIVERABLES

Park Board staff and senior leadership, Vancouver Fire Department, other stakeholder (as applicable), and MST feedback on the draft materials will be incorporated to develop the final report. Blackwell will refine mitigation plans, in consultation with the Park Board working group, and will provide class B cost estimates as required.

All final report deliverables as outlined in the RFP Scope of Work including digital and hard copy bound copies of the final report will be delivered by the end of March 2023. Blackwell has extensive experience communicating highly technical subjects to a wide range of audiences in written reports, presentations, poster displays, and education materials and will ensure that the report is written in plain language and is visually engaging (the [City of London Urban Forest Strategy](#) provides an example of our past reporting). This will include the use of graphics, maps, tables and photographs. The final report will be in keeping with relevant policies and legal frameworks and the City of Vancouver Writing Style Guide. The final report deliverables will include all GIS data and mapping products, compatible with Park Board's GIS software.

5.4.2 PRESENTATION OF DRAFT FINAL REPORT

Blackwell will present the draft final report to senior leadership using a PowerPoint presentation and question and answer session, similar in format to the interim report presentation. Blackwell's team will set an agenda, and record and distribute meeting minutes. Following the presentation and review and comment by senior leadership, Blackwell will make any required revisions or amendments as requested.

STAGE 2 (APRIL 2023 – DECEMBER 2023)

5.5 TREE RISK ASSESSMENTS (TRAQ)

Blackwell proposes to commence Level 1 tree risk assessments on trees identified as a high priority for assessment (<30% live crown foliage in proximity to specified targets) in April 2023, immediately following completion of the final report. We believe this targeted approach is the most economically efficient and logical way to complete hazard tree assessments that will provide the greatest benefits in protection of public safety. This approach also recognizes biological processes (i.e., trees that are dead do not



necessarily become hazards right of way). Some trees impacted by the hemlock looper may be retained to the next growing season, as the outbreak declines, and as affected trees recover.

Blackwell does not have the internal capacity to complete tree risk assessments prior to April, given the scope of work to be completed within the timelines stated in the RFP. However; our team may complete select tree risk assessments during the field assessment stage for areas identified by the Park Board, on a case-by-case basis. The Park Board may wish to proceed with the highest priority tree risk assessments earlier using internal capacity and/or external resources.

Tree risk assessments will follow the ISA Tree Risk Assessment standard and will be completed by staff with ISA TRAQ endorsement. Blackwell will require estimates from Park Board staff for levels of occupancy of trails and other targets in the study area. In addition, we require the Park Board to identify the level of tree risk they are willing to accept as outlined in Matrix 2: Risk Rating Matrix ². The risk levels are Extreme, High, Moderate, and Low.

The outcome of the tree risk assessments will be prioritized using estimated risk to targets (based on hemlock looper damage and consequence ranking) and a scope of work to mitigate tree risks. This will further inform treatment planning, budgeting, and scheduling, including identification of imminent dangers in need of immediate mitigation (spring 2023), any areas requiring temporary closure until risk mitigation is completed, and the priority sequence of risk mitigation actions in fall 2023 and in subsequent year(s).

Given that the number of tree risk assessments that will be required is unknown at this time and will be determined subject to the outcomes of the hemlock looper assessment and summary, **this task is not priced in our proposal. Blackwell proposes to provide the Park Board with a quote after completion of Stage 1**, at the personnel rates prescribed in our price proposal for personnel with ISA TRAQ endorsement (Judith Cowan, Ali Rahi, and Valentine Lynch).

5.6 TREATMENT PRESCRIPTIONS

Following the process successfully employed for Stanley Park post-windstorm, and in many other urban forest health, forest restoration and fuel management programs we have developed, we recommend the completion of detailed treatment prescriptions following completion of the mitigation plan. We anticipate that work on prescriptions will continue into the second year of the project and will be prioritized in consultation with Park Board staff. Comprehensive prescriptions that address both forest health and wildfire risk mitigation objectives (or separate prescriptions as required) are critical to inform project management and contract administration and planning. Timely completion of prescriptions will ensure projects/contracts are shovel-ready for implementation in fall of 2023 and through 2024 onwards. For sites identified in the assessment phase as requiring immediate treatment/hazard mitigation in spring of

² Dunster, J. A., E. Thomas Smiley, Nelda Matheny, and Sharon Lilly. 2013. Tree Risk Assessment Manual. Champaign, Illinois: International Society of Arboriculture.



2023, planning for follow-up planting, brushing, and invasive plant species maintenance will be incorporated into subsequent prescription development and localized remediation plans.

We have a highly experienced team to develop treatment prescriptions that consolidate all treatment objectives and complex site considerations in Stanley Park. Prescriptions will include detailed removal and retention specifications, fire hazard reduction targets, and planting, invasive plant species management, and brushing plans. Prescriptions will identify site specific values and issues and appropriate mitigation measures (i.e., protection of cultural resources, biological elements, infrastructure; riparian management; soil disturbance measures; etc.). Site-specific treatment plans will be science-based, cost-effective, address operational and public safety concerns, and ensure compliance with all applicable legislation and permitting requirements. Blackwell will coordinate all required professional surveys (i.e., archaeological, biological, geotechnical, and others); consult with other jurisdictions, managers and stakeholders as required including but not limited to Ministry of Transportation and Infrastructure and BC Hydro. MST feedback and Traditional Ecosystem Knowledge will be incorporated as provided. Reforestation plans will be developed with sufficient lead time to inform sowing requests, with planting ideally occurring in the spring following treatment.

Reforestation plans will be based on provincial tree species selection guidance with preferred and acceptable species, site-specific conditions and target stand objectives, and will integrate Traditional Ecosystem Knowledge as per guidance and input from MST. Blackwell was responsible for developing detailed treatment prescriptions for Stanley Park windstorm salvage and restoration activities and used an innovative cluster planting approach to better mimic natural, historical regeneration patterns and historical stand structure and function of the forest in Stanley Park (https://www.bablackwell.com/documents/N1_Spring_08_Planting_Plan.pdf). Blackwell learned that regeneration following Hurricane Frieda in 1962 was more typical of plantation forestry and did not create a natural structure and function. Future stand objectives will be determined in consultation with Park Board staff (and informed by MST input). Ideally, reforestation strategies and planting plans will aim to enhance stand heterogeneity and resistance to natural biotic and abiotic disturbance and influences of climate change.

We propose to follow our stated best practices for referral of prescriptions to potentially affected First Nations including MST (discussed in Section 8.0), subject to approval by the Park Board. We will ensure timely communications with the Park Board to support Park Board consultation processes and ensure MST input can be focused and provided in a timely manner, to inform prescriptions.

Given that the treatment area and number and scope of prescriptions that will be required is unknown at this time and will be determined subject to the outcomes of the hemlock looper response plan and wildfire risk mitigation plan, **this task is not priced in our proposal. Blackwell proposes to provide the Park Board with a quote after completion of Stage 1**, at the personnel rates prescribed in our price proposal.



STAGE 2 (2023) AND STAGE 3 (2024) TREATMENT IMPLEMENTATION

This section outlines our approach to conduct optional administration and project management of mitigation works and contracts. Note, we expect that residual prescriptions will continue to be developed into the second year of the contract (the methodology is not repeated here).

We anticipate multi-year and seasonal implementation as follows:

- **Prescriptions**
 - developed in priority sequence through 2023 and 2024 (likely over two or possibly more years, subject to area impacted)
- **Immediate treatments/risk mitigation** (hemlock looper and/or wildfire)
 - spring of 2023 (bird nest surveys required for tree removals during the breeding bird nesting window).
- **High priority treatments** (hemlock looper and/or wildfire)
 - tree removal, pruning, and/or other fuel management activities completed in fall through winter of 2023 and 2024 following prescriptions (tree removals completed outside of the bird nesting season);
- **Planting**
 - in the spring following treatment, subject to seedling availability, treatment completion, and other timeline constraints (all or part of planting may be delayed a year).
- **Maintenance and infill planting activities**
 - brush and invasive plant species management, and infill planting as required (subject to drought or other environmental stresses) three years after planting.

Staging of treatment implementation will be required subject to the identified priorities, the number of trees and area of polygons requiring mitigation, available Park Board budget, and seasonal constraints (i.e., to avoid tree removals during breeding bird season).

5.7 OPTIONAL TASK – PROJECT MANAGEMENT AND CONTRACT ADMINISTRATION FOR HEMLOCK LOOPER AND WILDFIRE RISK

This task will include the management and administration of contracts for both hemlock looper and wildfire risk mitigation in the first year (stage 2) and second year (stage 3) of the contract following the recommendations of the final report. This is expected to include completion of immediate risk mitigation activities in spring of 2023, and subsequent treatments completed in priority sequence in the fall/winter of 2023 and 2024. Project management and contract administration will follow much the same process and approach for both hemlock looper and wildfire risk mitigation. It is anticipated that in many cases, treatment for both objectives will occur concurrently (in the same areas) and by the same contractor.

Blackwell will be the coordinating professional and has the capability to act as the managing consultant and prime contractor responsible for coordination of all site operations and contractors to complete all works in Stanley Park (including tree removal, brushing, invasive plant species control, and planting



contracts). Blackwell will act as the City's representative in all matters related to the contracts and all stages of the work as we have done for numerous municipal clients (as required by the City and Park Board).

We have proposed a highly qualified team to provide contract administration, project management, and ongoing site supervision, quality control, liaison and progress/completion reporting. Project management and administration of works contracts, will be conducted in-house by Blackwell, with oversight by Bruce Blackwell who will supervise Blackwell project managers and lead meetings/site visits as needed to address any high-level concerns or key changes that affect outcomes and cost as they arise. Project management of works contracts (including monitoring and weekly site meetings, ongoing liaison, coordination and communication between all parties) will be led by Forest Operations Specialist Jeff Fisher in collaboration with Senior Advisors Bruce Blackwell and Jeff McWilliams. Technical Leads will provide field and office support for project management, and supervision and quality assurance of works progress and completion. Our base of operations in North Vancouver and dedicated internal capacity will enable us to provide effective on-site supervision, anticipate and manage issues as they arise, and be immediately responsive and liaise effectively with the Park Board and contractors.

We will apply our extensive experience in developing and managing large, multi-year fuel management, salvage and restoration, and stand improvement programs to ensure effective, safe, and timely treatment of priority areas. Our team's operational experience with Stanley Park windstorm restoration, ongoing hemlock looper impact mitigation work on the North Shore, and other related experience in planning and managing complex treatments and logistics in high public use and high-profile urban interface areas adds value to the services we provide. Our firm has expertise in project management, accounting and related administrative services, including procurement and delivery of services. Past project work demonstrates our firm's rigorous accounting, tendering, safety, and project management processes that have met third party (PricewaterhouseCoopers) audit standards. This includes the use of customized checklists and document templates to ensure contract mandatories, regulatory requirements, and treatment specifications are met at all stages of project development. Furthermore, our firm developed and applies robust standard operating procedures and policy in the delivery of treatment programs. Our existing processes and systems for contract administration and project management will ensure efficient, safe, and compliant operations.

Blackwell will complete all required planning and prework activities. We will coordinate all additional and/or outstanding professional surveys that may be required at this stage, including but not limited to archaeological, geotechnical, biological surveys (e.g., breeding bird and other wildlife surveys) surveys and will coordinate with BC Hydro and Ministry of Transportation and Infrastructure and others to obtain permitting and approvals as required. We will ensure works are completed in compliance with all applicable environmental and wildfire legislation, WorkSafeBC regulations and industry standards and best practices, and with consideration of archaeological concerns including protection of Culturally Modified Trees. Our team will also support the tendering process and contractor selection and onboarding as required, including assisting with tender and contract development, providing supporting



documentation, specifications and maps, answering questions relating to the contract work, and contractor selection.

Contractor compliance with the contract, treatment prescription, safety requirements, and other legislative requirements, as well as work progress will be monitored weekly and reported as weekly meeting minutes. Site instructions and clarifications and contemplated change orders will be prepared as required and Park Board staff will be notified. Monitoring of work progress and assessment of work completion may include quality checks against qualitative targets of the prescription, post-treatment data collection, mapping of areas treated and access features, assessment of temporary access rehabilitation, and data compilation and summaries.

In addition to the tasks outlined above, Blackwell will provide all services outlined in the RFP Scope of Work (Section 4.5).

Blackwell cannot provide a budget for contract management as there are too many unknowns with respect to scope (the total number of trees, and hectares requiring treatment) and considering the complexity of the mitigation and consultation requirements, among other factors. Our budget will be based on the rates provided in our price proposal with an additional 10% overhead on all contracted services. Upon completion of the first stage of the project (final report submission, March 2023) we will provide an annual estimate to do the work and the numbers of years/periods we estimate will be needed to complete all the work.

5.8 **TIMELINE**

Blackwell anticipates completing the project through the first two years according to the following schedule with the final report submission date set for March 31, 2023. As discussed in the work plan overview (Section 5.0), we assume a contract duration of two years from December 2022 to December 2024 (with possible 1-year extensions for a maximum total term of 4 years, at the City's discretion). Our work plan is outlined in three Stages as previously described in Section 5.0 (workplan overview) and as illustrated in Table 2.

This schedule may be modified in consultation with the Park Board as required.

Table 2. Proposed project timeline.

Phase and Task	Milestones	Dates	Time Scale																							
			Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023	Apr 2023	May 2023	Jun 2023	Jul 2023	Aug 2023	Sep 2023	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024
Stage 1																										
Phase 1: Preparation and Onboarding																										
Contract award and completion	Contract signed, mandatory documentation p	December 8, 2022																								
Kick-off meeting	Finalized/approved work plan	December 15, 2022																								
Background review		December 8-20, 2022																								
Phase 2: Hemlock Looper and Wildfire Risk Assessment																										
Hemlock Looper assessment	Completed assessment data package	December 15, 2022 - January 31, 2023																								
Wildfire risk assessment																										
Consultation with stakeholders																										
Park Board working group meeting #1	Project update	January 31, 2023																								
Phase 3: Draft Report																										
Completions, analyses, modelling, reporting, and mapping	Draft interim report submitted for review and comment	February 24, 2023																								
Field tour with Park Board staff	Demonstration and feedback received	February 28, 2023																								
Visual impact assessment	Visualization of estimated mitigation	February 1-21, 2023																								
Park Board working group meeting #2	Project update	February 28, 2023																								
Presentation to senior leadership	Senior leadership feedback received	March 1, 2023																								
Phase 4: Final Report																										
Incorporate internal and external stakeholder and MST feedback	Final draft submitted for review and comment	February 28 - March 17, 2023																								
Presentation to senior leadership	Senior leadership feedback received	March 21, 2023																								
Incorporate leadership feedback	Final report submitted	March 31, 2023																								
Park Board working group meeting #3	Project update & next steps	March 27, 2023																								
Stage 2																										
Tree risk assessment	Trees requiring mitigation identified, including immediate treatment needs	April 3 - 28, 2023																								
Treatment #1: Immediate hazard mitigation	Planning and prework activities	April 15-28, 2023**																								
Treatment #1: Implementation, contract administration, and project management	Immediate hazards mitigated and reporting submitted	May, 2023																								
Prescriptions for highest priority treatment areas	Prescriptions for Treatment #2 completed	April - September, 2023																								
Treatment #2: Planning and prework activities	Project shovel-ready and qualified contractor onboarded	August - September, 2023																								
Treatment #2: Implementation, contract administration, and project management	High priority areas treated and reporting submitted	October, 2023 - March, 2024																								
Stage 3																										
Develop detailed treatment prescriptions for high priority areas	Prescriptions completed	April - September, 2024																								
Planting in Treatment #1 and Treatment #2 areas	Planting complete	March - April, 2024																								
Treatment #3: Planning and prework activities	Project shovel-ready and qualified contractor onboarded	August - September, 2024																								
Treatment #3: Implementation, contract administration, and project management	High priority areas treated and reporting submitted	October - December, 2024																								

* Standard 8 hour work day

** Meeting and/or deliverable dates to be confirmed with the client.





6.0 PROJECT CHALLENGES

Some of the key challenges and considerations to successful completion of the project that we anticipate and our strategies to overcome these challenges are outlined below. Blackwell will retain the flexibility to respond and adapt to situations, issues, and changes in project scope as they arise. We will maintain open lines of communication with the Park Board Project Manager and working group to ensure timely resolution of identified issues and collaborative problem solving.

WEATHER

Weather conditions can substantially impact field assessment completion timelines. Specifically, snow, heavy precipitation, and wind limit the ability of crews to complete survey work from both a sampling effectiveness and safety standpoint. Snow obscures fine fuels (necessary for wildfire risk assessment) and overhead hazards preclude work in windy conditions. Blackwell has incorporated potential weather delays into the timeline and has sufficient capacity allocated to the project for completion of assessments within the proposed timeline.

COMPLEXITY OF ASSESSMENT OF HEMLOCK LOOPER IMPACT, POTENTIAL MORTALITY, AND HAZARD

There is considerable complexity inherent in definitively linking levels of hemlock looper defoliation with survival or mortality outlook, and tree risk/hazard, compounded by environmental stresses (i.e., drought) and unrelated risk factors (i.e., mistletoe). A key challenge is categorizing trees that will develop into a hazard over time to inform short and long-term priorities for mitigation in concert with fuel hazard implications over time. We will address this challenge by applying our prior experience and lessons learned from work with hemlock looper on the North Shore (see Section 7.0 for discussion of our innovative approach and our extensive fuel management experience), to apply a practical and biologically driven assessment methodology for Stanley Park, refined in collaboration with Park Board staff.

PUBLIC ENGAGEMENT AND APPROVAL AND STAKEHOLDER CONSULTATIONS

Blackwell recognizes the roles that an interested and active public, local stakeholders, and First Nations have in the efficacy and success of urban forest management projects. Negative public concerns such as opposition to tree cutting and/or perceptions that natural processes are not being allowed to unfold may affect scheduling and treatment timing. Prior communication of potential changes, and interventions/actions and upfront education will be crucial to obtain public support for any mitigation activities. Blackwell is committed to supporting public engagement by providing foundational education and outreach materials to communicate current condition, hazard, treatment options, and the impact of treatment on park resources and values. We are highly experienced in leading and supporting public engagement and outreach programs as well as consultations with stakeholders. Our team is skilled at producing social media content, poster displays, surveys and presentations to explain concepts to a range of audiences, solicit feedback, and respond to questions. Some members of our proposed team played a key role in the comprehensive consultation and engagement that was integral to obtaining approval and support for the Stanley Park windstorm restoration project (from coordination of public consultation and meetings and workshops with staff and complex stakeholder groups to information tours) and have familiarity with local stakeholder groups.



The coordination of multiple groups and representatives in scheduled consultation sessions can represent a challenge to obtaining timely review and feedback. In our experience, individual, thoughtful and targeted outreach to stakeholders has been a successful approach for obtaining review and feedback. External and internal stakeholders may also benefit from presentations and/or a site visit to ensure a shared understanding of assessment method and results, identified risks, and proposed mitigation strategies. With Park Board approval, Blackwell is prepared to include these parties in a site visit with Park Board staff.

FIRST NATIONS CONSULTATIONS AND POTENTIAL SCOPE OR TIMELINE IMPACTS

Blackwell will incorporate feedback obtained by Park Board staff from the local First Nations (Musqueam, Squamish, and Tsleil-Waututh or MST) as it is provided to us. As noted in the RFP Scope of Work, this consultation process may impact the scope and pricing during the project. In order to ensure meaningful and timely consultation with MST and mitigate potential impacts to project timelines and/or scope, Blackwell will provide detailed rationale for measures to mitigate any First Nations concerns identified during background research and field assessment, during our comprehensive referral process for plans and prescriptions, and as expressed by MST through existing Park Board engagement channels. Blackwell will proactively engage with Park Board staff to ensure consultation occurs at critical stages in the project that will likely be of greatest interest and concern to MST. This will facilitate focused review and feedback from MST. Interested MST representatives may also be invited to a proposed site visit, at the discretion of the Park Board.

HOMELESS ENCAMPMENTS AND SOCIAL ISSUES ASSOCIATED WITH PARK USE

The sites of homeless encampments and unlawful activities in the park will need to be identified (with Park Board input) and assessed for ignition risk and protection of public safety as much as possible, recognizing that respectful engagement is required. Our urban forestry team has worked in numerous parks and urban sites with evidence of occupation and is versed in the safety considerations. Additionally, we recognize that individuals using and living in the park will be impacted by treatments and/or may exhibit antagonistic behaviour during the implementation phase (as was experienced during post windstorm treatments in Stanley Park). Both the safety of workers and park users, including transient inhabitants, will be considered in project management. If required Blackwell will work with Park Board and Vancouver City Police to protect workers and mitigate and public safety concerns.

TREATMENT SCHEDULING AND TIMING WITHIN BIOLOGICAL AND SEASONAL WINDOWS

Treatments must be timed within biological and seasonal windows to avoid impacts to reproductive cycles of birds and animals, riparian features, soils, and other habitat elements. Where possible tree removals will be scheduled outside of nesting bird season and other important biological windows. For unavoidable tree removals conducted during the breeding bird season (i.e., potential immediate hazard mitigation in spring of 2024), nesting bird surveys will be coordinated as required. We will work with the Stanley Park Ecological Society and Qualified Professionals as we did for the windstorm removals to ensure protection of identified habitats and species at risk with minimal impacts to project timelines. In our experience with the windstorm operations, the endangered Pacific water shrew required a mitigation plan that required



federal approval before operations could begin. This was discovered and addressed during operations and we were able to bring together the right professionals required to quickly and efficiently address this complexity.

REQUIRED RESOURCES AND CAPACITY

Blackwell uses comprehensive project management processes, to anticipate and mitigate project risks and allocate resources and capacity. Blackwell will provide the requisite skilled resources and capacity to ensure completion of the project within the proposed timeline. Additionally, Blackwell has established working relationships with a number of highly qualified local consultants and contractors. Professional sub-consultants may be engaged (or recommended) if necessary, to conduct professional assessments (e.g., for geo-technical assessment, terrain stability, archaeology, and habitat and species at risk assessments) during prescription development and/or prior to treatment. Sub-contractors and consultants will not be engaged without prior written consent of the City.

7.0 INNOVATIVE AND ALTERNATIVE APPROACHES

HEMLOCK LOOPER ASSESSMENT APPROACH

The complexity inherent in hemlock looper assessments was previously described in Section 6.0 Project Challenges. Our proposed assessment approach is informed by prior experience with the hemlock looper infestation on the North Shore. The infestation on the North Shore is two years ahead of Stanley Park (with the attack starting in 2020, peaking in 2021) and correspondingly, so is our work on the North Shore. We have spent 2021 and 2022 developing and applying an assessment methodology that addresses the range of complexities of linking level of hemlock defoliation, with mortality, and tree hazard, separate from the impacts of other forest health factors and structural defects and with consideration of environmental stressors, while managing tree risk considering all factors combined in concert with fuel hazard implications over time. We have the benefit of lessons learned and experience in developing and refining treatment options and strategies and implementation in a complex environment (taking place winter 2023) to mitigate the hemlock looper impact on forest health and wildfire risk. This experience will create project efficiency and add value to the services we can provide for the City of Vancouver in Stanley Park.

Our proposed higher-level reconnaissance in unaffected areas of the park outside of the study area (the looper affected area) combined with in-house expertise on coastal forest health trends will further enhance the assessment and inform projections of potential expansion and progression of the hemlock looper infestation in the park combined with climate projections for 2023 that evaluate continuing drought conditions. This reconnaissance will be completed within the existing hemlock looper assessment budget (no additional cost).

DETAILED TREATMENT PRESCRIPTIONS

As outlined in our workplan, we propose that detailed, site-specific treatment prescriptions be completed in the Stage 2 and 3 of the project for priority treatment areas identified in the response and mitigation plan report. This is a similar approach that was followed in the Stanley Park windstorm restoration



whereby a higher-level mitigation plan was followed by detailed prescriptions (including detailed removal and retention specifications, fire hazard reduction targets, site-specific issues and mitigation measures, as well as planting and brushing plans). Comprehensive prescriptions that address both forest health and wildfire risk mitigation objectives (or separate prescriptions as applicable) are critical to inform project management and contract administration and planning including sowing requests/seedling orders. These prescriptions will also facilitate targeted review by and input from MST and other identified stakeholders and ensure projects are shovel-ready for implementation.

It is anticipated that prescription development will spill over beyond year two, subject to findings of the assessment and response/mitigation plan, and subject to treatment timelines and Park Board's available budget. Given that the treatment area and number and scope of prescriptions that will be required is unknown at this time and will be determined subject to the outcomes of the hemlock looper response plan and wildfire risk mitigation plan, this task is not priced in our proposal. Blackwell proposes to provide the Park Board with a quote after completion of Stage 1, at the personnel rates prescribed in our price proposal.

VISUAL IMPACT ASSESSMENT

In collaboration with Chartwell, we offer two options for visual impact assessment based on the intended purpose and audience for the visualizations, and Park Board's budget. The cost for option 1 to produce typical forest industry quality renderings using Visual Nature Studio is \$7,200. The cost for option 2 to produce visualization that is suitable for site-specific applications and public display is twice the cost at \$14,400.

8.0 INDIGENOUS KNOWLEDGE, UNDERSTANDING AND INCORPORATION

We recognize that Park Board staff are working with representatives from the local First Nations (Musqueam, Squamish, and Tsleil-Waututh or MST) to solicit feedback on this project and Blackwell is committed to supporting existing consultation processes and incorporating feedback into the project as it is provided.

Blackwell acknowledges and will take into account the City's Reconciliation Framework and goals including the three main principles: 1) cultural competency, 2) strengthened relations, and 3) effective decision-making. Cultural competency is a professional and continuing competency requirement of our Registered Professional Foresters. This is supported by our team's extensive experience in working with local Nations and many other First Nations across BC both as clients and with respect to the development of projects within their territories. We recognize the importance of thoughtful engagement and continue to build respectful relations.

All of our prescriptions for site specific treatments (including tree removals, reforestation/restoration, and fuel management) follow a comprehensive process to ensure cultural resources are identified and



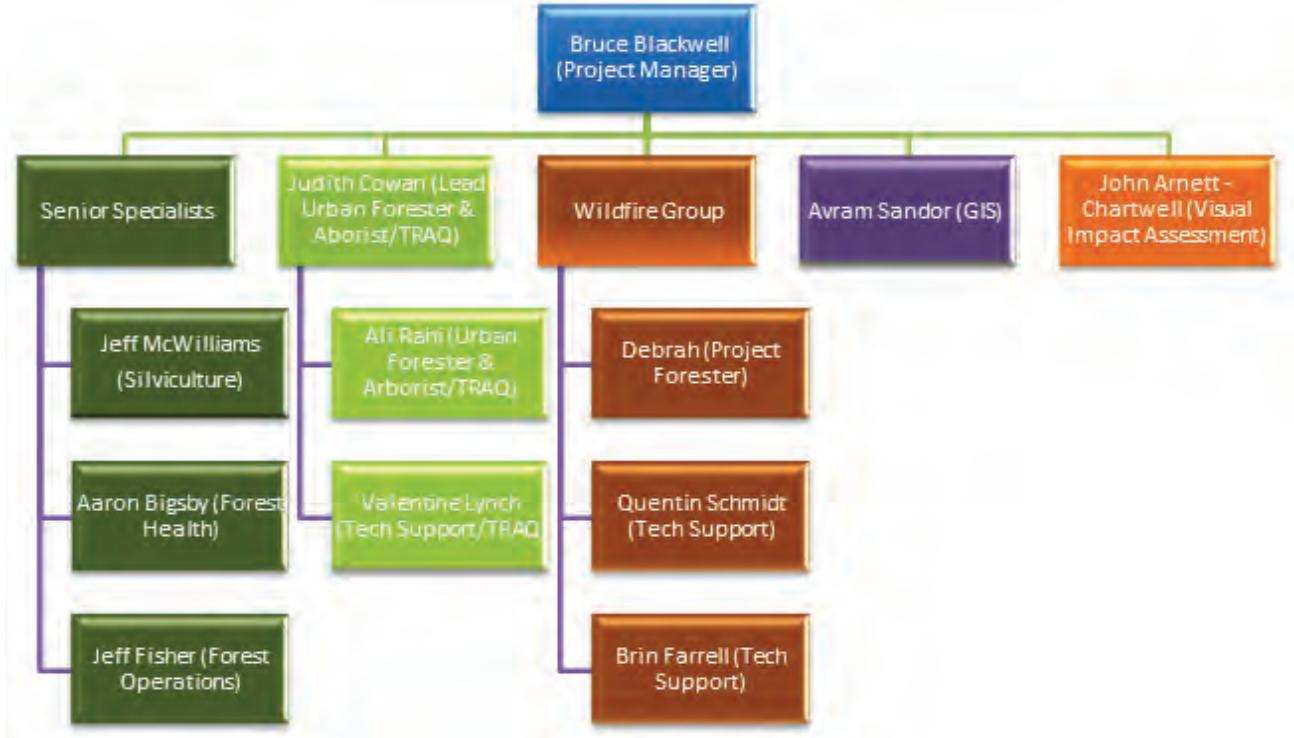
protected during treatment and to address any First Nations concerns about environmental impact and integrate traditional ecology knowledge. All potentially affected First Nations (with territories overlapping the project area) are identified via the Consultative Areas database and in consultation with the client and local Ministry of Forests First Nations Advisor. Potential cultural values are identified via consultation and through a data request with the Ministry of Forests Archaeology Branch, a referral package describing proposed work and requesting information on potential impacts to Indigenous values is sent to all identified First Nations, and all responses and communications are documented. Any concerns raised are addressed via meaningful, respectful engagement and appropriate mitigation in the prescription. The First Nation is informed of the location of the mitigation measure within the prescription or the addition to the prescription to ensure concerns have been appropriately addressed. We have received positive feedback from First Nation referrals departments regarding our process and the Musqueam, Squamish, and Tsleil-Waututh First Nations (MST) have regularly submitted responses to our fuel management prescription referrals in several municipal jurisdictions in Metro Vancouver and the Sea to Sky Corridor.

Blackwell's team have an extensive track record of partnering and working with and for First Nations across BC. We have delivered services related to forest management; development planning; natural resource development impact assessment; bioenergy feasibility assessment; wildfire management; land use negotiations (First Nation treaties, tenure purchase agreements and the allocation of tenure and chart re-allocations); and forest and land valuation in support of Specific Claims. Blackwell has a direct working relationship with the Squamish Nation having provided diverse services to the Nation over the years. In the area of wildfire management, we developed a community wildfire protection plan for the Squamish Valley community in 2017 and are currently completing a community wildfire resiliency plan for all reserves. We have also hosted Community FireSmart Resiliency Committee meetings for the Squamish Lillooet Regional District with Squamish Nation and Lil'wat Nation representatives in attendance along with other municipal and provincial government representatives. In the area of forest tenure management, Blackwell developed an ecosystem-based Woodlot Management Plan consistent with the cultural and spiritual values of the Squamish Nation s.22(3)(d)

[Redacted text block]



APPENDIX A – ORGANIZATION CHART





APPENDIX B – RESUMES

BRUCE BLACKWELL

Office: 604-986-8346 ext. 201

E-mail: bablackwell@bablackwell.com

s.22(3)(d)





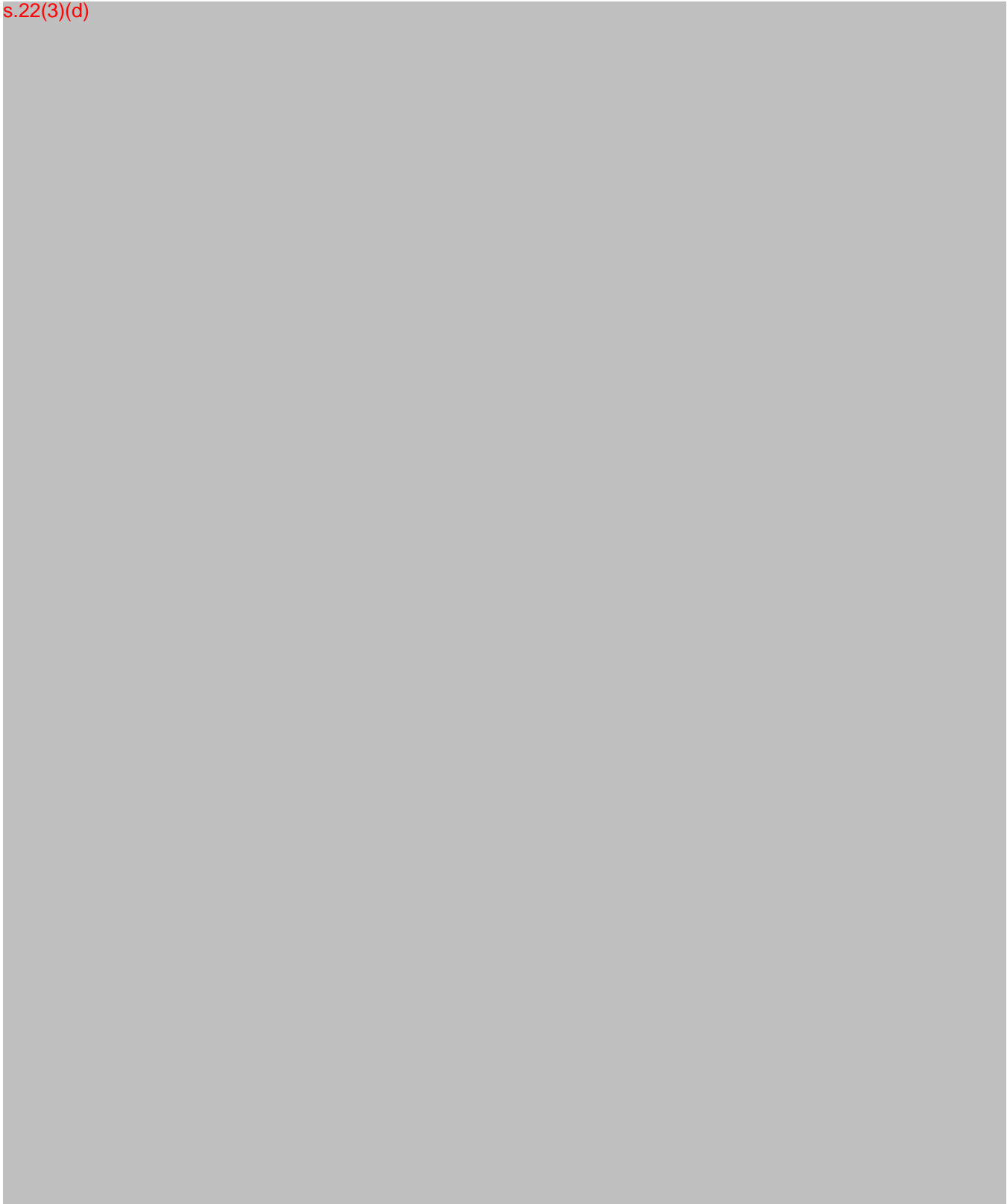
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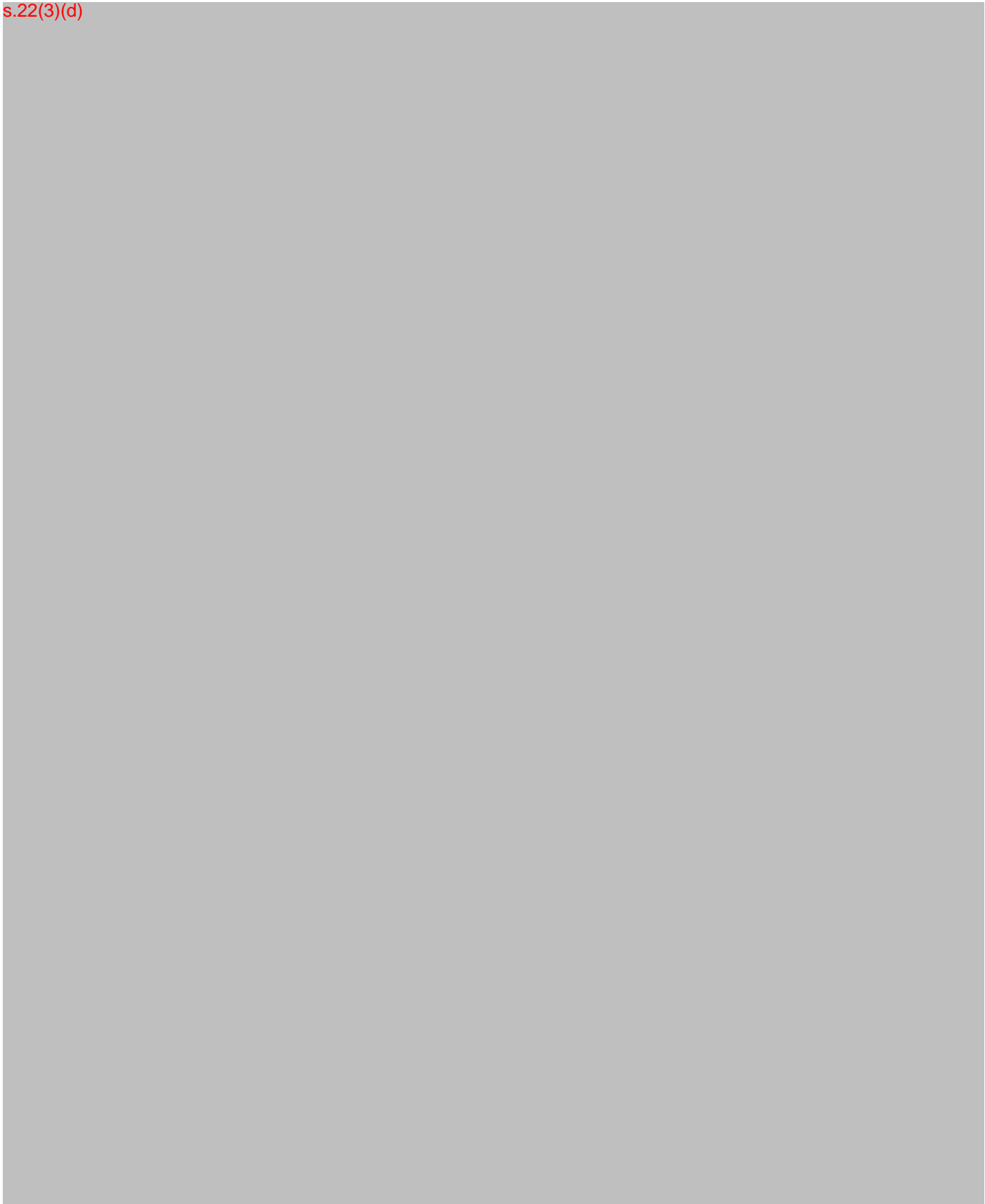
BRUCE BLACKWELL PROJECT SUMMARY

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JEFF MCWILLIAMS

Tel: 604.986.4944
jeff.mcwilliams@telus.net

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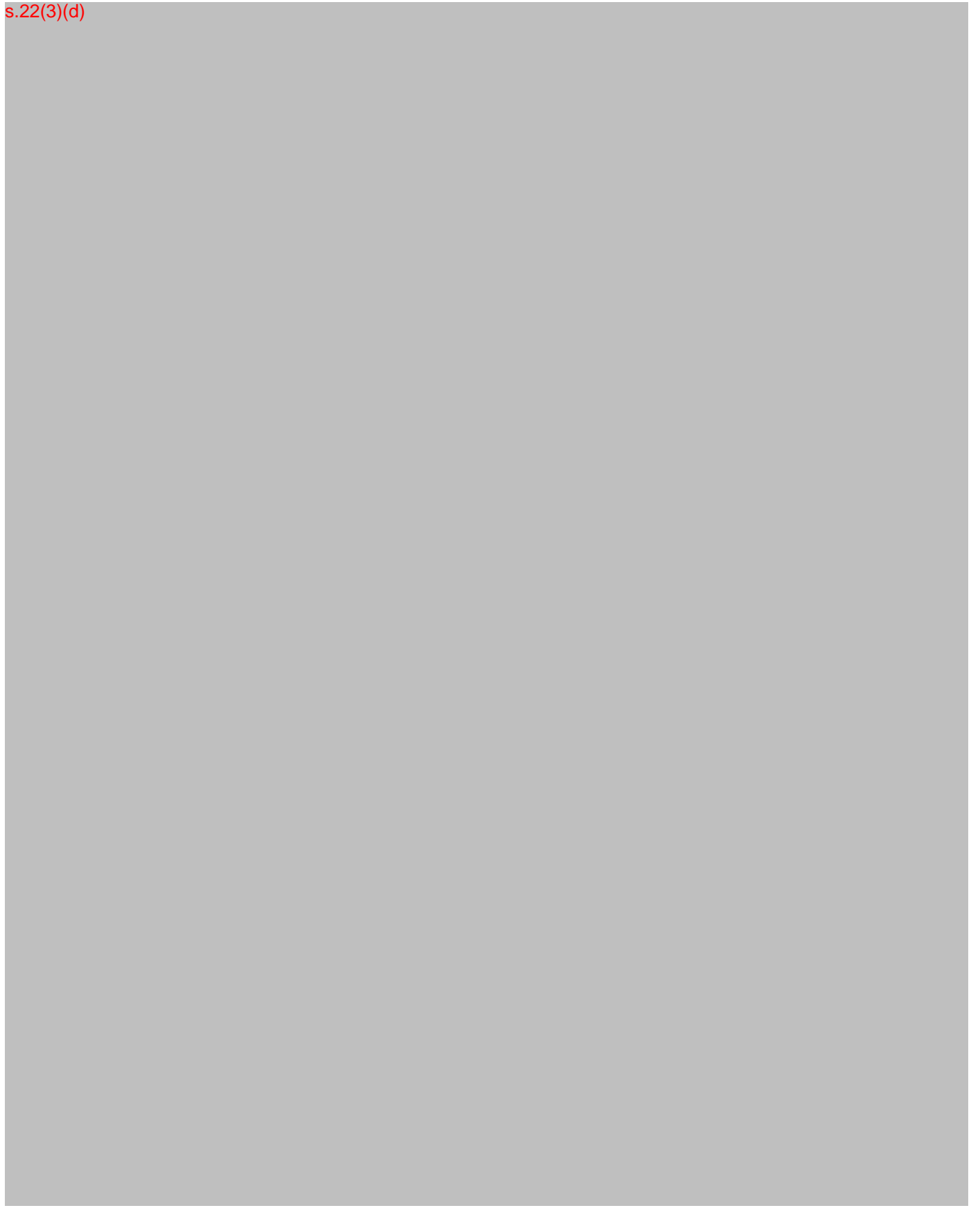


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JEFF FISHER

Tel: 604.314.1273

j_fisher@bablackwell.com

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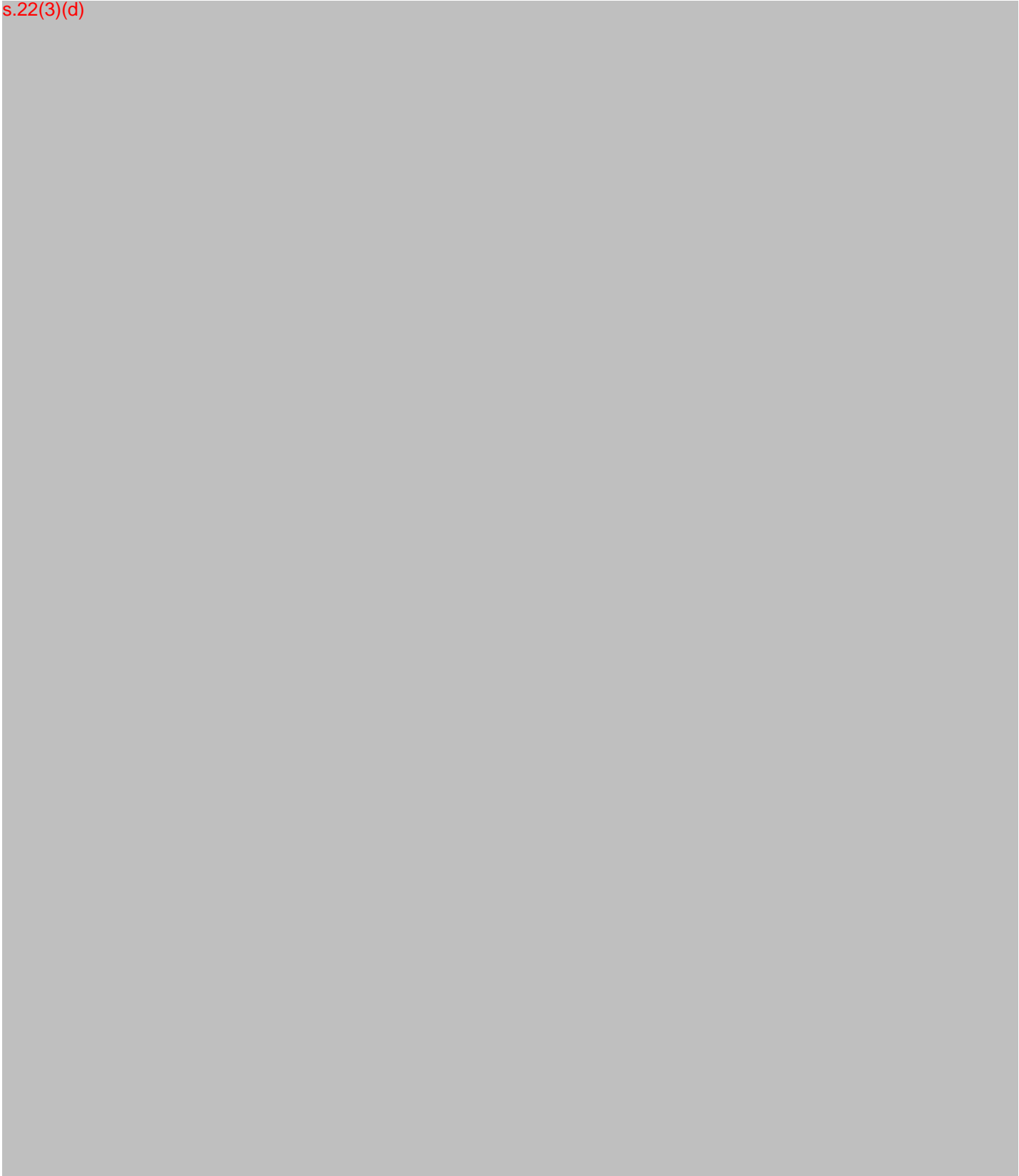
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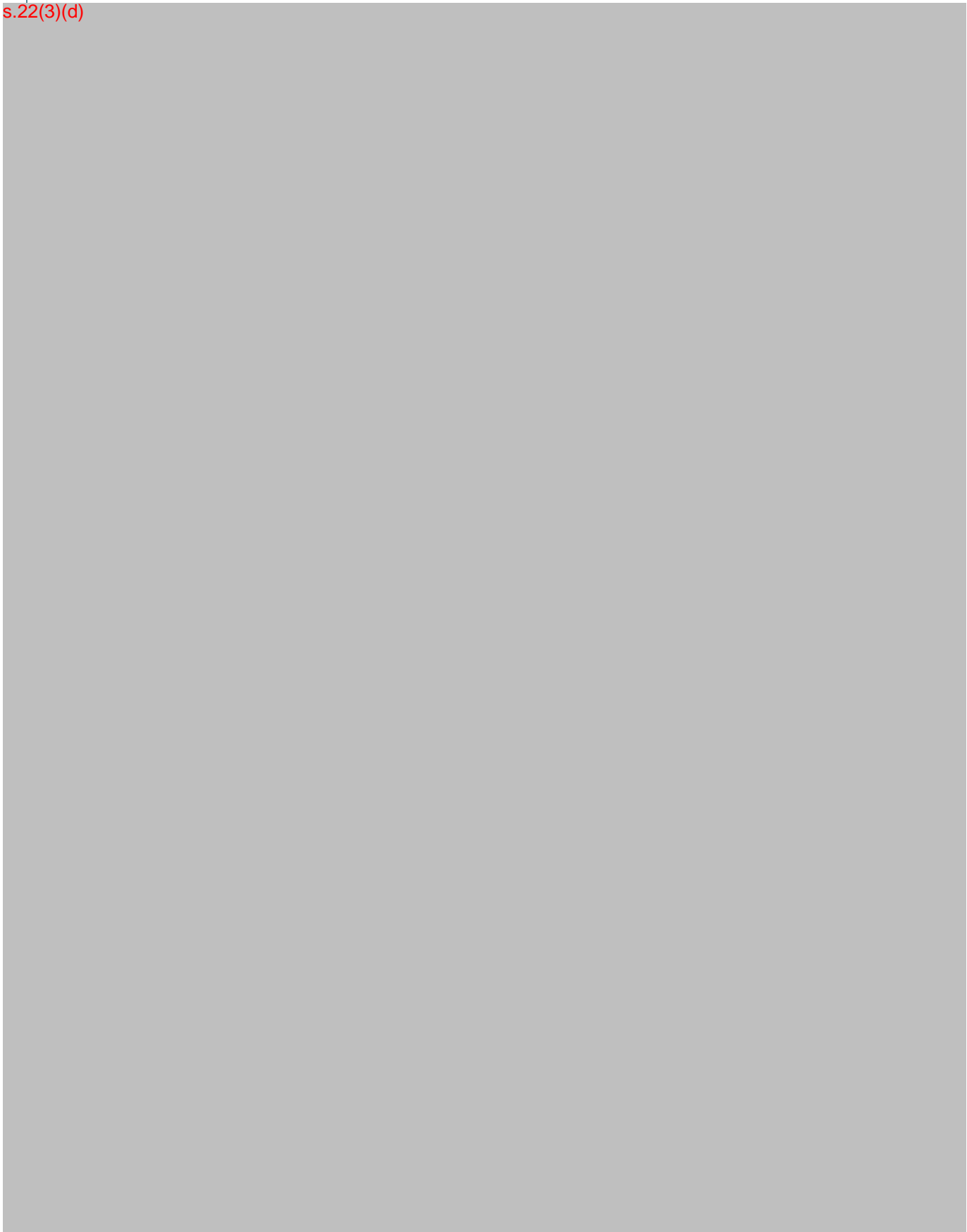
AARON BIGSBY

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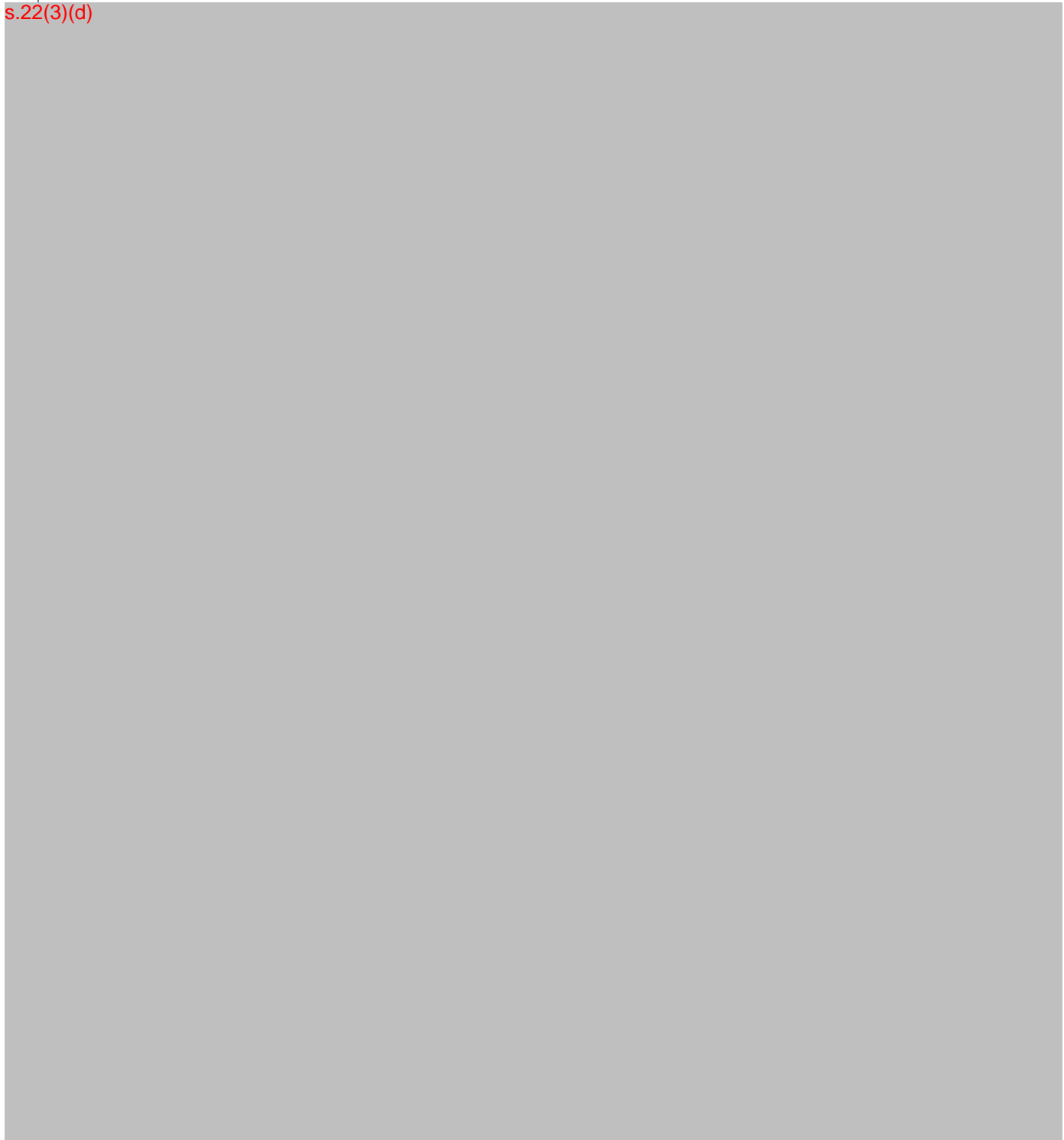


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JUDITH COWAN

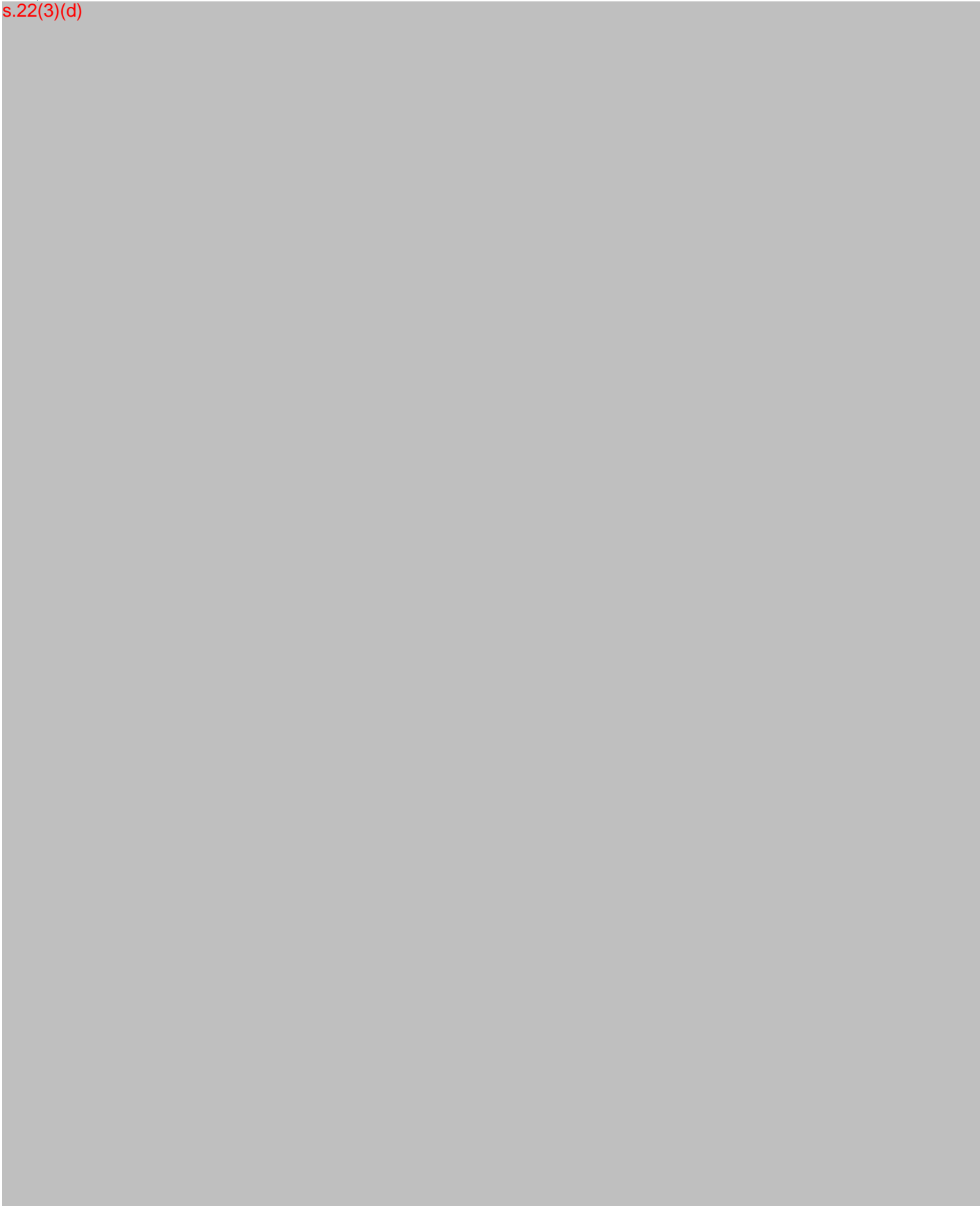
Office: (604) 986-8346 ext. 205
E-mail: j_cowan@bablackwell.com

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ALI RAHI

Office: 604-986-8346 Ext: 207
Email: a_rahi@bablackwell.com

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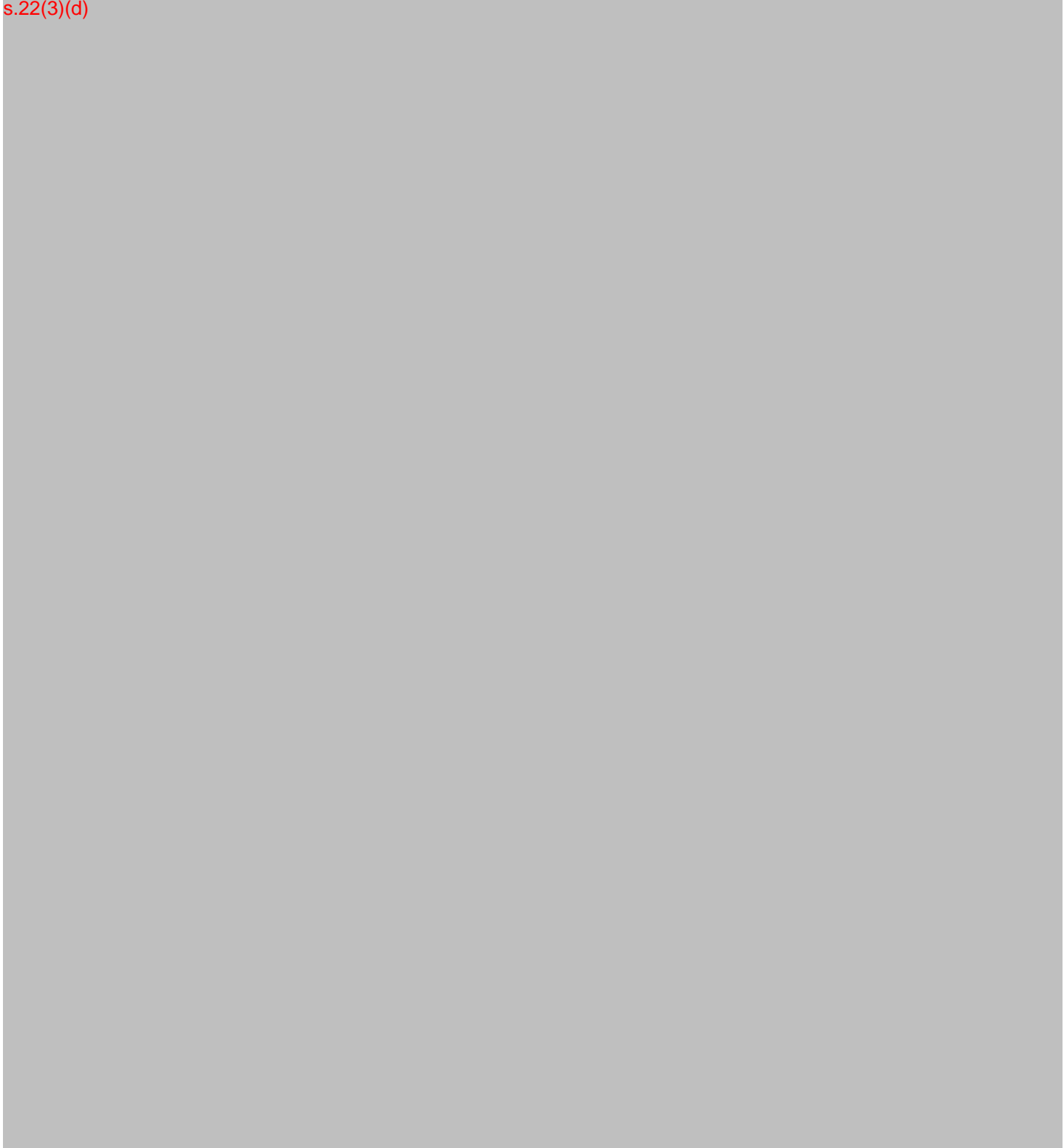


VALENTINE LYNCH

Office: 604-986-8346 x. 203

E-mail: v_lynch@bablackwell.com

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s.22(3)(d)





s.22(3)(d)





DEBRAH ZEMANEK

Office: (604) 986-8346 ext. 218
E-mail: d_zemanek@bablackwell.com

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QUENTIN SCHMIDT

Office: 604-986-8346 x. 206

E-mail: q_schmidt@bablackwell.com

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BRIN FARRELL

Office: (604) 986-8346

E-mail: b_farrell@bablackwell.com

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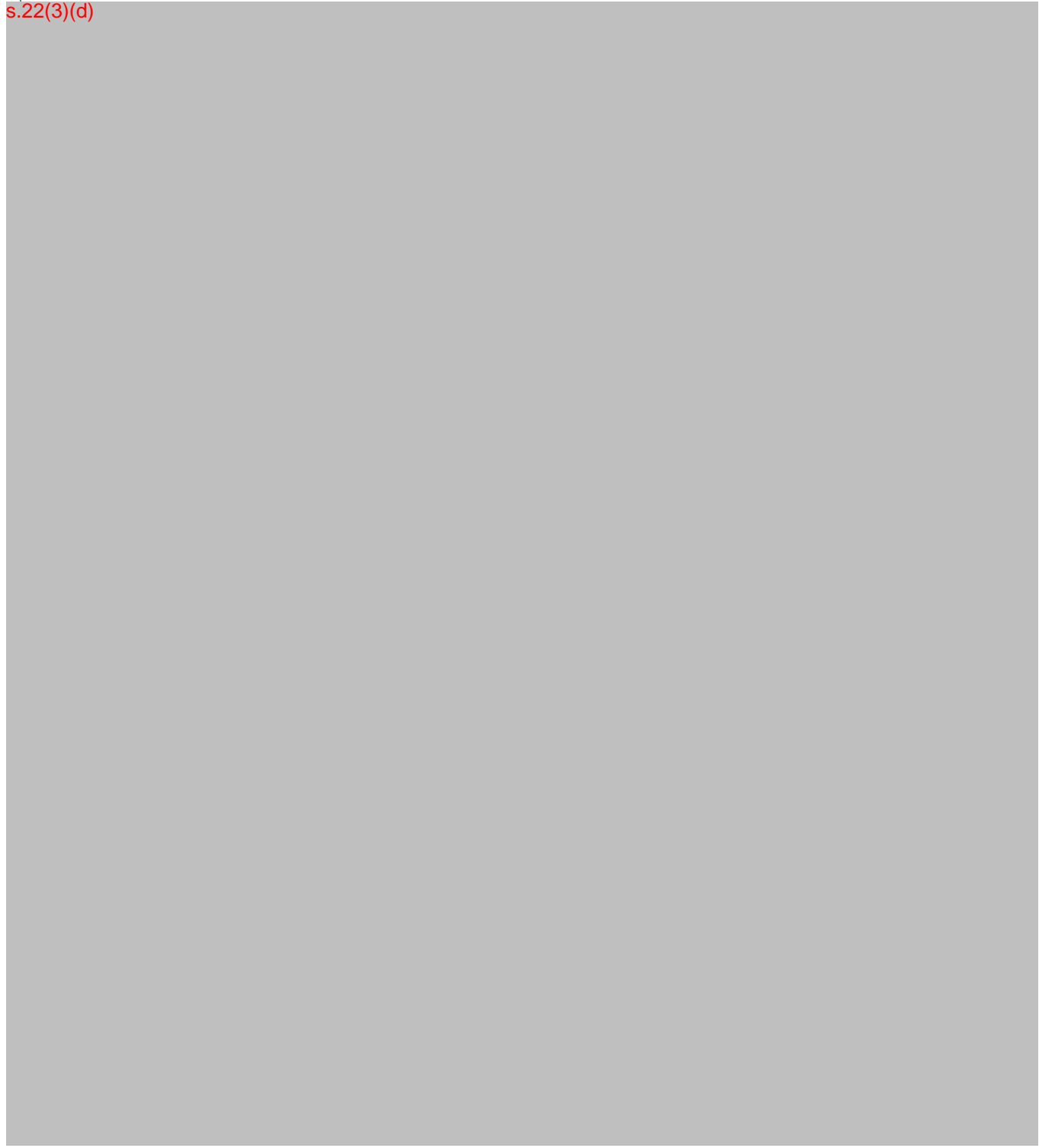




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ELIZABETH PANOZZO

Phone: (604) 986-8346 ext. 212

E-mail: e_panozzo@bablackwell.com

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s.22(3)(d)



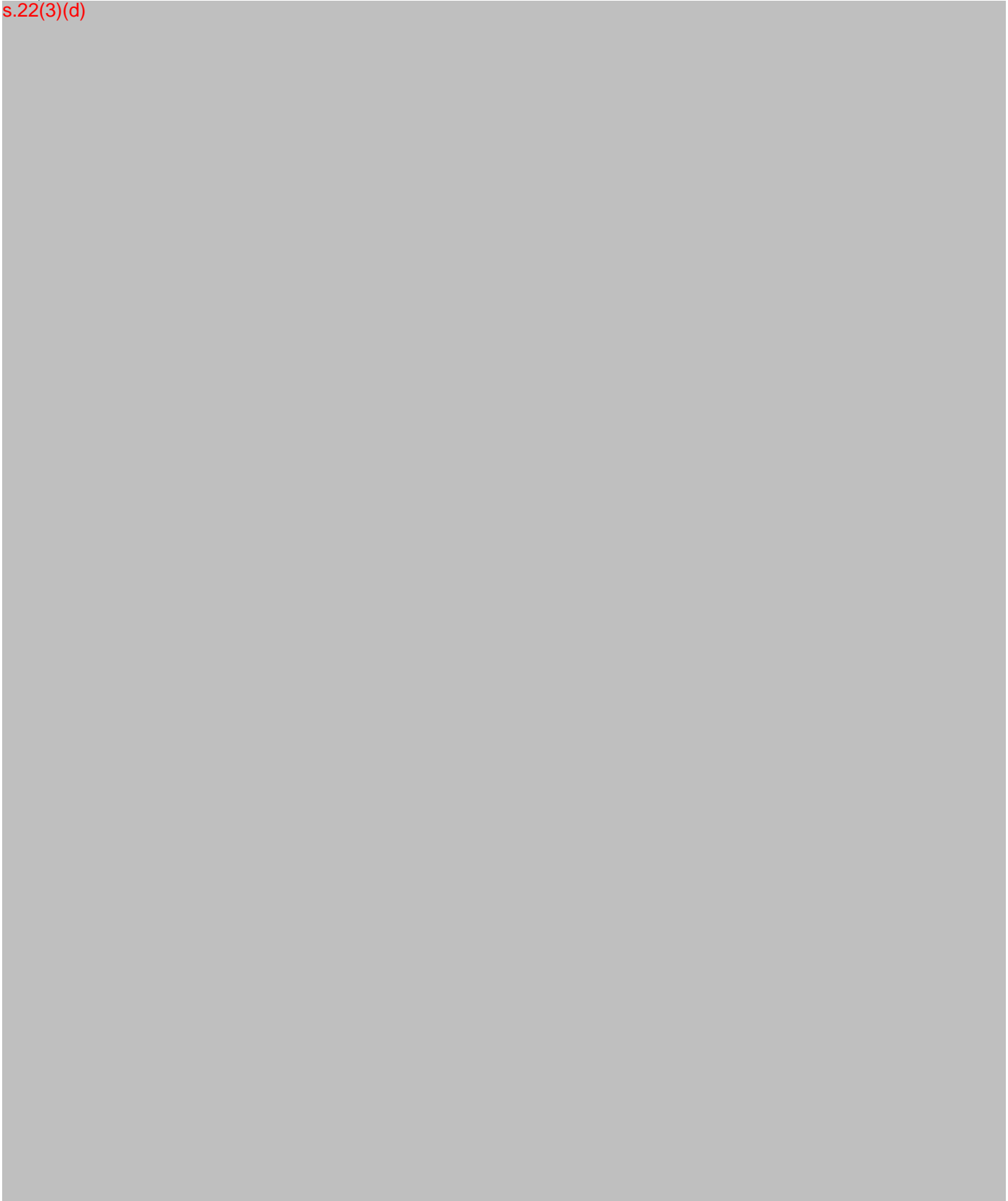


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AVRAM SANDOR

Phone: (604) 986-8346 ext. 214
E-mail: a_sandor@bablackwell.com

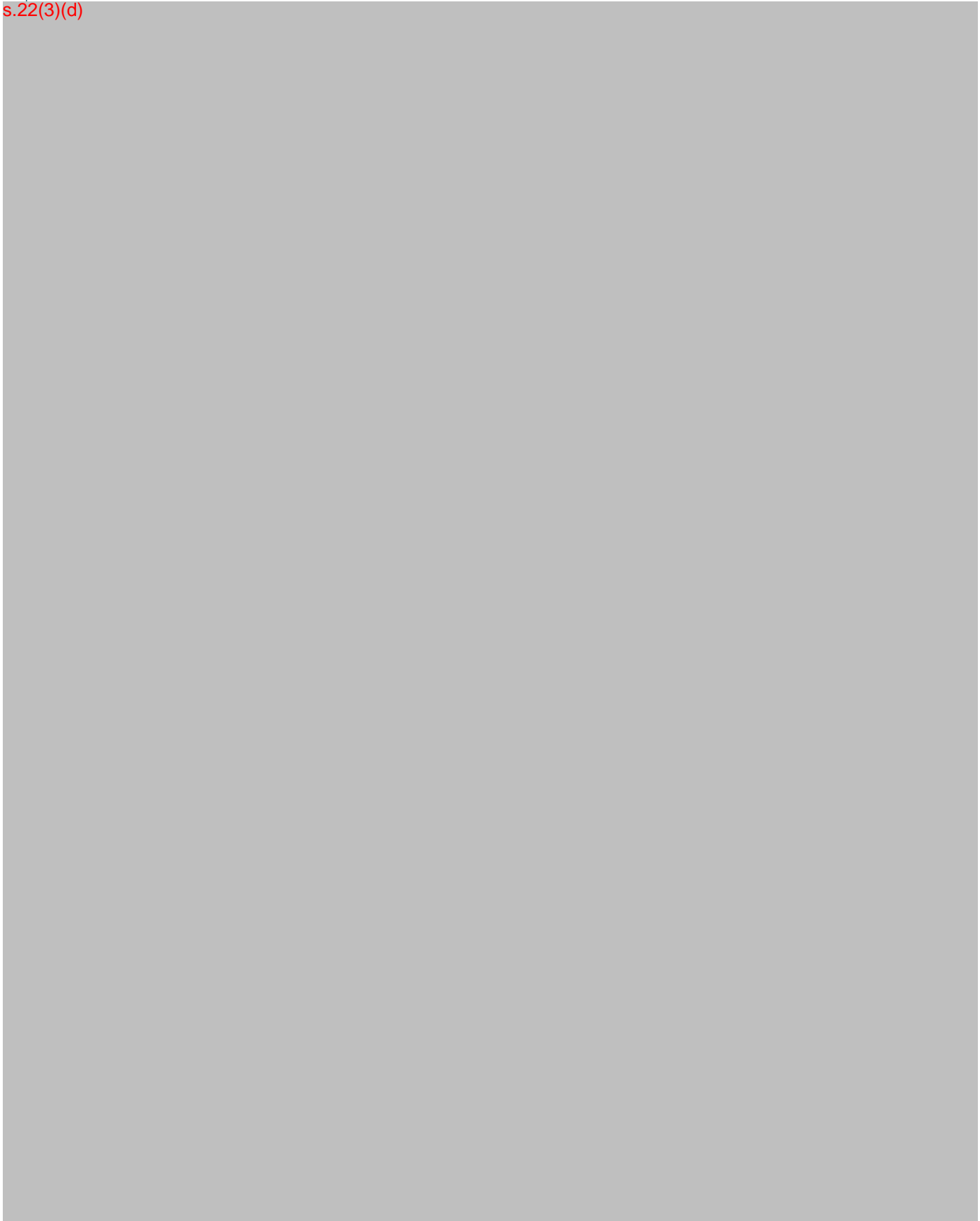
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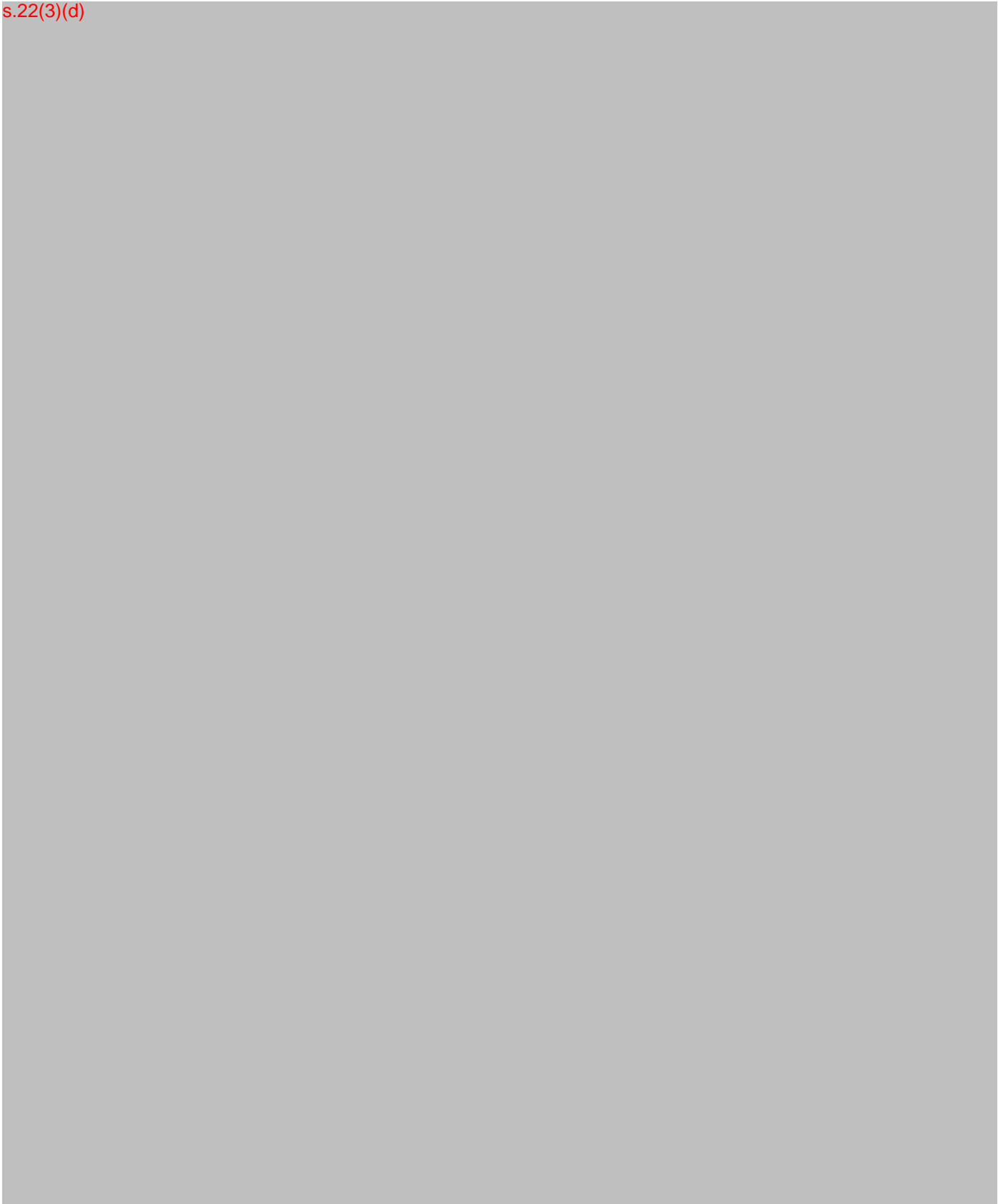


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JOHN ARNETT, CHARTWELL RESOURCE GROUP

John Arnett, M.Sc.

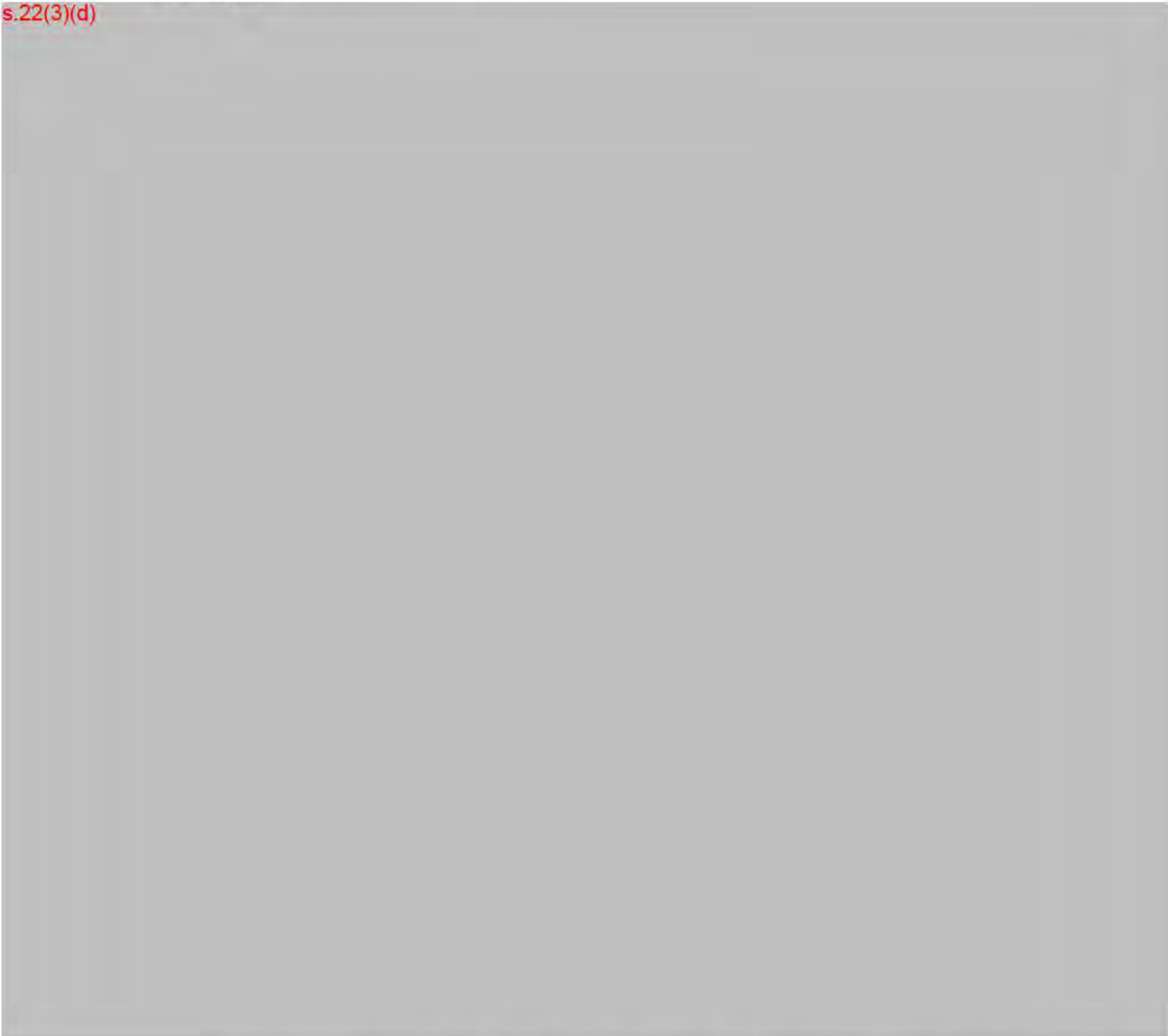
GIS Analyst

210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. jarnett@crgl.ca

T. 604-973-1126

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CHARTWELL RESOURCE GROUP LTD.

WWW.CRGL.CA • 210-275 Fell Ave, North Vancouver, BC V7P 3R5 • 604.980.5061



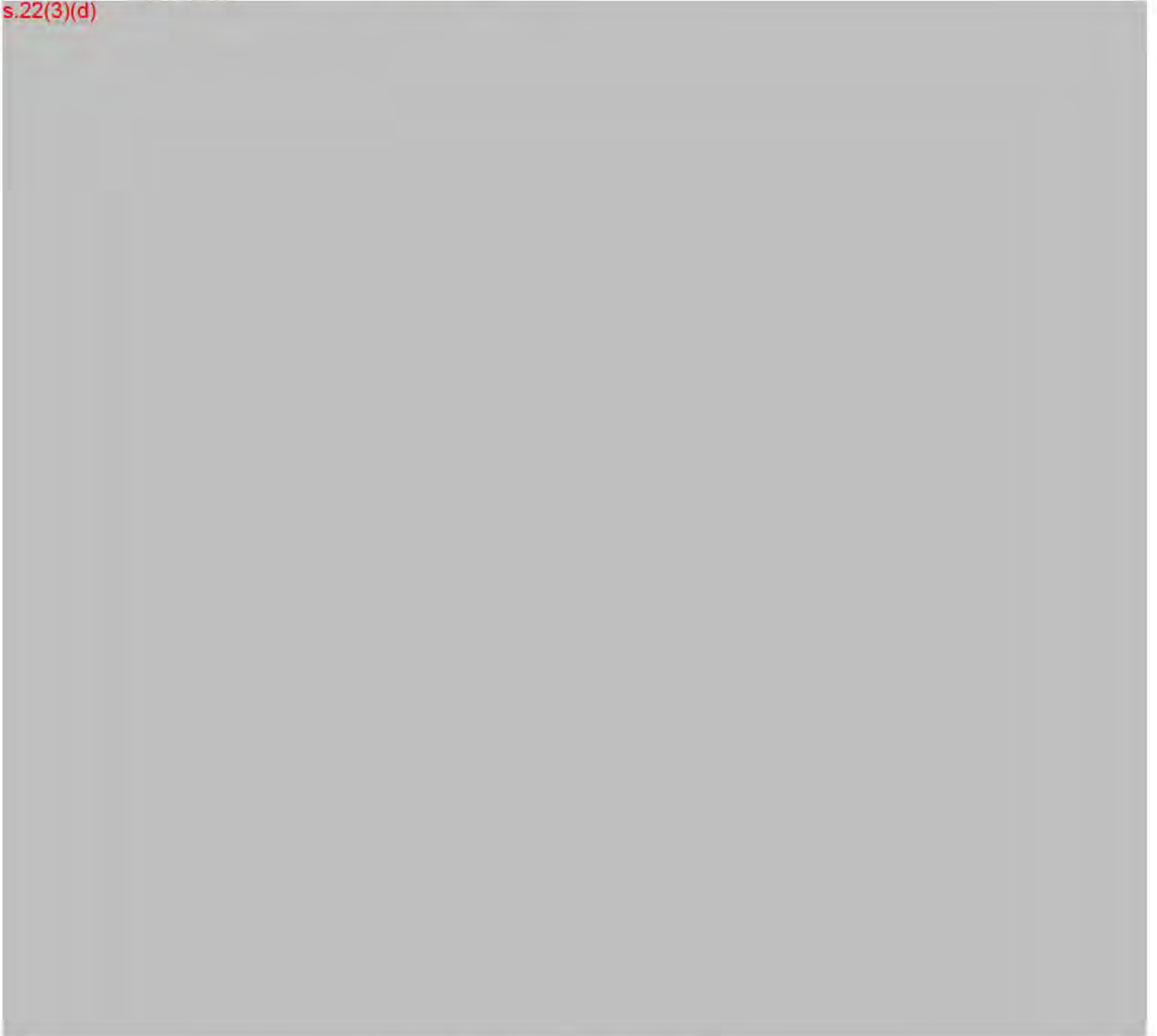
John Arnett, M.Sc.

GIS Analyst

210 - 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. jarnett@crgl.ca

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CERTIFICATE OF EXISTING INSURANCE

Section 2 through 8 – to be completed and executed by the Insurer or its Authorized Representative

- THIS CERTIFICATE IS ISSUED TO:** City of Vancouver, 453 W 12th Avenue, Vancouver, BC, V5Y 1V4
and certifies that the insurance policy (policies) as listed herein has/have been issued to the Named Insured and is/are in full force and effect.
- NAMED INSURED** (must be the same name as the Proponent/bidder and is either an individual or a legally incorporated company)

BUSINESS TRADE NAME or DOING BUSINESS AS B.A. Blackwell and Associates Ltd.

BUSINESS ADDRESS 270 – 18 Gostick Place, North Vancouver, BC V7M 3G3

DESCRIPTION OF OPERATION Consulting service for Stanley Park forestry initiatives

3. PROPERTY INSURANCE (All Risks Coverage including Earthquake and Flood)

INSURER _____	Insured Values (Replacement Cost)	-
TYPE OF COVERAGE _____	Building and Tenants' Improvements	\$ _____
POLICY NUMBER _____	Contents and Equipment	\$ _____
POLICY PERIOD From _____ to _____	Deductible Per Loss	\$ _____

4. COMMERCIAL GENERAL LIABILITY INSURANCE (Occurrence Form)

Including the following extensions:

√ Personal Injury	INSURER _____
√ Property Damage including Loss of Use to _____	POLICY NUMBER _____
√ Products and Completed Operations Inclusive -	POLICY PERIOD From _____ to _____
√ Cross Liability or Severability of Interest	Limits of Liability (Bodily Injury and Property Damage)
√ Employees as Additional Insureds	Per Occurrence \$ _____
√ Blanket Contractual Liability	Aggregate \$ _____
√ Non-Owned Auto Liability	All Risk Tenants' Legal Liability \$ _____
	Deductible Per Occurrence \$ _____

5. AUTOMOBILE LIABILITY INSURANCE for operation of owned and/or leased vehicles

INSURER _____	Limits of Liability -
POLICY NUMBER _____	Combined Single Limit \$ _____
POLICY PERIOD From _____ to _____	<i>If vehicles are insured by ICBC, complete and provide Form APV-47.</i>

6. UMBRELLA OR EXCESS LIABILITY INSURANCE

Limits of Liability (Bodily Injury and Property Damage Inclusive)

INSURER _____	Per Occurrence	\$ _____
POLICY NUMBER _____	Aggregate	\$ _____
POLICY PERIOD From _____ to _____	Self-Insured Retention	\$ _____

7. PROFESSIONAL LIABILITY INSURANCE

INSURER _____	Limits of Liability
POLICY NUMBER _____	Per Occurrence/Claim \$ _____
POLICY PERIOD From _____ to _____	Aggregate \$ _____
	Deductible Per Occurrence/Claim \$ _____

If the policy is in a "CLAIMS MADE" form, please specify the applicable Retroactive Date: _____

8. OTHER INSURANCE

TYPE OF INSURANCE <u>Errors & Omissions</u>	Limits of Liability
INSURER <u>As Arranged by Victor Insurance Managers Inc.</u>	Per Occurrence \$ <u>5,000,000</u>
POLICY NUMBER <u>s. 15(1)(l)</u>	Aggregate \$ <u>5,000,000</u>
POLICY PERIOD From <u>05/01/2022</u> to <u>05/01/2025</u>	Deductible Per Loss \$ <u>1,000</u>
TYPE OF INSURANCE _____	Limits of Liability
INSURER _____	Per Occurrence \$ _____
POLICY NUMBER _____	Aggregate \$ _____
POLICY PERIOD From _____ to _____	Deductible Per Loss \$ _____

SIGNED BY THE INSURER OR ITS AUTHORIZED REPRESENTATIVE J. Fell Dated 10/11/2022

PRINT NAME OF INSURER OR ITS AUTHORIZED REPRESENTATIVE, ADDRESS AND PHONE NUMBER
Jordan Fellner - Hub International Insurance Brokers, 400-4350 Still Creek Drive, Burnaby, BC V5C 0G5 604-269-1000

UNDERTAKING OF INSURANCE

To: CITY OF VANCOUVER

Re: PS20220102-VBPR-RFP - Consulting Service for Stanley Park Forestry Initiatives


Dear Sirs:

We, the undersigned have completed, signed and attached the "Certificate of Existing Insurance" enclosed with this undertaking and now also do hereby undertake and agree that if

B.A. Blackwell and Associates Ltd. (the "**Proponent**") is awarded a Contract,

we will insure the Supplier in accordance with the requirements of the Contract, the form of which is included in the RFP Documents and will form part of the Contract Documents.

Dated at Burnaby, British Columbia, this 11th day of October
20 22.

By (name): Jordan Fellner
Title: Account Executive
Signature: 

Full Corporate Name of Insurer:

The "Certificate of Existing Insurance" provided with the RFP should be completed and signed and enclosed with this Appendix, both of which are to be signed by the Insurance Company or an authorized broker on behalf of the Insurance Company. A SEPARATE FORM (AND CERTIFICATE OF EXISTING INSURANCE) SHOULD BE SIGNED FOR EACH POLICY IF THE PROPOENT HAS MORE THAN ONE INSURER OR BROKER FOR ITS POLICIES.



CERTIFICATE OF EXISTING INSURANCE

Section 2 through 8 – to be completed and executed by the Insurer or its Authorized Representative

- THIS CERTIFICATE IS ISSUED TO: City of Vancouver, 453 W 12th Avenue, Vancouver, BC, V5Y 1V4
and certifies that the insurance policy (policies) as listed herein has/have been issued to the Named Insured and is/are in full force and effect.
- NAMED INSURED (must be the same name as the Proponent/bidder and is either an individual or a legally incorporated company)
B. A. Blackwell & Associates Ltd.
BUSINESS TRADE NAME or DOING BUSINESS AS _____

BUSINESS ADDRESS

18 Gostick Place North Vancouver, BC V7M 3G3

DESCRIPTION OF OPERATION

Forestry & Environmental Consultants

- PROPERTY INSURANCE (All Risks Coverage including Earthquake and Flood)

INSURER <u>N/A</u>	Insured Values (Replacement Cost)	-
TYPE OF COVERAGE _____	Building and Tenants' Improvements	\$ _____
POLICY NUMBER _____	Contents and Equipment	\$ _____
POLICY PERIOD From _____ to _____	Deductible Per Loss	\$ _____

- COMMERCIAL GENERAL LIABILITY INSURANCE (Occurrence Form)

Including the following extensions:

- Personal Injury
- Property Damage including Loss of Use to _____
- Products and Completed Operations Inclusive -
- Cross Liability or Severability of Interest
- Employees as Additional Insureds
- Blanket Contractual Liability
- Non-Owned Auto Liability

INSURER Certain Underwriters at Lloyds as arranged by Shepapr Compello Ltd.
 POLICY NUMBER _____
 POLICY PERIOD From Sep. 22, 2022 to Sep. 15(1)(1)
 Sep 22, 2023

Limits of Liability (Bodily Injury and Property Damage)

Per Occurrence	\$ 5,000,000
Aggregate	\$ 5,000,000
All Risk Tenants' Legal Liability	\$ 500,000
Deductible Per Occurrence	\$ 2,500

- AUTOMOBILE LIABILITY INSURANCE for operation of owned and/or leased vehicles

INSURER _____
 POLICY NUMBER _____
 POLICY PERIOD From _____ to _____
 provide Form APV-47.

Limits of Liability -
 Combined Single Limit \$ _____
 If vehicles are insured by ICBC, complete and

- UMBRELLA OR EXCESS LIABILITY INSURANCE (Damage Inclusive)

INSURER _____
 POLICY NUMBER _____
 POLICY PERIOD From _____ to _____

Limits of Liability (Bodily Injury and Property Damage)

Per Occurrence	\$ _____
Aggregate	\$ _____
Self-Insured Retention	\$ _____

- PROFESSIONAL LIABILITY INSURANCE

INSURER _____
 POLICY NUMBER _____
 POLICY PERIOD From _____ to _____

Limits of Liability

Per Occurrence/Claim	\$ _____
Aggregate	\$ _____
Deductible Per Occurrence/Claim	\$ _____

If the policy is in a "CLAIMS MADE" form, please specify the applicable Retroactive Date: _____

- OTHER INSURANCE

TYPE OF INSURANCE _____
 INSURER _____
 POLICY NUMBER _____
 POLICY PERIOD From _____ to _____

Limits of Liability

Per Occurrence	\$ _____
Aggregate	\$ _____
Deductible Per Loss	\$ _____

TYPE OF INSURANCE _____
 INSURER _____
 POLICY NUMBER _____
 POLICY PERIOD From _____ to _____

Limits of Liability

Per Occurrence	\$ _____
Aggregate	\$ _____
Deductible Per Loss	\$ _____

SIGNED BY THE INSURER OR ITS AUTHORIZED REPRESENTATIVE

Warren McDonald

Dated Oct. 12, 2022

PRINT NAME OF INSURER OR ITS AUTHORIZED REPRESENTATIVE, ADDRESS AND PHONE NUMBER

Warren McDonald - Account Executive

UNDERTAKING OF INSURANCE

To: CITY OF VANCOUVER

Re: PS20220102-VBPR-RFP - Consulting Service for Stanley Park Forestry Initiatives

Dear Sirs:

We, the undersigned have completed, signed and attached the "Certificate of Existing Insurance" enclosed with this undertaking and now also do hereby undertake and agree that if

B. A. Blackwell & Associates Ltd. (the "Proponent") is awarded a Contract,

we will insure the Supplier in accordance with the requirements of the Contract, the form of which is included in the RFP Documents and will form part of the Contract

Documents.

Dated at Vancouver, British Columbia, this 12th day of October
2022.

By (name): Warren McDonald

Title: Account Executive

Signature:  _____

Full Corporate Name of Insurer:

The "Certificate of Existing Insurance" provided with the RFP should be completed and signed and enclosed with this Appendix, both of which are to be signed by the Insurance Company or an authorized broker on behalf of the Insurance Company. A SEPARATE FORM (AND CERTIFICATE OF EXISTING INSURANCE) SHOULD BE SIGNED FOR EACH POLICY IF THE PROPOENT HAS MORE THAN ONE INSURER OR BROKER FOR ITS POLICIES.

REQUEST OF PROPOSALS NO. PS20220102-VBPR-RFP
CONSULTING SERVICE FOR STANLEY PARK FORESTRY INITIATIVES
FORM OF PROPOSAL

FORM OF PROPOSAL

PS20220102-VBPR-RFP - CONSULTING SERVICE FOR STANLEY PARK FORESTRY INITIATIVES
(the "RFP")

Proponent's Full Legal Name: B.A. Blackwell & Associates Ltd.

"Proponent"

Address: 270 - 18 Gostick Place, North Vancouver, BC, V7M 3G3

Jurisdiction of Legal Organization: British Columbia

Key Contact Person: Bruce Blackwell

Telephone: Office: 604-986-8346 ext 201/ Cell: 604-351-1876

E-mail: bablackwell@bablackwell.com

The Proponent, having carefully examined and read the RFP, including all amendments and addenda thereto, if any, and all other related information published on the City's e-Sourcing system, hereby acknowledges that it has understood all of the foregoing, and in response thereto hereby submits the enclosed Proposal.

IN WITNESS WHEREOF the Proponent has executed this Proposal Form:



Signature of Authorized Signatory for the Proponent

November 1, 2022

Date

Bruce Blackwell, Principal

Name and Title

Signature of Authorized Signatory for the Proponent

Date

Name and Title

REQUEST OF PROPOSALS NO. PS20220102-VBPR-RFP
CONSULTING SERVICE FOR STANLEY PARK FORESTRY INITIATIVES
FORM OF PROPOSAL

FORM OF PROPOSAL

PS20220102-VBPR-RFP - CONSULTING SERVICE FOR STANLEY PARK FORESTRY INITIATIVES
(the "RFP")

Proponent's Full Legal Name: B.A. Blackwell & Associates Ltd.

"Proponent"

Address: 270 - 18 Gostick Place, North Vancouver, BC, V7M 3G3

Jurisdiction of Legal Organization: British Columbia

Key Contact Person: Bruce Blackwell

Telephone: Office: 604-986-8346 ext 201/ Cell: 604-351-1876

E-mail: bablackwell@bablackwell.com

The Proponent, having carefully examined and read the RFP, including all amendments and addenda thereto, if any, and all other related information published on the City's e-Sourcing system, hereby acknowledges that it has understood all of the foregoing, and in response thereto hereby submits the enclosed Proposal.

IN WITNESS WHEREOF the Proponent has executed this Proposal Form:



Signature of Authorized Signatory for the Proponent

November 1, 2022

Date

Bruce Blackwell, Principal

Name and Title

Signature of Authorized Signatory for the Proponent

Date

Name and Title

B. A. Blackwell & Associates Ltd.

PERSONAL INFORMATION CONSENT FORM(S)

Complete one copy of this Personal Information Consent Form(s), in the form set out below, for each key personnel for whom a CV or other information regarding employment history and qualifications has been included in the Proposal.

PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Jeff MacWilliams
_____ (Print Name)

consent to the indirect collection from B.A. Blackwell & Associates Ltd.
_____ (Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.


Signature

Oct 31/22.
Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PERSONAL INFORMATION CONSENT FORM(S)

Complete one copy of this Personal Information Consent Form(s), in the form set out below, for each key personnel for whom a CV or other information regarding employment history and qualifications has been included in the Proposal.

PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Aaron Bigsby


_____ (Print Name)

consent to the indirect collection from B.A. Blackwell & Associates Ltd.

_____ (Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.



Signature

October 31, 2022

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PERSONAL INFORMATION CONSENT FORM(S)

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PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Quenton Schmidt
_____ (Print Name)

consent to the indirect collection from B.A. Blackwell & Associates Ltd.

_____ (Print Name of Proponent) of my
personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.

Quenton Schmidt
Signature

Oct. 31. 2022
Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PERSONAL INFORMATION CONSENT FORM(S)

Complete one copy of this Personal Information Consent Form(s), in the form set out below, for each key personnel for whom a CV or other information regarding employment history and qualifications has been included in the Proposal.

PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Debrah Zemunek
_____ (Print Name)

consent to the indirect collection from B.A. Blackwell & Associates Ltd.
_____ (Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.


Signature

Oct 31, 2022
Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PERSONAL INFORMATION CONSENT FORM(S)

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PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Brian Blackwell
_____ (Print Name)

consent to the indirect collection from B.A. Blackwell & Associates Ltd.
_____ (Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.

[Signature]
Signature

OCT 31, 2022
Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PERSONAL INFORMATION CONSENT FORM(S)

Complete one copy of this Personal Information Consent Form(s), in the form set out below, for each key personnel for whom a CV or other information regarding employment history and qualifications has been included in the Proposal.

PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Valentine Lynch
_____ (Print Name)

consent to the indirect collection from B.A. Blackwell & Associates Ltd.
_____ (Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.

Valentine J
Signature

Oct. 31 2022
Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PERSONAL INFORMATION CONSENT FORM(S)

Complete one copy of this Personal Information Consent Form(s), in the form set out below, for each key personnel for whom a CV or other information regarding employment history and qualifications has been included in the Proposal.

PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Arwan Sandar
_____ (Print Name)

consent to the indirect collection from B.A. Blackwell & Associates Ltd.
_____ (Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.



Signature

Oct 31, 2022

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PERSONAL INFORMATION CONSENT FORM(S)

Complete one copy of this Personal Information Consent Form(s), in the form set out below, for each key personnel for whom a CV or other information regarding employment history and qualifications has been included in the Proposal.

PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, JUDITH COWAN
_____ (Print Name)

consent to the indirect collection from B.A. Blackwell & Associates Ltd.
_____ (Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.

Judith Cowan
Signature

Oct 31 / 2022
Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PERSONAL INFORMATION CONSENT FORM(S)

Complete one copy of this Personal Information Consent Form(s), in the form set out below, for each key personnel for whom a CV or other information regarding employment history and qualifications has been included in the Proposal.

PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Alireza Aragh-Rain

(Print Name)

consent to the indirect collection from B.A. Blackwell & Associates Ltd.

(Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.


Signature

2022-10-31
Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PERSONAL INFORMATION CONSENT FORM(S)

Complete one copy of this Personal Information Consent Form(s), in the form set out below, for each key personnel for whom a CV or other information regarding employment history and qualifications has been included in the Proposal.

PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Brin Farrell

(Print Name)

consent to the indirect collection from B.A. Blackwell & Associates Ltd.

(Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.


Signature

Oct. 31 / 22
Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PERSONAL INFORMATION CONSENT FORM(S)

Complete one copy of this Personal Information Consent Form(s), in the form set out below, for each key personnel for whom a CV or other information regarding employment history and qualifications has been included in the Proposal.

PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Jeff Fisher

(Print Name)

consent to the indirect collection from B.A. Blackwell & Associates Ltd.

(Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.



Signature

November 1, 2022

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PERSONAL INFORMATION CONSENT FORM(S)

Complete one copy of this Personal Information Consent Form(s), in the form set out below, for each key personnel for whom a CV or other information regarding employment history and qualifications has been included in the Proposal.

PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Elizabeth Panozzo
_____ (Print Name)

consent to the indirect collection from B.A. Blackwell & Associates Ltd.
_____ (Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.



Signature

November 1, 2022

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

Chartwell Resource Group Ltd.

PERSONAL INFORMATION CONSENT FORM(S)

Complete one copy of this Personal Information Consent Form(s), in the form set out below, for each key personnel for whom a CV or other information regarding employment history and qualifications has been included in the Proposal.

PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, John Arnett

(Print Name)

consent to the indirect collection from _____
B.A. Blackwell & Associates Ltd. (Print Name of Proponent) of my
personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.


Signature

2022-10-31
Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PS20220102-VBPR-RFP - Consulting Service for Stanley Park Forestry Initiatives

		Bruce Blackwell	Jeff McWilliams	Jeff Fisher	Judith Cowan	Aaron Bigsby	Ali Rahi	Valentine Lynch	Debrah Zemanek	Quentin Schmidt	Brin Farrell	Elizabeth Panozzo	Avram Sandor	John Arnett (Chartwell)						
		Project Manager	Silviculture Specialist	Forestry Operations Specialist	Lead Urban Forester and Arborist/ TRAQ	Forest Health Specialist	Urban Forester and Arborist/ TRAQ	Technical Support/ TRAQ	Project Forester Wildfire	Technical Support - Wildfire	Technical Support - Wildfire and GIS	Administrative and Technical Support	Geomatics Professional	Visual Impact Assessment						
Estimated Fees and Disbursements		s.21(1)																		
1.0	Phase 1: Preparation and On-boarding														Total Hours	Estimated Fees	Estimated Disburs. \$	Total Fees \$		
1.1	Background Material Review all relevant Park Board and City of Vancouver documents and policies	4.00			16.00		12.00	12.00							44.00	s.21(1)		s.21(1)		
1.2	Kick-off meeting (and finalization of work plan, schedule)	4.00			4.00										8.00					
	<i>Subtotal Hours</i>	<i>8.00</i>	<i>0.00</i>	<i>0.00</i>	<i>20.00</i>	<i>0.00</i>	<i>12.00</i>	<i>12.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>52.00</i>					
2.0	Phase 2: Hemlock Looper & Wildfire Risk Assessment																			
2.1	Hemlock Looper Area - All Areas excluding forest trails (plot survey)				40.00	8.00	80.00	80.00							208.00	s.21(1)				
2.2	Hemlock Looper Area - Only Forest Trails (plot survey)				40.00	8.00	80.00	80.00							208.00					
2.3	Hemlock Looper Assessment - walk-thorough survey of trails, roadways, and other targets				20.00		40.00	20.00							80.00					
2.4	Wildfire Risk Assessment	80.00							160.00	160.00					400.00					
2.5	Consultation with Stakeholders (i.e., Park Board, Fire Department staff, SPES)				16.00				16.00						32.00					
2.6	Park Board working group meeting	8.00			16.00										24.00					
	<i>Sub-total Hours</i>	<i>88.00</i>	<i>0.00</i>	<i>0.00</i>	<i>132.00</i>	<i>16.00</i>	<i>200.00</i>	<i>180.00</i>	<i>176.00</i>	<i>160.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>952.00</i>					
3.0	Phase 3: Draft Report Delivery																			
3.1	Development of the draft interim report														0.00	s.21(1)		s.21(1)		
a	Hemlock Looper Assessment compilation, inventory and analysis	6.00			8.00		40.00								54.00					
b	Hemlock Looper Mapping							8.00			10.00		30.00		48.00					
c	Wildfire Risk Assessment compilation and analysis								20.00	20.00					40.00					
d	Wildfire Risk Modelling and Mapping										10.00		30.00		40.00					
e	Hemlock Looper Assessment and Response Plan reporting	8.00	20.00	20.00	40.00	8.00		8.00				5.00			109.00					
f	Wildfire Risk Assessment and Mitigation Plan reporting	40.00						5.00	15.00			5.00			65.00					
3.2	Visual impact assessment Option 1 (Note: Option 2 pricing is 160 hours @ \$90/hr for a total cost of \$14,400)													80.00	80.00					
3.3	Field tour with Park Board staff (and others as/if invited by Park Board)	12.00			12.00										24.00					
3.4	Park Board working group meeting	8.00			16.00										24.00					
3.5	Presentation to senior leadership (incl PowerPoint, agenda, meeting notes, minutes)	8.00			12.00			4.00							24.00					
	<i>Sub-total Hours</i>	<i>82.00</i>	<i>20.00</i>	<i>20.00</i>	<i>88.00</i>	<i>8.00</i>	<i>40.00</i>	<i>25.00</i>	<i>35.00</i>	<i>20.00</i>	<i>20.00</i>	<i>10.00</i>	<i>60.00</i>	<i>80.00</i>	<i>508.00</i>					
4.0	Phase 4: Final Report																			
4.1	Draft Final Findings Report & Deliverables (including report finalization)	40.00			40.00			16.00				10.00			106.00	s.21(1)				
4.2	Presentation to senior leadership (incl PowerPoint, agenda, meeting notes, minutes)	4.00			8.00			4.00							16.00					
4.3	Park Board working group meeting	8.00			12.00										20.00					
	<i>Sub-total Hours</i>	<i>52.00</i>	<i>0.00</i>	<i>0.00</i>	<i>60.00</i>	<i>0.00</i>	<i>0.00</i>	<i>20.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>10.00</i>	<i>0.00</i>	<i>0.00</i>	<i>142.00</i>					
4.5	Optional Task																			
4.5.1	Project Management & Contract Administration for Hemlock Looper																			
4.5.2	Project Management & Contract Administration for Wildfire risk																			
4.5.3	Other - please specify details, if any																			
	<i>Sub-total Hours</i>																			
	<i>Total Hours per Team Member</i>	<i>230.00</i>	<i>20.00</i>	<i>20.00</i>	<i>300.00</i>	<i>24.00</i>	<i>252.00</i>	<i>237.00</i>	<i>211.00</i>	<i>180.00</i>	<i>20.00</i>	<i>20.00</i>	<i>60.00</i>	<i>80.00</i>						
	<i>Total Hours for the project</i>														<i>1654.00</i>					
	<i>Total Project Fees (exclusive of GST)</i>														\$	<i>178,455.00</i>	\$	<i>7,690.00</i>	\$	<i>186,145.00</i>

PLEASE NOTE:
 All prices are to be exclusive of applicable GST calculated upon such prices, but inclusive of all other costs.
 For proposed support staff, provide hourly rates including all costs for salary, benefits, profit and any other employment related expenses.

Details of Estimated Disbursements Fees

#	Description	Estimated Fees
Phase 1		
Phase 2	Hemlock Looper and Wildfire Risk Assessment - Vehicle rental (57 field days @ \$120/field day)	\$7,390.00
	Looper and Wildfire Risk Assessment - GPS rental (55 field days) at \$10/day	
Phase 3		
Phase 4	20 bound hard copies of the report @ \$0.15/page	\$300.00
Optional task		
Total Estimated Disbursement		\$7,690.00

** For travel cost, please explain how many trips have been budgeted etc.

Sustainability

INDIGENOUS PARTICIPATION

1. Do you have any strategic partnerships or joint ventures with First Nations and/or Indigenous peoples or organizations that seek mutually-beneficial project such as revenue flows and/or skills, training and employment opportunities? No

Strategic Partnerships

Joint Venture

Which is applied to:

All projects/contracts, including this one

OR

Specific work within projects/contracts

Specific locations

This project/contract

- 2, Please indicate any other ongoing partnership relations with Indigenous peoples, businesses or organizations that advance economic inclusion such as

Truth & Reconciliation Calls to Action

Initiatives/partnerships for:

- Recruitment,
- Employment,
- Supplier engagement,
- Sub-contractors involvement

- Other: Ongoing contractual relations with numerous First Nations including to advance tenure purchase agreements, support treaty negotiations, and support Specific Claims for compensation for past resource development incursions

3. Please describe how you will prioritize Indigenous participation and economic outcomes (ie. Indigenous businesses, sub-contracting, employment, job skills/training opportunities) as part of this procurement:

We will work with our existing relationships, and within City of Vancouver procurement processes, to engage First Nations contractors. Members of our team have established working relationships with or are familiar with First Nations contractors that provide services applicable to the needs of this project (i.e., tree removal, brush removal, pruning, equipment operation). This includes but is not limited to businesses fully or partially owned by members of the Squamish Nation (Atwell Contracting Ltd. and Beaverfoot Resources Ltd.).

SUPPLIER DIVERSITY

Please note for the Supplier Diversity, Vendors' are required to answer to the following question, which will be kept confidential in accordance with the Legal Terms and Conditions of this RFP.

<p>In the space below, indicate the vendor's company profile with regards to social value and economic inclusion including recognized certifications and/or if owned/controlled by an equity-seeking demographic (including but not limited to non-profit, cooperative, Women, Indigenous Peoples, Ethno-cultural People (minorities, newcomers, immigrants), persons with disabilities or LGBTQ2+ people).</p>	
<p>Majority owned/controlled/ by:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Indigenous People <input type="checkbox"/> Black & African diaspora <input type="checkbox"/> Person of Color & Racialized <input type="checkbox"/> 2S/LGBTQQIPAA+; Trans & Non-binary <input type="checkbox"/> Women <input type="checkbox"/> People with Disabilities <input type="checkbox"/> Neurodiverse <input type="checkbox"/> Non-Profit/Charity (Social Enterprise) <input type="checkbox"/> Coop <input type="checkbox"/> Employee Owned <input type="checkbox"/> Community Contribution Corporation (3C/CCC) <input type="checkbox"/> Other: please indicate 	<p>Social / Diverse Certifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> BCorp <input type="checkbox"/> Supplier Diversity Certification <input type="checkbox"/> JUST <input type="checkbox"/> Living Wage <hr/> <p>Enviro / Other Certifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Fairtrade <input type="checkbox"/> Green Business Certification (ie. LEED, ClimateSmart) <input checked="" type="checkbox"/> Other: please indicate BC Forest Safety Council SAFE certified
<p><input checked="" type="checkbox"/> None of the above</p>	<p><input type="checkbox"/> None of the above</p>

DIVERSE SUPPLIER PARTICIPATION

Will you be using sub-contractors for this procurement?

No

Yes

If yes, please indicate if any, of your sub-contractors identify as social/diverse (equity-seeking) owned/controlled/certified and how they will participate in as part of this contract

We propose to use only one sub-contractor, Chartwell Resource Group Ltd. They do not identify as equity-seeking owned/controlled/certified. Their participation will be limited to one task, a desktop visual impact assessment.

EMPLOYMENT EQUITY

In addition to being an equal opportunity employer, please indicate/describe:

1. Any policies/programs or how you advance employee equity, diversity and inclusion for racialized and under-represented populations (such as Indigenous People, People with Disabilities)
 - Equity, Diversity, Inclusion Policy
 - o Implementation/leadership/reporting
 - Federal Contractors Program
 - Pay Equity (across gender/ racialized)
 - Diversity (gender / racialized) in Leadership (Board, Executive etc)
 - Employee Resource Groups
 - Other: please describe
2. Employee Diversity tracking & reporting
 - Annual Surveying
 - Ongoing monitoring
 - Public reporting
 - Federal reporting
 - Other:
3. Source or recruit from Workforce Development and/or Skill Training programs:
 - Pathways / Pre-employment services for people who are under-represented and/or face barriers to traditional employment
 - Apprenticeships
4. Initiatives to support career advancement for racialized or under-represented persons
 - Job related skills development
 - Higher education
 - Financial support
 - Mentorship
 - Paid Apprenticeships
 - "Manager in Training"
 - Other:
5. Do you compensate (wages & benefits) at or above a Living Wage (\$20.53)
 - Yes
 - No
6. Non-mandatory benefits (i.e. extended health) to your employees
 - Extended health
 - RRSP contribution
 - Sick Leave Pay

WORKFORCE DIVERSITY

Vendors' are required to answer to the following question, which is for information gathering purposes only, and will be kept confidential in accordance with the Legal Terms and Conditions.

<p>As best known, in the space below, indicate the vendor's company profile with regards to economic inclusion supporting employment equity, diversity, inclusion and reconciliation by an equity-seeking demographic (including but not limited to Women, Indigenous Peoples, Ethno-cultural People (minorities, newcomers, immigrants), persons with disabilities or LGBTQ2+ people). <i>Confidential & for information only</i></p>	
<p><u>Overall Workforce Diversity:</u></p> <ul style="list-style-type: none"> % Indigenous People % Black & African diaspora % Person of Color & Racialized % 2S/LGBTQQIPAA+ % Trans & Gender Diverse & Non-binary <u>50</u> % Women % People with Disabilities % Neurodiverse 	<p><u>Leadership/Management/Executive Workforce Diversity:</u></p> <ul style="list-style-type: none"> % Indigenous People % Black & African diaspora % Person of Color & Racialized % 2S/LGBTQQIPAA+ % Trans & Gender Diverse & Non-binary % Women % People with Disabilities % Neurodiverse
<p><u>If you choose not to respond please indicate why:</u></p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> <u>Do not track this information</u> <input type="checkbox"/> <u>Do not want to share this information</u> 	

SUBCONTRACTORS

Provide details on Subcontractors in the form set out below by listing all of the subcontractors that the Proponent proposes to use in carrying out its work under an Agreement.

If selected to enter into an Agreement with the City, the Proponent may be limited to using subcontractors listed in its Proposal. If the City objects to a subcontractor listed in a Proposal, the City may permit a Proponent to propose a substitute Subcontractor acceptable to the City.

Subcontracted Scope	Visual impact assessment	
Subcontractor	Chartwell Resource Group Ltd. (Chartwell)	
Contact (name, title, email, telephone no.)	Eric Ortmayr, Partner / GIS Manager, Chartwell Resource Group Ltd. Direct: 604.973.1125 Office: 604.980.5061 eortmayr@crgl.ca	
Approximate Percent of the Work to be Subcontracted	5%	
Social Value Business - shall mean a business that has a recognized environmental or social certification and/or is majority owned/controlled by an equity-seeking demographic (including but not limited to non-profit, cooperative, Women, Indigenous Peoples, Ethno-cultural People (minorities, newcomers, immigrants), persons with disabilities or LGBTQ+ people).	Chartwell does not qualify as a Social Value Business	
The Subcontractor's Relevant Experience (identify at least three similar projects within the last five years, including the client)	1. Project Name:	Chinook Multiphase Contract - Connor Creek Block Planning for Ministry of Forests, BC Timber Sales (May 2022 - ongoing)
	Client:	Ministry of Forests, BC Timber Sales
	Nature of Work:	A landscape level visual impact assessment to model proposed block development in the Connor Creek area.

		Planned modifications were built into the 3D model to render what the proposal will look like from a variety of viewpoints in a photo-realistic manner. Deliverables included viewpoint and visibility maps, percentage alteration calculations and RPF report with sign-off.
	Value:	\$7000
	Client Contact:	Viviana Flores 778.704.0031 Viviana.Flores@gov.bc.ca
	2. Project Name:	Katzie and Kwantlen First Nations Woodland License (February 2022 - ongoing)
	Client:	K&K Forestry Operations Ltd. (managed by Probyn Log Ltd.)
	Nature of Work:	A landscape level visual impact assessment was performed to model proposed block development for the First Nations woodlot license N2Z. Planned modifications were built into the 3D model to render what the proposal will look like from a variety of viewpoints in a photo-realistic manner. Deliverables included viewpoint and visibility maps, percentage alteration calculations and RPF report with sign-off.
	Value:	\$40000
	Client Contact:	Matthew Brine 604.540.5384 matthewb@probynlog.com
	3. Project Name:	Woodlot 1699 Forestry Operations (2014 – ongoing)
	Client:	Wolf Lake Holdings Inc.
	Nature of Work:	A landscape level visual impact assessment was performed to model proposed block development in Woodlot 1699 in the Harrison Hot Springs area. Planned modifications

		<p>were built into the 3D model to render what the proposal will look like from a variety of viewpoints in a photo-realistic manner. Deliverables included viewpoint and visibility maps, percentage alteration calculations and RPF report with sign-off.</p>
	<p>Value:</p>	<p>\$8500</p>
	<p>Client Contact:</p>	<p>Rob Deines 604.813.7727 rdeines@westtwoenterprises.ca</p>

Mike Hedberg, RPF

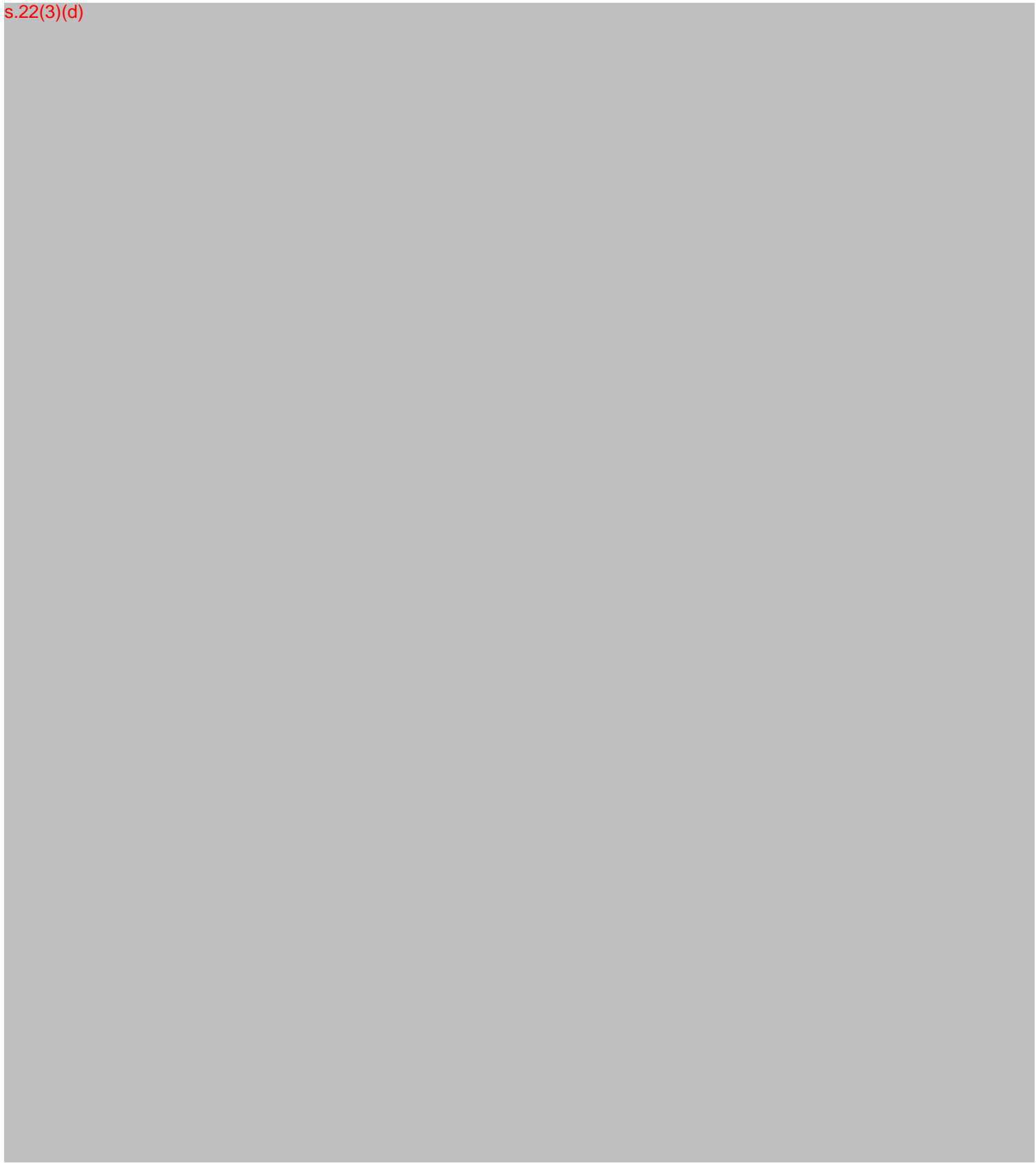
Partner / COO

210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. mhedberg@crgl.ca

T. 604-903-3422

s.22(3)(d)



Mike Hedberg, RPF

Partner / COO

210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. mhedberg@crgl.ca

T. 604-903-3422

s.22(3)(d)



Gerald Wolfe, RPF

Partner / Manager - Squamish

210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. gwolfe@crgl.ca

T. 604-390-3423

s.22(3)(d)

Gerald Wolfe, RPF

Partner / Manager - Squamish

210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. gwolfe@crgl.ca

T. 604-390-3423

s.22(3)(d)



Nick Reinhardt, RPF

Partner / Senior Project Manager

Suite 210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. nreinhardt@crgl.ca

T. 604-973-1128

s.22(3)(d)



Nick Reinhardt, RPF

Partner / Senior Project Manager

Suite 210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. nreinhardt@crgl.ca

T. 604-973-1128

s.22(3)(d)



Nicholas O. Soverel, M.Sc., RPF

102-315 1st St West North Vancouver BC V7M 1B5

Tel: 778-873-6742; E-mail: nsoverel@fronterasolutions.ca

<https://www.linkedin.com/in/nicholas-soverel-418689a/>



FRONTERA
FOREST SOLUTIONS INC.

www.fronterasolutions.ca

s.22(3)(d)



LAUREN SHINNIMIN, MSFM, RPF

Cell: s.22(1)

Email: lshinnimin@fronterasolutions.ca

s.22(3)(d)



Ryan Turner, RPF

Partner / Forester / ISA Certified Arborist

210 – 275 Fell Avenue, North Vancouver, BC, V7P 3R5

E. rturner@crgl.ca

T. 604-973-1132

s.22(3)(d)



CHARTWELL RESOURCE GROUP LTD.

Ryan Turner, RPF

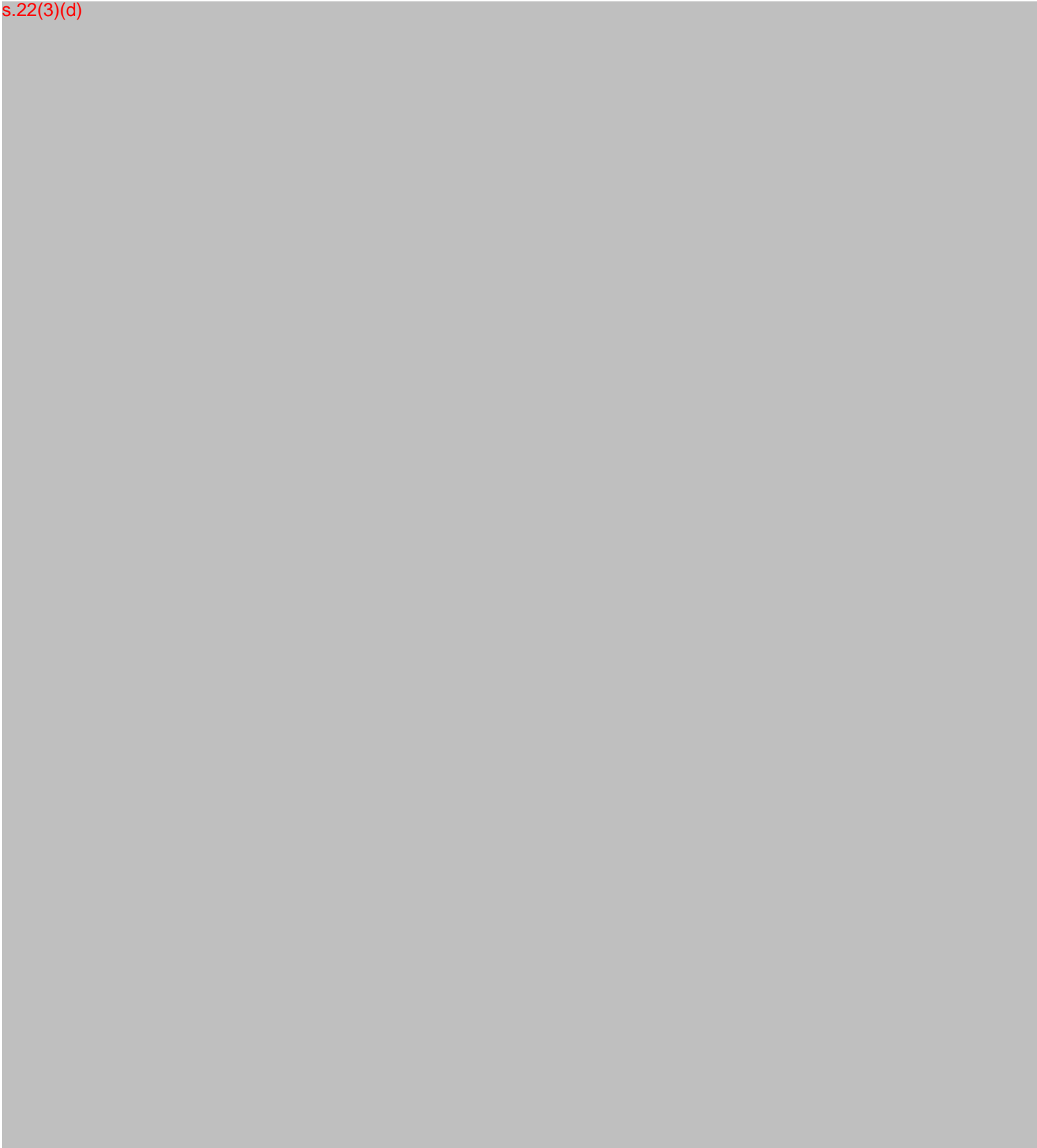
Partner / Forester / ISA Certified Arborist

210 – 275 Fell Avenue, North Vancouver, BC, V7P 3R5

E. rturner@crgl.ca

T. 604-973-1132

s.22(3)(d)



Jordan Snyder, RFT

Project Lead

210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. jsnyder@crgl.ca

T. 604-973-1141

s.22(3)(d)



Jordan Snyder, RFT


Project Lead

210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. jsnyder@crgl.ca

T. 604-973-1141

s.22(3)(d)



Noah L. Sullivan, B.Sc., ISA Arborist

102-315 1st St West North Vancouver BC V7M 1B5

Tel: 250-280-4211; E-mail: nsullivan@fronterasolutions.ca

<https://www.linkedin.com/in/noah-sullivan-130a37201/>



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FOREST SOLUTIONS INC.

www.fronterasolutions.ca

s.22(3)(d)



Lori Bartsch, M.Sc., RPF, RPBio

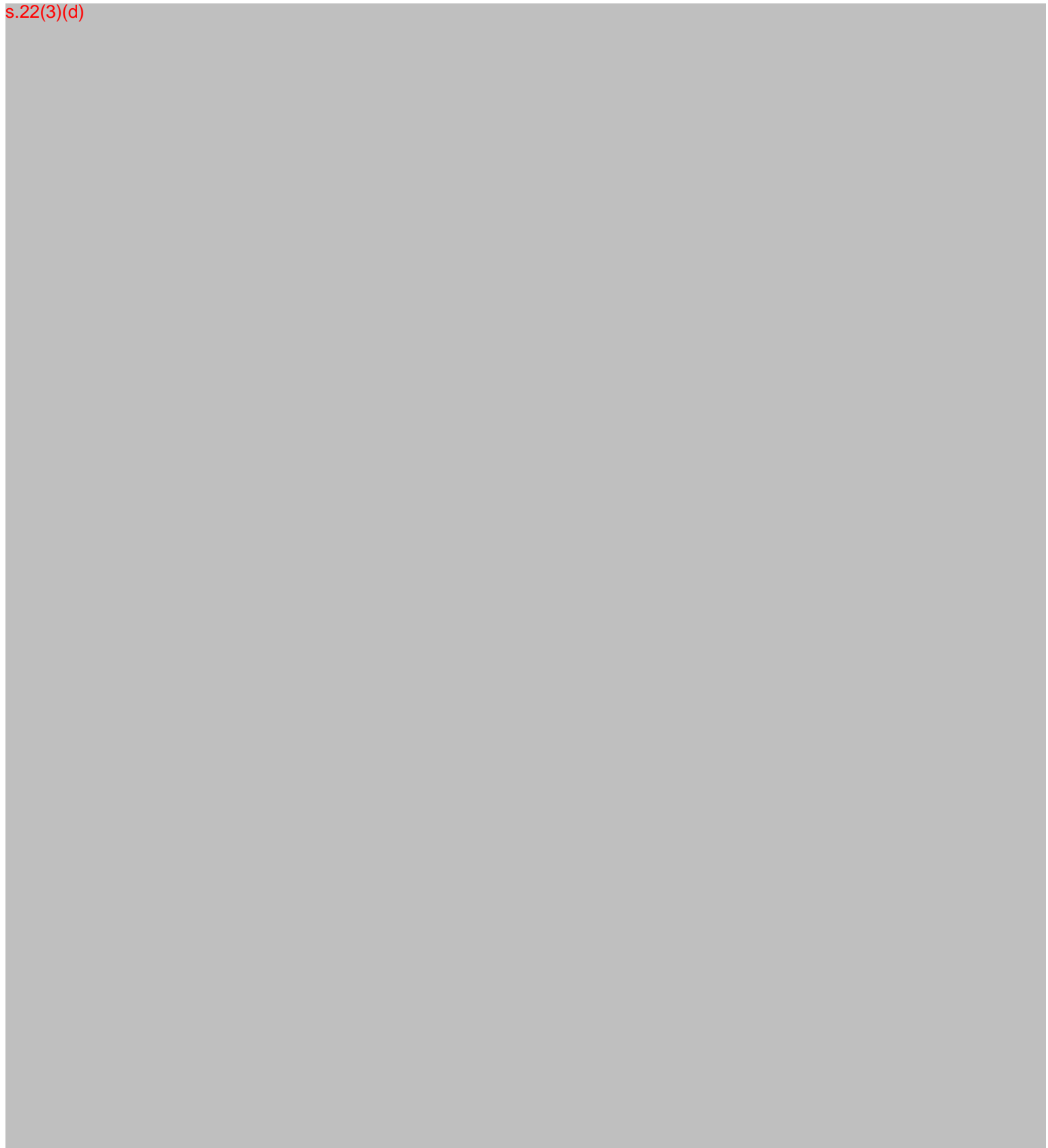
Environmental Services Project Manager

210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. lbartsch@crgl.ca

T. 604-973-1102

s.22(3)(d)



Lori Bartsch, M.Sc., RPF, RPBio

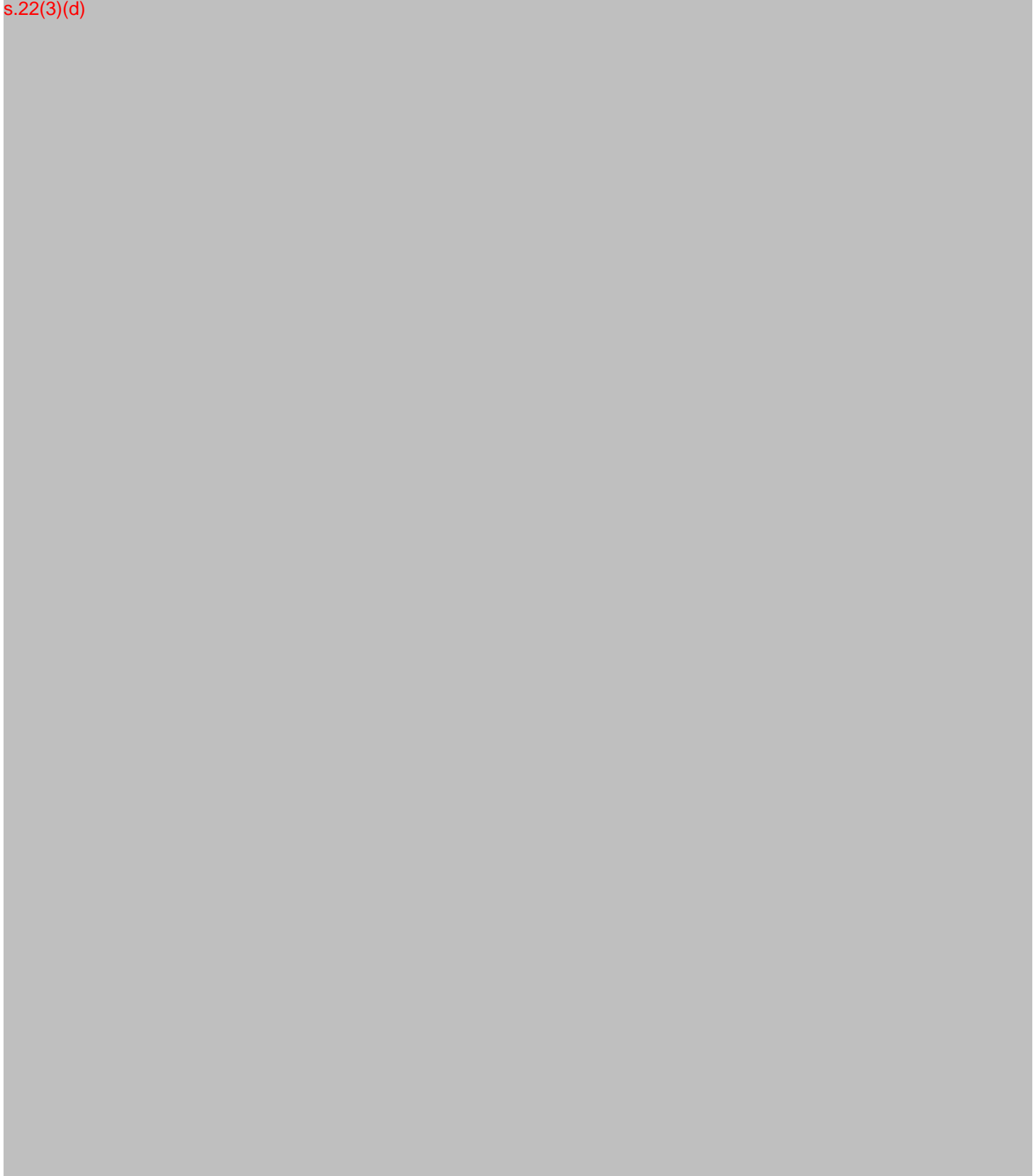
Environmental Services Project Manager

210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. lbartsch@crgl.ca

T. 604-973-1102

s.22(3)(d)



TIMOTHY MASAO EBATA, BSc., MSc., RPF

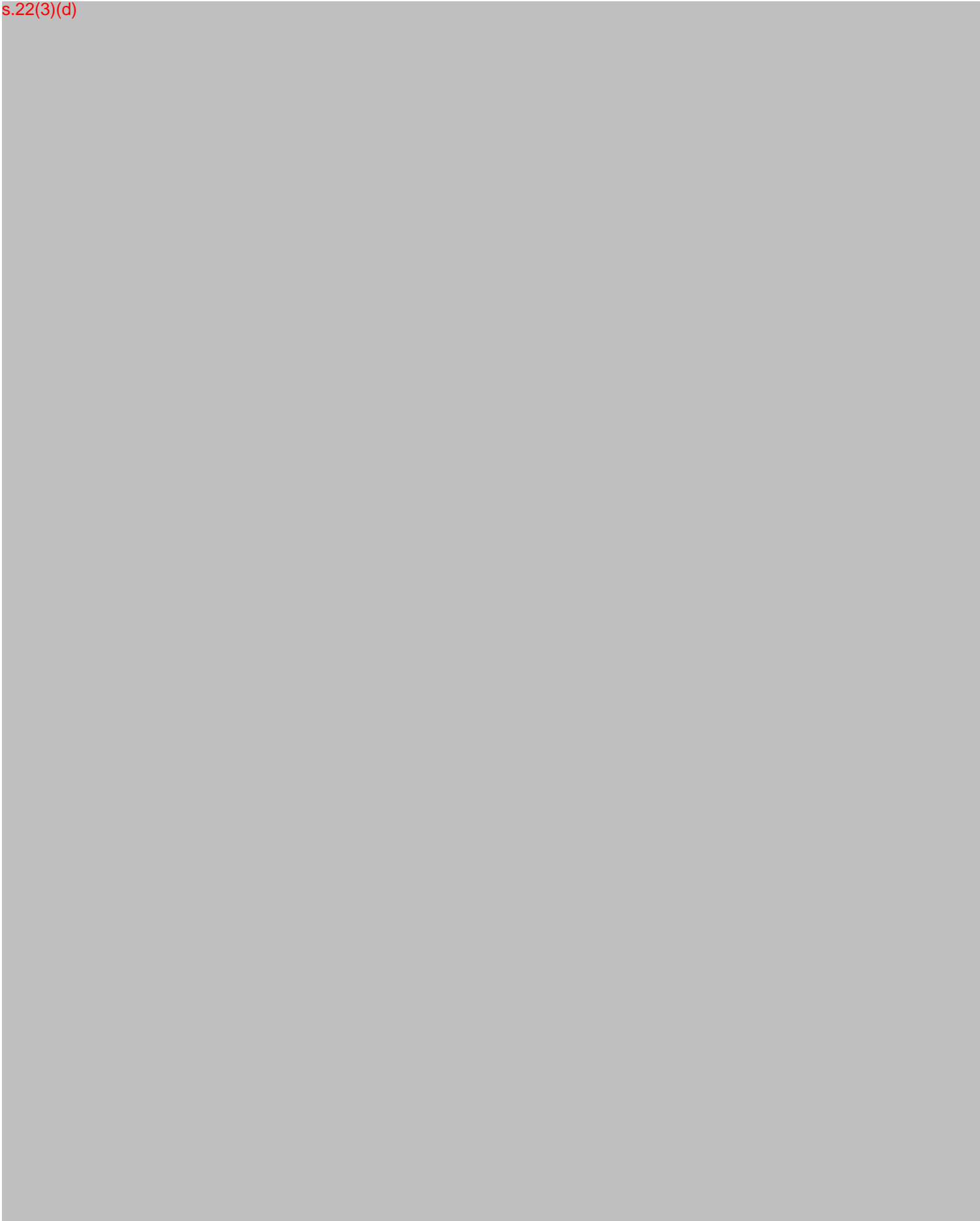
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Chris Beasy, GISP

Project Manager – LiDAR Projects

210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. cbeasy@crgl.ca

T. 604-973-1103

s.22(3)(d)



Chris Beasy, GISP

Project Manager – LiDAR Projects

210 – 275 Fell Avenue, North Vancouver, BC V7P 3R5

E. cbeasy@crgl.ca

T. 604-973-1103

s.22(3)(d)



Joseph Rakofsky, MSc.

Cell: s.22(1)

• Email: jrakofsky@fronterasolutions.ca

[LinkedIn](#)



FRONTERA
FOREST SOLUTIONS INC.

s.22(3)(d)

DECLARATION OF SUPPLIER CODE OF CONDUCT COMPLIANCE

Complete this Declaration of Supplier Code of Conduct Compliance in the form set out below.

All proposed suppliers are to complete and submit this form to certify compliance with the supplier performance standards set out in the Supplier Code of Conduct.

The City of Vancouver expects each supplier of goods and services to the City to comply with the supplier performance standards set out in the City's Supplier Code of Conduct (SCC) <<https://policy.vancouver.ca/AF01401P1.pdf>>. The SCC defines minimum labour and environmental standards for City suppliers and their subcontractors.

Suppliers are expected to comply with the aforementioned standards upon submitting a tender, proposal, application, expression of interest or quotation to the City, or have a plan in place to comply within a specific period of time. The City reserves the right to determine an appropriate timeframe in which suppliers must come into compliance with these standards. To give effect to these requirements, an authorized signatory of each proposed vendor must complete the following declaration and include this declaration with its submission:

As an authorized signatory of Chartwell Resource Group Ltd (*vendor name*), I declare that I have reviewed the SCC and to the best of my knowledge, Chartwell Resource Group Ltd (*vendor name*) and its proposed subcontractors have not been and are not currently in violation of the SCC or convicted of an offence under national and other applicable laws referred to in the SCC, other than as noted in the table below (*include all violations/convictions that have occurred in the past three years as well as plans for corrective action*).

Section of SCC / title of law	Date of violation /conviction	Description of violation / conviction	Regulatory / adjudication body and document file number	Corrective action plan

I understand that a false declaration and/or lack of a corrective action plan may result in no further consideration being given to the submission of Chartwell Resource Group Ltd (*vendor name*).

Signature: 

Name and Title: Cliff Roberts, President

PROPOSAL IN RESPONSE TO:

**RFP NO. PS20220102-VBPR-RFP
“CONSULTING SERVICE FOR STANLEY PARK FORESTRY
INITIATIVES”**

PRIVATE AND CONFIDENTIAL

Due date: November 1, 2022, at 3:00 PDT



Proponent:

Chartwell Resource Group Ltd.
210-275 Fell Avenue
North Vancouver, BC V7P3R5
Email: info@crgl.ca

&

Frontera Forest Solutions, Inc.
206-270 3rd St. West
North Vancouver, BC, V7M 1G1
Email: info@fronterasolutions.ca

Submitted to:



Jing Fan, Procurement Specialist - City of
Vancouver
453 West 12th Ave.
Vancouver, BC V5Y 1V4
Jing.Fan@vancouver.ca



November 1, 2022

Jing Fan, Procurement Specialist - City of Vancouver
453 West 12th Ave.
Vancouver, BC V5Y 1V4
Jing.Fan@vancouver.ca

RE: Proposal in response to RFP No. PS20220102-VBPR-RFP “Consulting Service for Stanley Park Forestry Initiatives”

Chartwell Resource Group Ltd. (“Chartwell”; <https://crgl.ca/>) is pleased to submit this proposal to undertake the project “Consulting Service for Stanley Park Forestry Initiatives”. We are subcontracting the services of Frontera Forest Solutions, Inc. (“Frontera”; www.fronterasolutions.ca) and we plan to co-manage this project.

Chartwell and Frontera are registered and in good standing with WorkSafeBC (account numbers 200619343 and 065868).

This proposal lays out our vision of the approach our team would take in delivering a high-quality and science-based plan. We are prepared to work collaboratively with the City of Vancouver (“the City”), the Musqueam, Squamish, and Tsleil-Waututh Nations (“MST”), and other community stakeholders to provide a workable solution that is fit for the park.

We have carefully selected a multidisciplinary team of experienced professionals who are prepared to tackle all aspects of this project. Chartwell Resource Group Ltd has a team of highly skilled engineers, foresters, biologists, GIS professionals, and project managers, allowing us to provide valuable and innovative solutions to a wide range of challenges.

Frontera Forest Solutions Inc. has an experienced team with extensive fire and fuels planning knowledge in natural and urban environments. Their strengths also include forest restoration, ecology, and fire risk assessment modeling.

In response to the needs of the project, we are also prepared to subcontract additional subject matter experts and university academics in cases where additional support is required.

We would be happy to discuss any part of this proposal or to provide additional work examples or references. Please do not hesitate to contact us at any time.

Sincerely,

Nick Reinhardt, RPF, Partner / Sr. Project Manager at Chartwell Resource Group Ltd.

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1. EXECUTIVE SUMMARY

We are pleased to submit this comprehensive proposal to the City of Vancouver for review. As local firms, we care about Stanley Park and are both personally and professionally invested in stewarding its beauty and ecosystem health.

We realize the complexity of this Project and are prepared to tackle all aspects of it with the highest level of professionalism. To this end, we have carefully selected twelve personnel who meet and exceed the requested list of professionals as outlined on Page 1 of this RFP's Technical Proposal document (Table 1). Our Project Team's organizational hierarchy allows for an information flow between Project Advisors, Managers, and Technicians that we believe will produce extremely high-quality results (APPENDIX A –Organization Chart). Importantly, our Project Team includes a highly experienced and Senior Entomologist.

We propose a work plan for Phases 1 and 2 that is science-focused and will produce high quality inventories and assessment results. Using these results, we are prepared to collaborate with the City, MST, the Park Board, and the Vancouver Fire Department to design recommendations and reporting that will solve the current issues related to the Hemlock Looper (HL) and Wildfire Risk (WR).

In addition to assessments and reporting for HL and WR, our Team is particularly strong in forest harvesting and operational management. It is highly likely that Phase 4.5 will involve years of forestry interventions that may involve heavy or light machinery. Chartwell is a leader in the forestry operational planning, management, and supervision that will provide superior consultancy in all aspects related to forest operations.

Finally, we include a series of innovative approaches towards building public support and education, increasing scientific knowledge, and increasing our Team's efficiency. To this end, we are prepared to assist the City in communicating our findings to the general public in order to build support for management recommendations.

2. PROPONENT OVERVIEW

Prime Proponent Legal Name and Contact Info:

Nick Reinhardt
Chartwell Resource Group Ltd.
210-275 Fell Avenue
North Vancouver, BC, V7P3R5
Tel: 604-980-5061
Email: nreinhardt@crgl.ca

Subcontractor Proponent Legal Name and Contact Info:

Nicholas Soverel
Frontera Forest Solution, Inc.
102-315 1st St West
North Vancouver, BC, V7M 1B5
Tel: 778-873-6742
Email: info@fronterasolutions.ca

2.1 CHARTWELL RESOURCE GROUP LTD.

Chartwell Resource Group Ltd. is a natural resource consultancy specializing in services and solutions for the resource sector. Formed in 2021 through the merger of Chartwell Consultants Ltd. (established 2000), and Hedberg and Associates Consulting Ltd. (established 2004), Chartwell has grown from a small group of operational foresters into a multi-disciplinary team offering a broad spectrum of consulting services from our four offices in the Lower Mainland.

The interdisciplinary services offered by our team of over 70 people, combine experience in forest management, resource and land management, road and bridge engineering, GIS and mapping, LiDAR, asset inventory, environmental science, planning, ecology, and recreation.

Chartwell has successfully completed projects for BC Hydro involving vegetation management and tree clearing within urban settings. Our strength in communicating with stakeholders and community members enabled many of these projects to be completed efficiently. Chartwell has worked for the Squamish Nation for nearly two decades, providing a wide variety of forestry services which including long term planning, planting, harvesting supervisor, and GIS. Our GIS department strives to find innovative solutions for client. LandPLANNER was created out of this innovation and allows Chartwell and its clients to access large amounts of data online or on mobile devices and work in a highly collaborative and efficient manner.

We are the primary forestry consultants from many First Nations including the Squamish, Tsleil-Waututh, Lil'wat, and Sechelt Nations. Additionally, our clients include Community Forests from Hope to Sechelt and all the way up to Pemberton. Our decade of work with BC Hydro and their Transmission Vegetation Management Program has given us the skills to work with large budgets with complex issues, and a diverse range of stakeholders.

2.2 FRONTERA FOREST SOLUTIONS, INC.

Frontera Forest Solutions Inc. ('Frontera') is a North Vancouver-based forestry consulting firm specializing in forest and wildfire resiliency planning and implementation. We have a current staff roster of nine employees, including a range of forestry professionals, trainees, and urban foresters. Frontera currently works for numerous local and First Nation governments and has developed partnerships with the University of British Columbia and the Canadian Forest Service. Frontera offers a diverse range of professional and academic experience, most notably as it relates to prescribed burn planning and fire behaviour modeling.

Beyond fire and fuel management planning, Frontera's staff independently bring knowledge, work experience, and skillsets that are highly relevant to this project, including: ecosystem restoration and forest planning, forest ecology, interagency relationship building, and GIS and spatial modelling.

Frontera has worked for over forty communities providing all levels of fire and fuels planning, prescription development, and implementation. We are experts in developing Community Wildfire Resiliency Plans (CWRPs), developing fuel management prescriptions (FMPs) and prescribed fire burn plans, collecting FireSmart Home Assessment information and FireSmart Neighbourhood Planning, and working with private landowners and municipalities dealing with development permits and wildfire.

3. KEY PERSONNEL

We have selected a Project Team consisting of a wide variety of experienced professionals who will meet and exceed the requirements outlined in the RFP. Table 1 outlines the name, role, qualifications, and area of expertise of the twelve selected team members.

In addition, Appendix A contains a complete organizational chart of the proposed team members for this project. In addition, we have provided resumes for all twelve personnel as separate attachments to this RFP.

Table 1. Key Personnel

Personnel Name	Personnel Role	Applicable Education & Credentials	Areas of Applicable Expertise
Mike Hedberg	Project Advisor	RPF, BSF	Senior Forester, Operations Specialist
Gerald Wolfe	Project Advisor	RPF, ISA Arborist, TRAQ	Senior Forester, Operations Specialist
Nick Reinhardt	Project Manager	RPF, BSF	Project Manager, Mid-level Professional Forester
Nicholas Soverel	Project Manager	MSc, RPF	Project Manager, Wildfire and Fuels Specialist
Lauren Shinnimin	Team Member	MSFM, RPF	Assistant Wildfire and Fuels Specialist
Ryan Turner	Team Member	RPF, BSF, ISA Arborist, TRAQ	Forester and Arborist

Personnel Name	Personnel Role	Applicable Education & Credentials	Areas of Applicable Expertise
Jordan Snyder	Team Member	RFT, BA, TRAQ	Forestry Technician
Noah Sullivan	Team Member	BSc, ASFIT, ISA Arborist, TRAQ	Urban Forest and Wildfire Technician
Lori Bartsch	Subject Matter Expert	RPF, RPBio, MSc	Restoration Biologist, Biologist
Tim Ebata	Subject Matter Expert	RPF, MSc	Consulting Entomologist
Chris Beasy	GIS Team Member	GISP	GIS and LiDAR Specialist
Joseph Rakofsky	GIS Team Member	MSc	GIS Specialist and GIS Coordinator

4. EXPERIENCE & QUALIFICATIONS

4.1 SIMILAR PROJECTS AND REFERENCES

Chartwell Resource Group Ltd. and Frontera Forest Solutions Inc. have led, managed, and successfully delivered on projects of a similar size and scope. Below we provide six examples, three for each firm, of similar projects that we successfully completed on time and on budget.

4.1.1 CHARTWELL

Project #1: Tree Farm License (TFL) 38 – Tenure Management

Chartwell Resource Group Ltd. manages Tree Farm License (TFL) 38 in the traditional territory of the Squamish, Tsleil-Waututh and Lil'wat Nations on behalf of Sqomish Forestry and the Squamish Nation. Chartwell provides full phase forestry and natural resource management services that includes tenure management, long-term planning, operational planning, reforestation, and silviculture. Chartwell has been successfully delivering these services to Sqomish for over 15 years. In addition to planning, Chartwell also supplies contractors with operational plans, pre-works, safety orientations and prescriptions to complete harvesting, road building, and reforestation goals.

Reference #1:

Rick Jaccard
 Sqomish Forestry LP
 1124 Enterprise Way,
 Squamish, BC V8B 0E9
 Phone: (604) 892-3501
 Email: Rick_jaccard@sqomishforestry.com

Project #2: NSP Vegetation Layout; MET Emergency Vegetation Work; LM Emergency Response; Sunshine Coast Vegetation Patrols and Layout.

Vegetation management for BC Hydro, including field patrols, inspections, and layout. The coordination and oversight of multiple field crews and sub-consultants is also a component, along with quality control and peer reviews. Monthly accruals and weekly reports are prepared and provided to each subregional vegetation maintenance coordinator for BC Hydro.

Reference #2:

Geoff Helfrich, RPF

Operations Manager: Transmission Vegetation & Access Programs
ISA Certified Arborist & Utility Specialist
BC Hydro
3333 22nd Ave
Prince George, BC V2N 1B4
Phone: 250 561 4970
Email: geoff.helfrich@bchydro.com

Project #3: Regional Riparian Spatial Analysis for Restoration Prioritization (District of Nanaimo)

The purpose of this project was to spatially analyze the current riparian cover levels (functional riparian width) across the region’s major watercourses and identify priority areas for restoration of riparian vegetative buffer extent and quality to enhance climate resilience and water protection in the region.

Reference #3:

Matthew McTavish, E.P.
Director, Environment & Forestry
McTavish Resource & Management Consultants Ltd.
Unit 203, 19292 60 Avenue, Surrey BC V3S 3M2 Canada
Phone: 604.323.4881
Email: matt@mctavishconsultants.ca

4.1.2 FRONTERA

Project #1:

Frontera currently holds a three-year contract with the Resort Municipality of Whistler (RMOW). Under this contract, Frontera manages all aspects of forestry and wildfire planning and prevention services on behalf of the RMOW. This includes all planning, prescription development, supervision and management of operational fuel management and long-term monitoring of the impacts of fuels vegetation management.

Reference #1:

Heather Beresford; Environmental Stewardship Manager
4325 Blackcomb Way
Whistler, B.C. V8E 0X5
T: 604-935-8374
Email: hberesford@whistler.ca

Project #2: Since 2019 Frontera has co-led and assisted the District of Mackenzie's fire and fuels program. In this role, we have worked collaboratively with the District, the McLeod Lake Mackenzie Community Forest (MLMCF), and the local BC Wildfire Service. In 2019 we assisted in completing a 500 ha FMP along Highway 39 with the objective of increasing egress safety in the event of an evacuation. A portion of the Highway 39 FMP was also selected for a burn plan and Frontera led the development of this plan. We have assisted the District in tendering, selecting, and implementing approximately 100 ha of the Highway 39 FMP area. We are also in discussion with the BC Wildfire Service regarding implementing a 20 ha burn in 2022.

We have worked with the District of Mackenzie and staff to write two different FMPs within the District boundary and adjacent to private residences. We have assisted the District in implementing these local treatments which have resulted in positive feedback from the District's Council and the community at large. We are currently working with the District to implement their FireSmart program and are planning to provide consultancy in developing an updated CWRP and Community FireSmart Plan.

Reference #2:

Ian LeBlanc, RFT,
Wildfire Project Coordinator - MLMCF
T: 250-640-6287
Email: WPC@mlmcf.ca

Project #3: Frontera has been the sole fire and fuels consultant to the Lílwat Nation since late 2018. We lead all aspects of the Nation's fire and fuels programs and collaborated with Lílwat Forestry Ventures, the Village of Pemberton, and Pemberton BC Wildfire Service. This has included grant application funding for 2019, 2020, 2021 and 2022. Frontera has assisted in securing well over \$500,000 in fuel management prescription and operations funding, burn planning and implementation funding, as well as FireSmart planning and implementation funding. These grant applications have been through the BC Government, First Nations Emergency Service Society (FNESS) and Indigenous Services Canada (ISC).

Frontera's consultancy has resulted in the prescription of over 150 ha of forested land within the wildland-urban interface, completion of approximately 20 ha of treatment area, burn planning of over 100 ha, and successfully collaborated with the BC Wildfire Service and the Nation to support an 80 ha burn in 2021. In terms of FireSmart programming, Frontera secured funding for a full-time FireSmart Coordinator and Frontera has worked with the FireSmart Coordinator for the last six months to complete FireSmart home assessment. In collaboration, we have completed 50 home assessments with approximately half of the homes being FireSmart treated.

Reference #3:

Troy Bikadi, Community and Workplace Health and Safety Officer Lil'wat Nation
T: 604-966-4339
Email: Troy.Bikadi@lilwat.ca

5. WORK PLAN

The project team realizes the importance of completing this work while closely collaborating with City of Vancouver and Park Board staff. Our Team's Project Managers will ensure that lines of communication are open between our team and all City and representatives. From the beginning of this project, the Project Team will participate in ongoing meetings and provide any feedback as requested. This is to ensure that information, data, findings, and recommendations are communicated to the City. The project team envisions four main phases to this project. The below sections outline our proposed steps to approaching and implementing this work plan in these four phases. We believe this work plan is both innovative and feasible given the proposed methods, approach, and timeline.

Within this work plan, there are two key areas of note:

- **Note #1:** This RFP requested a project deadline of March 2023. However, after careful review and building a robust work plan, we feel that meeting a March 2023 deadline is highly unlikely. This is due to two main factors: a) a high likelihood for public, First Nations, and stakeholder feedback delays, and b) the high level of complexity of the project's overall scientific and management questions. Given these two main factors, we propose what we believe to be a more feasible deadline of June 30, 2023. We would be happy to discuss this deadline proposal further.
- **Note #2:** The RFP requested details and outline for RFP Scope of Work Section 4.5: "Project Management & Contract Administration – Optional Task". For this section, we provide a basic outline of our work plan for the City's review. However, due to many unknowns regarding implementation, including the lack of any implementation plan or approvals from the City, we do not feel that we can confidently develop a work plan budget for Section 4.5. Within this proposal document we provide a rate sheet of hourly costs that we would propose to provide professional services for this work. Upon further discussions or negotiations, we would be happy to finalize and sign off on future budgets once more structured plans and details are in place.

We have prepared a Gantt chart that outlines all key phases and milestones associated with this proposed workplan (Figure 1). We have also separately submitted a detailed budget to accompany this proposal document's workplan which provides additional and important tasks within the phases.

At any point we would be happy to discuss and/or negotiate any part of this proposed work plan, timeline, and budget.

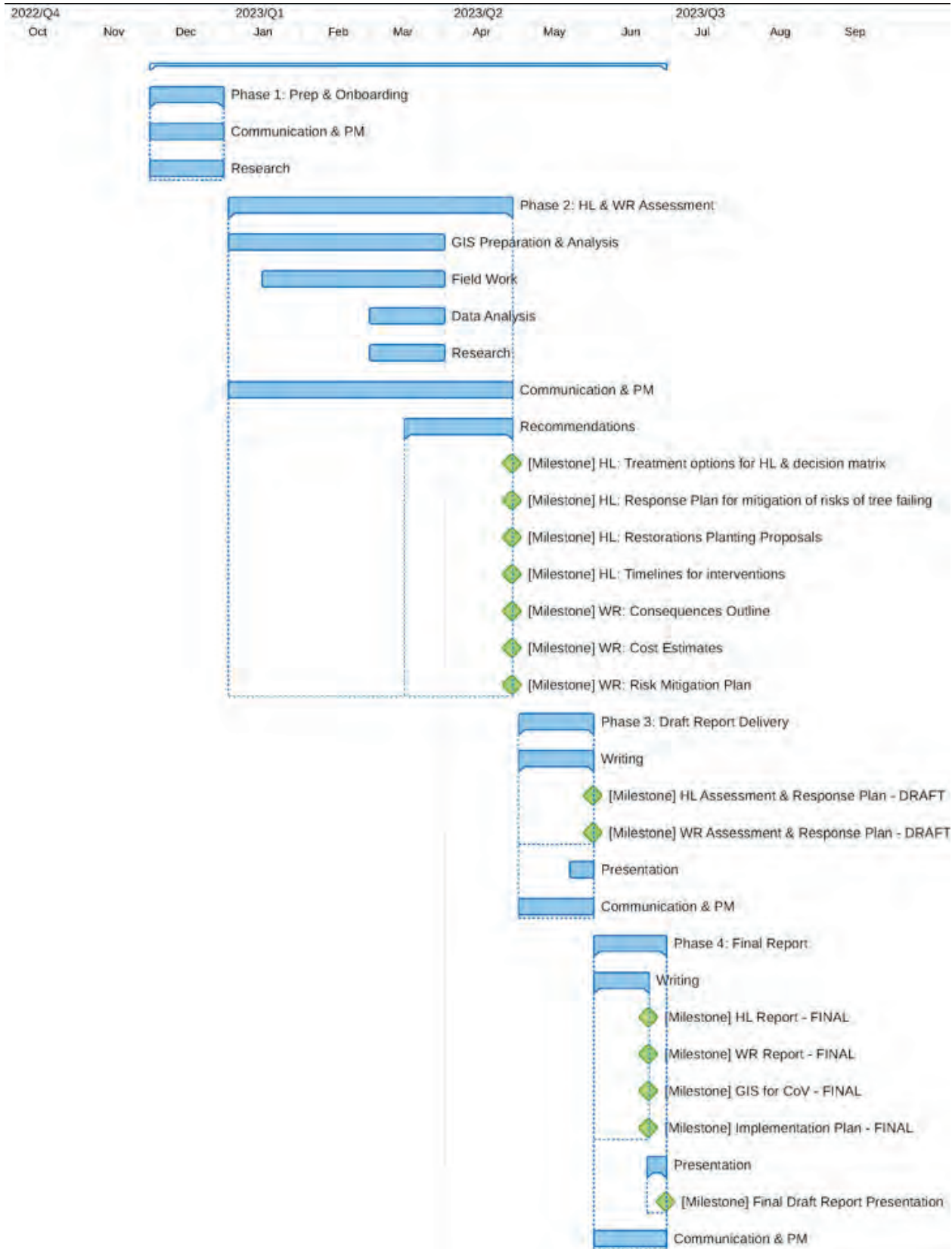


Figure 1. Gantt Chart of this proposal's work plan.

5.1 PHASE 1: PREPARATION AND ON-BOARDING

As outlined in Figure 1, Phase 1 is dedicated to kicking off this project, including gathering all relevant plans, documents, and background documents including those listed on page 2 of the RFP's Scope of Work document. Phase 1 will also involve ongoing meetings, both in person and in the field to assess and discuss high-level options of the project, including approaches to the work plan and consultation and engagement with the City and First Nations. We anticipate that the City will work directly with the public and the media; however, our project team is prepared to provide communications support to the City as requested.

We anticipate Phase 1 will begin at the commencement of this project and will be wrapped up by the end of December 2022 (Figure 1). Our project budget outlines specific time towards the research, communications, and meetings as well as project management for Phase 1.

5.2 PHASE 2: HEMLOCK LOOPER & WILDFIRE RISK ASSESSMENT

Due to its overall complexity, Phase 2 is composed of a few different subphases as listed below. We anticipate Phase 2 to begin in early January 2023 and finalized at the end of April 2023 (Figure 1).

All Phase 2 subphases will be project managed to maximize efficiency and regular communications, including ongoing office or field meetings (Figure 1).

5.2.1 SUBPHASE: FIELD WORK

We propose three categories of field work.

The first category of work is the initial and ongoing field work where we propose to invite City staff and professionals out into the field to visually assess damage from the HL and discuss overall thoughts and recommendations. We propose that our consulting Entomologist and Biologist be present during these initial and ongoing field visits in order to discuss high-level management considerations. During initial field work we will calibrate the Project Team on approaches to data collection and working with the public throughout the project.

The second category is a reconnaissance and ground truthing of the entire Park for both impact and assessment of the damage caused by the HL and current WR. HL assessments will focus on the northern half of the park or the full known extent of the outbreak. Crews will assess the entire Park for its current WR. Ground truthing will entail an accuracy assessment of current GIS and remotely sensed derived datasets for later refinement and improvement.

The third phase of field work will follow the reconnaissance and will include more specific field data collection including the establishment of field plots. This will occur after ground truthing of all GIS datasets so that plot locations are strategically located within accurately developed GIS datasets. Field data collection will include both plot level and tree specific data collection. Additionally, fuel loading (tonnage per plot), forest inventory (living and dead stems), tree risk/hazard, and site level ecological data will be recorded.

We propose all categories of field work to be completed by the end of March 2023 (Figure 1).

5.2.2 SUBPHASE: GIS PREPARATION AND GIS ANALYSIS

This project involves a great deal of GIS and remote sensing data preparation and analysis. The GIS team is prepared to work with the City’s existing datasets and build and finalize all GIS datasets so that they conform to all data standards set by the City. The GIS team will first refine and build a HL damage dataset and utilize all existing data. Our GIS team proposes to use the City’s available Spring 2020 aerial and LiDAR data to utilize tree specific and aggregated datasets. Our GIS team will build initial field maps to be used by the field teams. Once field ground truthing takes place, the GIS team will refine the HL and wildfire datasets while taking direction from various members of the entire Project Team. The GIS Team will utilize UAV imagery collected by the field crews to support and further refine all datasets.

We propose that this subphase to be completed by the end of March 2023 (Figure 1).

5.2.3 SUBPHASE: RESEARCH AND ANALYSIS

This subphase entails working in a more detailed fashion with our advisors, including the Biologist and Entomologist. This phase will involve more research and background regarding historical HL outbreaks as well as other biological processes such as invasive plants, wildlife, and wildlife habitat. During this phase the Project Team will cross check findings from Phase 1 background research and additional and more in-depth research conducted in this subphase.

We propose that this subphase to be completed by the end of March 2023 (Figure 1).

5.2.4 SUBPHASE: RECOMMENDATIONS

The Project Team will then work together to devise management recommendations which will be based on all work completed to this date. Management recommendations will entail all requests made within the City’s RFP including treatment options, restoration planting, timelines, proposed solutions, cost estimates, and response plans and mitigation plans.

We propose that this subphase to be completed by the end of April 2023 (Figure 1).

5.3 PHASE 3: DRAFT REPORT DELIVERY

This Phase entails drafting both the HL and WR assessment response plans. We propose to work with City staff as needed to design and draft response plans that are tailored to the City’s preferences and will work most appropriately. We will incorporate Park Board, Vancouver Fire Department and MST feedback into draft materials. Once both drafts are completed, we propose to present the draft interim report and recommendations to senior leadership.

We propose this Phase, along with its project management and ongoing communication to occur between May 1 and May 30, 2023 (Figure 1).

5.4 PHASE 4: FINAL REPORT

During this Phase we will incorporate all feedback and editorials from the City, Park Board, Vancouver Fire Department and MST in order to finalize all reports. This will likely include final follow up with City staff and representatives. Furthermore, we anticipate that some final edits to GIS datasets will need to occur in order to deliver these to the City. The final step of this Phase will be to present all deliverables to senior leadership.

We anticipate that this final Phase will be completed by the end of June 2023 (Figure 1).

5.5 OPTIONAL PHASE: PROJECT MANAGEMENT & CONTRACT ADMIN

Our Project Team is both very experience and prepared to deliver all aspects of this Phase of work as outlined in this RFP's Scope of Work Section 4.5. We proposed to follow all outline tasks included in the RFP's Scope of Work pages 5 and 6. Given very little planning or discussion has occurred with the City, we do not feel that at this very early phase we can design a professional work plan or an associated budget. Furthermore, we recognize that this implementation work may take years to complete and that we would need to adapt to likely changes or adaptations in a plan moving forward regardless.

We provide a rate sheet for our professional services in Appendix B. We would be happy to further discuss any requests for further work plan or budget development at any time with the City.

6. PROJECT CHALLENGES

We recognize that there may be some challenges in undertaking this Project. We anticipate these specific challenges to likely be factors that affect the project:

- Due to the high value and high visitation of Stanley Park ("the Park"), forest management decisions will be highly scrutinized by the public,
- Forest health, including HL management and its impacts to WR are complex and require localized management solutions,
- Ongoing engagement with MST, City staff, the Vancouver Fire Department, and the Park Board could result in contradictory feedback,
- Future emerging findings or information will likely require adaptation to planning and will require City staff and their consultants to provide ongoing professional support services.

7. INNOVATION AND ALTERNATIVE APPROACHES

Our Project Team provides additional innovative and alternative approaches to this work plan.

7.1 UAV'S AND VISUAL QUALITY ANALYSIS

The Project Team consists of multiple UAV pilots, including an Advanced Pilot. We have the certifications to apply for and receive permission to fly within the controlled airspace of the Park. We propose to utilize UAV imagery to capture HL damage and other forest structure attributes. This photography will assist in ground truthing and assessing complex forest structural components.

In addition to video and photography, we are prepared to capture photogrammetric-level imagery using our UAVs. These photogrammetric images will allow us to map sections of the Park to be used in GIS as well as to derive point clouds that can be used in 3D modelling for visual quality assessments. We propose to use these 3D models for our internal visual quality assessments; however, these 3D images can be supplied to the City for public consultation.

7.2 LIDAR AND FORESTRY METRICS

The Project Team consists of two individuals (Joseph Rakofsky and Chris Beasy) who are both experts in LiDAR analysis and interpretation. We propose to utilize existing LiDAR-derived outputs already in possession of the City to enhance initial and ongoing field work. We also propose to use single tree and group analysis using LiDAR point clouds to enhance existing LiDAR datasets. We are confident that LiDAR will assist in determining locations of dead trees, their heights and will improve the digitization of HL affected polygons and their severity.

7.3 LANDPLANNER

As part of this proposal Chartwell will employ the use of LandPLANNER a secure, web-based, on and off-line productivity-enhancement system geared for resource managers and their teams in the office and in the field (<https://landplanner.ca/>). Any user with a PC, tablet or smartphone and can connect and interact with maps and information. With everyone sharing the same data, productivity is vastly improved.

LandPLANNER was developed by Chartwell to give all of our staff access to LiDAR information that we were acquiring for our resource management operations. Adding other resource management datasets resulted in a flexible and responsive system that our team could use both in the field and in the office. Now, our field crews work in the field with all of the layers that they need and any edits, additions, and deletions that they make are uploaded when they are back in range. Our Project Managers can see what work has been done each day. LandPLANNER has improved Chartwell's productivity so much that we're make it available to our clients.

8. INDIGENOUS KNOWLEDGE, UNDERSTANDING AND INCORPORATION

The Project Team has a proven track record of progressively and cooperatively working with, supporting, and in some cases partnering with, First Nations. Our team is sensitive and aware of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and its direct implications when it comes to forests, forest management, and incorporation of Indigenous Peoples and their knowledge.

Chartwell Resource Group Ltd. works alongside many First Nations to achieve their natural resource management objectives. For example, we participate in the collection of forest inventory data which includes traditional plant surveys, habitat overview assessments, and cultural features screening. We have built long-standing professional relationships with land and resource and referrals departments of the First Nations territories we work in. We coordinate assessments, other professionals and archeology work when required.

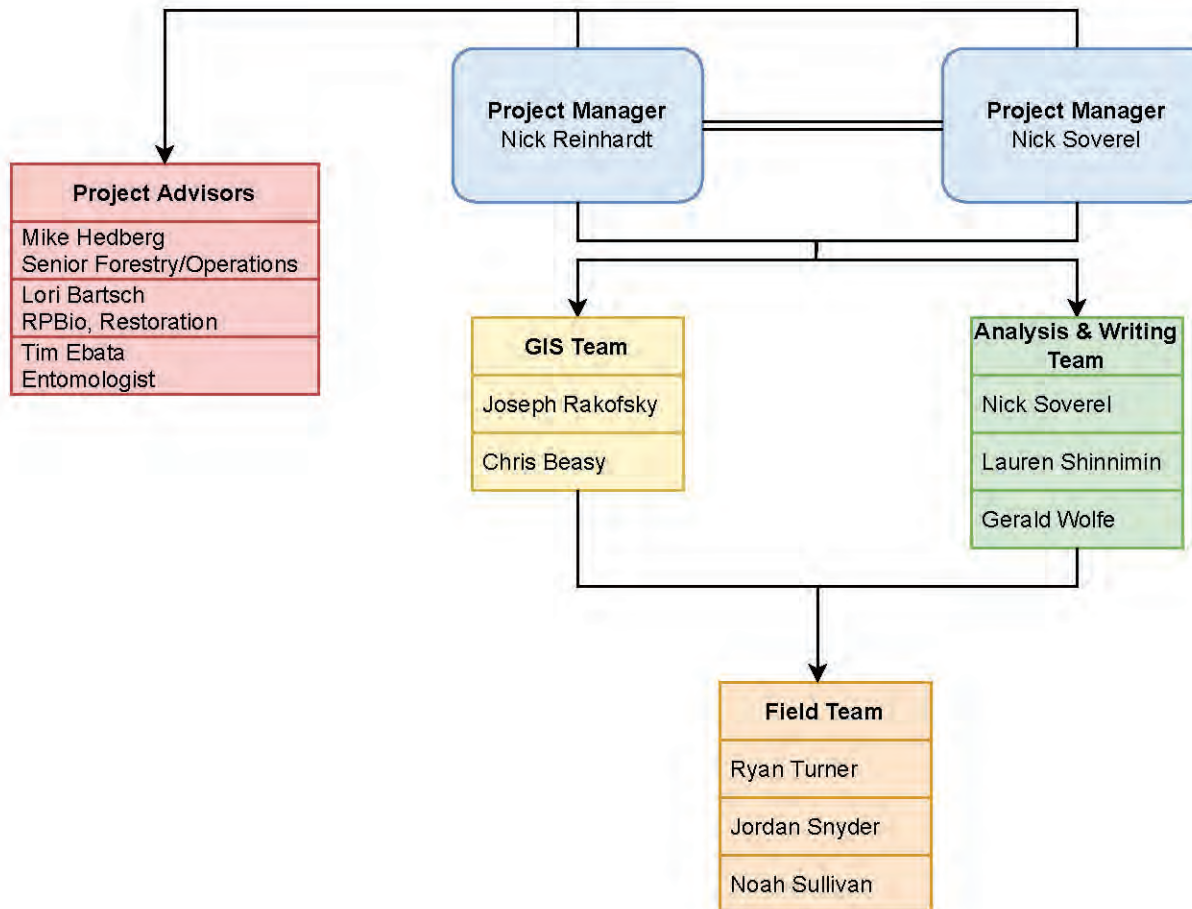


Many of Chartwell's existing clients are First Nations. Chartwell has been a part of assisting to bring forest tenures owned and managed within the traditional territories of these nation to a point where that they can begin to benefit from these business ventures. Currently Chartwell provides extensive natural resource management, forestry, biology, and engineering services to the Squamish and Tsleil-Waututh Nations.

Frontera has relationships and contracts with over ten different First Nations within BC and supports grant funding and economic development activities related to forestry or WR reduction. Specific to this project, Frontera works collaboratively with the Squamish Nation and communicates regularly with their forestry staff in regard to forestry activities within the Squamish Nation's traditional territory.

Frontera works collaboratively with many First Nations clients on fire and fuel management projects, including incorporation of forestry practices as they relate to the protection of important cultural, natural, and spiritual features.

9. APPENDIX A –ORGANIZATION CHART





CERTIFICATE OF EXISTING INSURANCE

Section 2 through 8 – to be completed and executed by the Insurer or its Authorized Representative

- THIS CERTIFICATE IS ISSUED TO: City of Vancouver, 453 W 12th Avenue, Vancouver, BC, V5Y 1V4
and certifies that the insurance policy (policies) as listed herein has/have been issued to the Named Insured and is/are in full force and effect.
- NAMED INSURED (must be the same name as the Proponent/bidder and is either an individual or a legally incorporated company)
Chartwell Resource Group Ltd.
BUSINESS TRADE NAME or DOING BUSINESS AS

BUSINESS ADDRESS

210 - 275 Fell Avenue, North Vancouver, BC V7P 3R5

DESCRIPTION OF OPERATION

Natural Resource/Forestry Project Mangement Consultants, Professional Foresters, Engineers & Certified Arborists

- PROPERTY INSURANCE (All Risks Coverage including Earthquake and Flood)

INSURER _____	Insured Values (Replacement Cost)	-
TYPE OF COVERAGE _____	Building and Tenants' Improvements	\$ _____
POLICY NUMBER _____	Contents and Equipment	\$ _____
POLICY PERIOD From _____ to _____	Deductible Per Loss	\$ _____

- COMMERCIAL GENERAL LIABILITY INSURANCE (Occurrence Form)

Including the following extensions:	INSURER _____	Lloyds of London, arranged by Vailo Insurance Services
√ Personal Injury	POLICY NUMBER _____	s.15(1)(l)
√ Property Damage including Loss of Use to	POLICY PERIOD _____	From <u>July 1, 2022</u>
√ Products and Completed Operations Inclusive) -	to <u>July 1, 2023</u>	
√ Cross Liability or Severability of Interest	Limits of Liability (Bodily Injury and Property Damage	
√ Employees as Additional Insureds	Per Occurrence	\$ <u>5,000,000</u>
√ Blanket Contractual Liability	Aggregate	\$ <u>5,000,000 (Products & Completed Ops)</u>
√ Non-Owned Auto Liability	All Risk Tenants' Legal Liability	\$ <u>500,000</u>
	Deductible Per Occurrence	\$ <u>2,500</u>

- AUTOMOBILE LIABILITY INSURANCE for operation of owned and/or leased vehicles

INSURER _____	Limits of Liability -
POLICY NUMBER _____	Combined Single Limit \$ _____
POLICY PERIOD From _____ to _____	<i>If vehicles are insured by ICBC, complete and provide Form APV-47.</i>

- UMBRELLA OR EXCESS LIABILITY INSURANCE (Damage Inclusive)

INSURER _____	Limits of Liability (Bodily Injury and Property
POLICY NUMBER _____	Damage Inclusive)
POLICY PERIOD From _____ to _____	Per Occurrence \$ _____
	Aggregate \$ _____
	Self-Insured Retention \$ _____

- PROFESSIONAL LIABILITY INSURANCE

INSURER <u>Lloyds of London, arranged by Vailo Insurance Services</u>	Limits of Liability
POLICY NUMBER <u>s.15(1)(l)</u>	Per Occurrence/Claim \$ <u>2,000,000</u>
POLICY PERIOD From <u>July 1, 2022</u> to <u>July 1, 2023</u>	Aggregate \$ <u>4,000,000</u>
	Deductible Per Occurrence/Claim \$ <u>5,000</u>

If the policy is in a "CLAIMS MADE" form, please specify the applicable Retroactive Date: _____

- OTHER INSURANCE

TYPE OF INSURANCE _____	Limits of Liability
INSURER _____	Per Occurrence \$ _____
POLICY NUMBER _____	Aggregate \$ _____
POLICY PERIOD From _____ to _____	Deductible Per Loss \$ _____
TYPE OF INSURANCE _____	Limits of Liability
INSURER _____	Per Occurrence \$ _____
POLICY NUMBER _____	Aggregate \$ _____
POLICY PERIOD From _____ to _____	Deductible Per Loss \$ _____

SIGNED BY THE INSURER OR ITS AUTHORIZED REPRESENTATIVE

Sarah Zipp, BA, CIP _____ Dated November 1, 2022

PRINT NAME OF INSURER OR ITS AUTHORIZED REPRESENTATIVE, ADDRESS AND PHONE NUMBER

Arthur J. Gallagher Canada Limited, #101 - 4430 West Saanich Road, Victoria, BC V8Z39 250-386-1454

Will be provided by email to
Jing Fan no later than
November 8, 2022

UNDERTAKING OF INSURANCE

To: CITY OF VANCOUVER

Re: PS20220102-VBPR-RFP - Consulting Service for Stanley Park Forestry Initiatives

Dear Sirs:

We, the undersigned have completed, signed and attached the "Certificate of Existing Insurance" enclosed with this undertaking and now also do hereby undertake and agree that if

_____ (the "**Proponent**") is awarded a Contract, we will insure the Supplier in accordance with the requirements of the Contract, the form of which is included in the RFP Documents and will form part of the Contract

Documents.

Dated at _____, British Columbia, this _____ day of _____
_____ 20____.

By (name): _____

Title: _____

Signature: _____

Full Corporate Name of Insurer:

The "Certificate of Existing Insurance" provided with the RFP should be completed and signed and enclosed with this Appendix, both of which are to be signed by the Insurance Company or an authorized broker on behalf of the Insurance Company. A SEPARATE FORM (AND CERTIFICATE OF EXISTING INSURANCE) SHOULD BE SIGNED FOR EACH POLICY IF THE PROPOENT HAS MORE THAN ONE INSURER OR BROKER FOR ITS POLICIES.

REQUEST OF PROPOSALS NO. PS20220102-VBPR-RFP
CONSULTING SERVICE FOR STANLEY PARK FORESTRY INITIATIVES
FORM OF PROPOSAL

FORM OF PROPOSAL

PS20220102-VBPR-RFP - CONSULTING SERVICE FOR STANLEY PARK FORESTRY INITIATIVES
(the "RFP")

Proponent's Full Legal Name: Chartwell Resource Group Ltd.

"Proponent"

Address: #210 - 275 Fell Ave North Vancouver, BC, V7P 3R5

Jurisdiction of Legal Organization: British Columbia

Key Contact Person: Cliff Roberts

Telephone: 604-973-1105

E-mail: Croberts@crgl.ca

The Proponent, having carefully examined and read the RFP, including all amendments and addenda thereto, if any, and all other related information published on the City's e-Sourcing system, hereby acknowledges that it has understood all of the foregoing, and in response thereto hereby submits the enclosed Proposal.

IN WITNESS WHEREOF the Proponent has executed this Proposal Form:



Signature of Authorized Signatory for the Proponent

November 1, 2022

Date

Cliff Roberts, President

Name and Title

Signature of Authorized Signatory for the Proponent

Date

Name and Title

PERSONAL INFORMATION CONSENT FORM(S)

Complete one copy of this Personal Information Consent Form(s), in the form set out below, for each key personnel for whom a CV or other information regarding employment history and qualifications has been included in the Proposal.

PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives


Gerald Wolfe

With the provision of my signature at the foot of this statement I, _____
_____ (Print Name)

consent to the indirect collection from _____
_____ (Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.



November 1, 2022

Signature

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

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PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, _____

Jordan Snyder (Print Name)

consent to the indirect collection from _____

Chartwell Resource Group Ltd. (Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.



Signature

November 1, 2022

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

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PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Mike Hedberg (Print Name)

Chartwell Resource Group Ltd. (Print Name of Proponent) of my consent to the indirect collection from _____

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) Freedom of Information and Protection of Privacy Act.



November 1, 2022

Signature	_____	Date	_____
Signature	_____	Date	_____
Signature	_____	Date	_____
Signature	_____	Date	_____
Signature	_____	Date	_____

PERSONAL INFORMATION CONSENT FORM(S)

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PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Nick Reinhardt

(Print Name)

consent to the indirect collection from Chartwell Resource Group Ltd.

(Print Name of Proponent) of my
personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.

_____ Signature	Nov. 1st 2022 _____ Date
_____ Signature	_____ Date
_____ Signature	_____ Date
_____ Signature	_____ Date
_____ Signature	_____ Date

PERSONAL INFORMATION CONSENT FORM(S)

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PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

Ryan Turner

With the provision of my signature at the foot of this statement I, _____
_____ (Print Name)

consent to the indirect collection from Chartwell Resource Group Ltd.
_____ (Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

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November 1, 2022

Signature

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

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PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Chris Beasy

(Print Name)

consent to the indirect collection from Chartwell Resource Group Ltd.

(Print Name of Proponent) of my

personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.

Chris Beasy
Signature

Nov. 1, 2022
Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

PERSONAL INFORMATION CONSENT FORM(S)

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PERSONAL INFORMATION CONSENT FORM

Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Lori Bartsch

(Print Name)

consent to the indirect collection from Chartwell Resource Group Ltd

(Print Name of Proponent) of my
personal information in the form of a work history, resume or summary of qualifications.

In consenting to this indirect collection, I understand that my personal information, so collected, will be stored on servers located in the United States and will be used by the City for the sole purpose of evaluating the submitted response to the above-noted procurement process. I understand further that my personal information, once collected by the City, will be handled by the City in accordance with the provisions of the (BC) *Freedom of Information and Protection of Privacy Act*.



Signature

Nov. 1st, 2022

Date

Signature

Date

Signature

Date

Signature

Date

Signature

Date

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PERSONAL INFORMATION CONSENT FORM

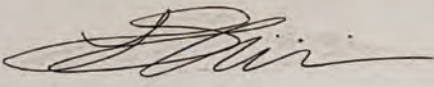
Reference #PS20220102-VBPR-RFP

Title: Consulting Service for Stanley Park Forestry Initiatives

With the provision of my signature at the foot of this statement I, Nicholas Soverel, Lauren Shinnimin, Joseph Rakofsky, Noah Sullivan, Tim Ebata (Print Name)

consent to the indirect collection from C R G L
_____ (Print Name of Proponent) of my
personal information in the form of a work history, resume or summary of qualifications.

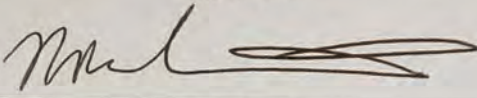
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Signature

01/11/2022

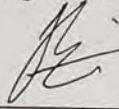
Date



Signature

01/11/2022

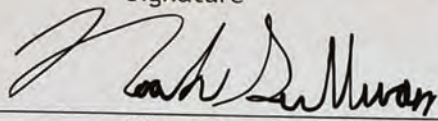
Date



Signature

01/11/2022

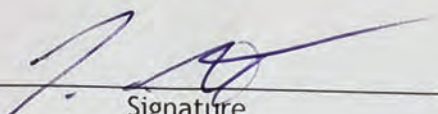
Date



Signature

01/11/2022

Date



Signature

01/11/2022

Date

Sustainability

INDIGENOUS PARTICIPATION

1. Do you have any strategic partnerships or joint ventures with First Nations and/or Indigenous peoples or organizations that seek mutually-beneficial project such as revenue flows and/or skills, training and employment opportunities?

Strategic Partnerships

Joint Venture

Which is applied to:

All projects/contracts, including this one

OR

Specific work within projects/contracts

Specific locations

This project/contract

Chartwell works with several First Nation in partnerships to provide opportunities to these communities in the forms of revenue sharing and/or employment. Most of these partnerships are directly related to specific projects. Chartwell does employ some of the trained individuals to participate in projects outside nation specific projects.

2. Please indicate any other ongoing partnership relations with Indigenous peoples, businesses or organizations that advance economic inclusion such as

Truth & Reconciliation Calls to Action

Initiatives/partnerships for:

- o Recruitment,
- o Employment,
- o Supplier engagement,
- o Sub-contractors involvement

Other: Chartwell works with and as a service partner for several First Nations organizations who own and manage forest tenures in BC. These include the Tsleil-Waituth, Squamish, Lil'wat, Katzie-Kwantlen, Seabird, and Sechlet First Nations. We provide forest management and decision-making support services that are focused on the success the Nations in their enterprises. Our companies strategic goals is to work within First Nation traditional territories in a respectful and informed manner, in order to design partnerships where we both thrive.

3. Please describe how you will prioritize Indigenous participation and economic outcomes (ie. Indigenous businesses, sub-contracting, employment, job skills/training opportunities) as part of this procurement:

We have First Nations employees, and we actively recruit new staff members in partnerships with Nations for whom we work. We encourage and support training initiatives, helping with training whenever possible in Nation led initiatives.

The nature of our work as Registered Professionals has specific education requirements which can be limiting but it does allow us to be exposed to resource work with broader employment opportunities, many of which are First Nation Owned. It is with these relationships, where we have found more opportunity to expand our training and co-operative involvement.

SUPPLIER DIVERSITY

Please note for the Supplier Diversity, Vendors' are required to answer to the following question, which will be kept confidential in accordance with the Legal Terms and Conditions of this RFP.

<p>In the space below, indicate the vendor's company profile with regards to social value and economic inclusion including recognized certifications and/or if owned/controlled by an equity- seeking demographic (including but not limited to non-profit, cooperative, Women, Indigenous Peoples, Ethno-cultural People (minorities, newcomers, immigrants), persons with disabilities or LGBTQ2+ people).</p>	
<p>Majority owned/controlled/ by:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Indigenous People <input type="checkbox"/> Black & African diaspora <input type="checkbox"/> Person of Color & Racialized <input type="checkbox"/> 2S/LGBTQQIPAA+; Trans & Non-binary <input type="checkbox"/> Women <input type="checkbox"/> People with Disabilities <input type="checkbox"/> Neurodiverse <input type="checkbox"/> Non-Profit/Charity (Social Enterprise) <input type="checkbox"/> Coop <input checked="" type="checkbox"/> Employee Owned <input type="checkbox"/> Community Contribution Corporation (3C/CCC) <input type="checkbox"/> Other: please indicate 	<p>Social / Diverse Certifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> BCorp <input type="checkbox"/> Supplier Diversity Certification <input type="checkbox"/> JUST <input type="checkbox"/> Living Wage <hr/> <p>Enviro / Other Certifications</p> <ul style="list-style-type: none"> <input type="checkbox"/> Fairtrade <input type="checkbox"/> Green Business Certification (ie. LEED, ClimateSmart) <input type="checkbox"/> Other: please indicate

DIVERSE SUPPLIER PARTICIPATION

Will you be using sub-contractors for this procurement?

No

X - Yes

If yes, please indicate if any, of your sub-contractors identify as social/diverse (equity-seeking) owned/controlled/certified and how they will participate in as part of this contract.

Our Subcontractor Frontera Forest Solutions, Inc. is 100% LGBTQ+ and 100% immigrant owned. They will co-manage this project with Chartwell and will be responsible for the Wildfire portion.

EMPLOYMENT EQUITY

In addition to being an equal opportunity employer, please indicate/describe:

1. Any policies/programs or how you advance employee equity, diversity and inclusion for racialized and under-represented populations (such as Indigenous People, People with Disabilities)
 - Equity, Diversity, Inclusion Policy
 - o Implementation/leadership/reporting
 - Federal Contractors Program
 - Pay Equity (across gender/racialized), **We do an annual review of gender pay equity**
 - Diversity (gender / racialized) in Leadership (Board, Executive etc) Our senior Management and operation teams is gender/racially diverse
 - Employee Resource Groups
 - Other: please describe
2. Employee Diversity tracking & reporting
 - Annual Surveying
 - Ongoing monitoring
 - Public reporting
 - Federal reporting
 - Other:
3. Source or recruit from Workforce Development and/or Skill Training programs:
 - Pathways / Pre-employment services for people who are under-represented and/or face barriers to traditional employment
 - Apprenticeships
4. Initiatives to support career advancement for racialized or under-represented persons
 - Job related skills development
 - Higher education
 - Financial support
 - Mentorship
 - Paid Apprenticeships
 - "Manager in Training"
 - Other:
5. Do you compensate (wages & benefits) at or above a Living Wage (\$20.53)
 - Yes
 - No
6. Non-mandatory benefits (i.e. extended health) to your employees
 - Extended health
 - RRSP contribution
 - Sick Leave Pay

WORKFORCE DIVERSITY

Vendors' are required to answer to the following question, which is for information gathering purposes only, and will be kept confidential in accordance with the Legal Terms and Conditions.

<p>As best known, in the space below, indicate the vendor's company profile with regards to economic inclusion supporting employment equity, diversity, inclusion and reconciliation by an equity-seeking demographic (including but not limited to Women, Indigenous Peoples, Ethno- cultural People (minorities, newcomers, immigrants), persons with disabilities or LGBTQ2+ people). <i>Confidential & for information only</i></p>	
<p><u>Overall Workforce Diversity:</u></p> <p>6% Indigenous People</p> <p>4% Black & African diaspora</p> <p>13% Person of Color & Racialized</p> <p>4% 2S/LGBTQQIPAA+ Trans & Gender Diverse & Non-binary</p> <p>40% Women</p> <p>People with Disabilities</p> <p>Neurodiverse</p>	<p><u>Leadership/Management/Executive Workforce Diversity:</u></p> <p>Indigenous People</p> <p>4% Black & African diaspora</p> <p>4% Person of Color & Racialized 2S/LGBTQQIPAA+ Trans & Gender Diverse & Non-binary</p> <p>36% Women</p> <p>People with Disabilities</p> <p>Neurodiverse</p>
<p><u>If you choose not to respond please indicate why:</u></p> <p><input type="checkbox"/> <u>Do not track this information</u></p> <p><input type="checkbox"/> <u>Do not want to share this information</u></p>	<p>CRGL does not actively track this information or ask its employees to disclose this information. The above information is based on the information individuals were willing to share.</p>

SUBCONTRACTORS

Provide details on Subcontractors in the form set out below by listing all of the subcontractors that the Proponent proposes to use in carrying out its work under an Agreement.

If selected to enter into an Agreement with the City, the Proponent may be limited to using subcontractors listed in its Proposal. If the City objects to a subcontractor listed in a Proposal, the City may permit a Proponent to propose a substitute Subcontractor acceptable to the City.

Subcontracted Scope	Wildfire Risk Assessment, Analysis, Reporting Services	
Subcontractor	Frontera Forest Solutions, Inc. (www.fronterasolutions.ca)	
Contact (name, title, email, telephone no.)	Nicholas Soverel, Owner nsoverel@fronterasolutions.ca , Tel: 778-873-6742	
Approximate Percent of the Work to be Subcontracted	40%	
Social Value Business - shall mean a business that has a recognized environmental or social certification and/or is majority owned/controlled by an equity-seeking demographic (including but not limited to non-profit, cooperative, Women, Indigenous Peoples, Ethno-cultural People (minorities, newcomers, immigrants), persons with disabilities or LGBTQ+ people).	Frontera is 100% LGBTQ+ and 100% immigrant owned.	
The Subcontractor's Relevant Experience (identify at least three similar projects within the last five years, including the client)	1. Project Name:	RMOW Fire and Fuels Consulting
	Client:	Resort Municipality of Whistler (RMOW)
	Nature of Work:	Frontera currently holds a three-year contract with the Resort Municipality of Whistler (RMOW). Under this contract, Frontera manages all aspects of forestry and wildfire planning and prevention services on behalf of the RMOW. This includes all planning, prescription development, supervision and

		management of operational fuel management and long-term monitoring of the impacts of fuels vegetation management.
	Value:	\$150,000/year
	Client Contact:	Heather Beresford ; Environmental Stewardship Manager 4325 Blackcomb Way Whistler, B.C. V8E 0X5 T: 604-935-8374 Email: hberesford@whistler.ca
	2. Project Name:	MLMCF and DoM Fire and Fuels Consulting Services (2019-2022)
	Client:	McLeod Lake Mackenzie Community Forest and the District of Mackenzie
	Nature of Work:	<p>Since 2019 Frontera has co-led and assisted the District of Mackenzie's fire and fuels program. In this role, we have worked collaboratively with the District, the McLeod Lake Mackenzie Community Forest (MLMCF), and the local BC Wildfire Service. In 2019 we assisted in completing a 500 ha FMP along Highway 39 with the objective of increasing egress safety in the event of an evacuation. A portion of the Highway 39 FMP was also selected for a burn plan and Frontera led the development of this plan. We have assisted the District in tendering, selecting, and implementing approximately 100 ha of the Highway 39 FMP area. We are also in discussion with the BC Wildfire Service regarding implementing a 20-ha burn in 2022.</p> <p>We have worked with the District of Mackenzie and staff to write two different FMPs within the District boundary and adjacent to private residences. We have assisted the</p>

		District in implementing these local treatments which have resulted in positive feedback from the District's Council and the community at large. We are currently working with the District to implement their FireSmart program and are planning to provide consultancy in developing an updated CWRP and Community FireSmart Plan.
	Value:	\$100,000/year
	Client Contact:	Ian LeBlanc, RFT, Wildfire Project Coordinator - MLMCF T: 250-640-6287 Email: WPC@mlmcf.ca
	3. Project Name:	Lílwat Nation Fire and Fuels Consulting Ongoing (2019-2022)
	Client:	Lílwat Nation
	Nature of Work:	<p>Frontera has been the sole fire and fuels consultant to the Lílwat Nation since late 2018. We lead all aspects of the Nation's fire and fuels programs and collaborated with Lílwat Forestry Ventures, the Village of Pemberton, and Pemberton BC Wildfire Service. This has included grant application funding for 2019, 2020, 2021 and 2022. Frontera has assisted in securing well over \$500,000 in fuel management prescription and operations funding, burn planning and implementation funding, as well as FireSmart planning and implementation funding. These grant applications have been through the BC Government, First Nations Emergency Service Society (FNESS) and Indigenous Services Canada (ISC).</p> <p>Frontera's consultancy has resulted in the prescription of over 150 ha of forested land within the wildland-</p>

		<p>urban interface, completion of approximately 20 ha of treatment area, burn planning of over 100 ha, and successfully collaborated with the BC Wildfire Service and the Nation to support an 80 ha burn in 2021. In terms of FireSmart programming, Frontera secured funding for a full-time FireSmart Coordinator and Frontera has worked with the FireSmart Coordinator for the last six months to complete FireSmart home assessment. In collaboration, we have completed 50 home assessments with approximately half of the homes being FireSmart treated.</p>
	Value:	\$100,000/year
	Client Contact:	<p>Troy Bikadi, Community and Workplace Health and Safety Officer Lílwat Nation T: 604-966-4339 Email: Troy.Bikadi@lilwat.ca</p>



WORKING TO MAKE A DIFFERENCE

Assessment Department	Location	Clearance Section
Mailing Address	6951 Westminster Highway	Telephone 604 244 6380
PO Box 5350	Richmond BC	Toll Free within Canada
Station Terminal	V7C 1C6	1 888 922 2768
Vancouver BC V6B 5L5	www.worksafebc.com	Fax 604 244 6390

Diamond Head Consulting Ltd.
878 east 17th St
North Vancouver
NORTH VANCOUVER, BC V7L 2X1

October 26, 2022

Person/Business : DIAMOND HEAD CONSULTING LTD
Account number : 657906

This letter provides clearance information for the purposes of Section 258 of the Workers Compensation Act.

We confirm that the above-referenced firm is active, in good standing, and has met WorkSafeBC's criteria for advance clearance. Accordingly, if the addressee on this letter is the prime contractor, the addressee will not be held liable for the amount of any assessment payable for work undertaken by the above-referenced firm to January 01, 2023.

This firm has had continuous coverage with us since March 01, 2001.

Employer Service Centre
Assessment Department

Clearance Reference # : C133490975
CLRAAA

For more information about Section 258 and clearance letters visit WorkSafeBC.com

Please refer to your account number in your correspondence or when contacting the Assessment Department.
To alter this document constitutes fraud.



Vancouver Stanley Park Hemlock Looper Impact Assessment and Forest Management Plan

Closing: Nov 1, 2022

Submitted by:

Diamond Head Consulting

3559 Commercial Street

Vancouver BC

Canada, V5N 4E8

Mike Coulthard

Principal and Senior Forester and Biologist

P: 604 733 4886

E: mike@diamondheadconsulting.com



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LETTER OF INTRODUCTION



Nov 1, 2022

RE: Vancouver Stanley Park Hemlock Looper Response and Wildfire Risk Assessment and Mitigation Plan

Diamond Head Consulting Ltd. (DHC) is pleased to submit this proposal to assist Vancouver to understand and mitigate the impacts from the Hemlock Looper outbreak in Stanley Park. DHC is a Vancouver-based environmental consulting firm specializing in natural resources management, GIS, wildfire mitigation, urban forestry, risk management and environmental planning in urban areas. Our multidisciplinary team offers a breadth of experience in traditional and urban forestry practice. We have extensive regional and international experience our work has been recognized in Canada with two National Awards for Planning Excellence: 1) Town of New Westminster Urban Forest Management Plan (2017); and 2) Climate Adaptation Strategy for Metro Vancouver (2019).

Our project team offers:

- **Multidisciplinary professionals:** foresters, arborists, geospatial and remote sensing analysts, planners, biologists and landscape designers
- **Friendly, articulate and available professional staff** with a full understanding of the requirements and specifications to conduct an impact assessment of the hemlock looper outbreak and the associated risk from wildfire and trees
- **Extensive experience** in forest health and tree risk management, wildfire assessment, restoration and planting prescriptions and forest management planning
- **History of successfully completing complex and challenging projects** of similar scope on schedule and within budgets
- **Successful working relationships** with Vancouver and other local governments throughout western Canada

The enclosed proposal is submitted in response to the above-referenced Request for Proposal. Through submission of this proposal we agree to all of the terms and conditions of the Request for Proposal.

We have carefully read and examined the Request for Proposal and have conducted such other investigations as were prudent and reasonable in preparing the proposal. We agree to be bound by statements and representations made in this proposal and to any agreement resulting from the proposal.

Should you have any questions or require clarification on our proposal, please do not hesitate to contact us by phone or email, as noted below.

Mike Coulthard, Principal & Senior Forester and Biologist
P: 604-733-4886 | E: mike@diamondheadconsulting.com
3559 Commercial Street | Vancouver | V5N 4E8

A handwritten signature in black ink, appearing to read "Mike Coulthard", is positioned below the contact information.

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1 EXECUTIVE SUMMARY

Diamond Head Consulting Ltd. (DHC) is a leading environmental consulting firm specializing in forestry and ecosystem management. Our Vancouver-based company was founded in 2001 and has grown to include a team of 35 registered professional planners, foresters, biologists, arborists, geospatial and remote sensing analysts, and landscape designers. Our clients include municipalities, government agencies, commercial and residential developers, First Nations, and private landowners.

We have extensive experience in urban forest management, arboriculture, forestry and wildfire mitigation, environmental planning, community engagement, natural resources management including biodiversity and conservation. DHC specializes in ecological inventories and assessments of environmental features, wildlife, species at risk, invasive species, and terrestrial, riparian and aquatic habitat. We use this information to make management recommendations for the protection, restoration, and enhancement of habitat, as well as sustainable development, park, trail and recreation programming, and risk management. Managing the urban forest is also a focus of many of DHC's projects. Properly caring for trees in our urban landscape ensures we benefit from their services while managing their associated risk.

We have worked extensively with Vancouver in the past on a range of initiatives. We completed the Urban Forest Canopy Cover Mapping and Canopy Forecasting for Vancouver. The analysis from this work will provide a foundation for this project. We completed the Urban Forest Strategy and Public Tree Management Guidebook for the City as well as the Invasive Species Management Strategy for the Vancouver Board of Parks and Recreation. Our certified tree risk assessors regularly complete tree risk assessments for urban natural interface areas and our senior professionals are working with Vancouver to update their tree risk policy.

Our forestry team has completed wildfire mitigation projects ranging from Community Wildfire Protection Plans for Cities and Regional Districts as well as fuel mitigation prescriptions for Cities and the Ministry of Forests for high risk interface areas. We have completed hemlock looper impact and wildfire risk assessments for Metro Vancouver for the north shore watersheds and are addressing the hemlock looper outbreak in the City of North Vancouver as part of their Urban Forest Strategy, which is under development.

We have provided a cost for this level of effort which totals \$99,270. We have the expertise and resources required to complete this work within the project timelines with a planned submission date of March 31, 2023.

Through submission of this proposal, we agree to all outlined terms and conditions. We agree to be bound by statements and representations made in this proposal and confirm that all team members named in the RFP have the ability to commit to the project over its anticipated duration. DHC is registered and in good standing with WCB (657906) and maintains the required insurance policies. Please do not hesitate to contact us if you have any questions or require clarification on anything contained in this proposal.



2 PROJECT INTRODUCTION

Over the last two years, a Hemlock Looper moth outbreak has caused a severe health decline and widespread mortality of conifers in certain areas of Stanley Park. In addition to the impacts of the looper, there has been a record breaking drought through August, September and October that has further stressed the health of the trees in the park. The impacts to trees from the looper outbreak and this drought may not become fully realized for one or two more growing seasons. The dead vegetation created by this forest pest has created fuel accumulations that could pose a wildlife threat. It has also resulted in dead standing trees that could be threats to visitors of the park and the park's infrastructure.

The City requires a study to determine the extent and severity of impacts from the Hemlock Looper and the resulting threat from wildfire and trees failing. A defensible approach to managing the impacts of the Hemlock Looper is required to ensure that the park continues to be safe for visitors. The scope of this project includes an evaluation of the health and condition of the trees in the forested areas of the park. This will be done using current technology including drone imagery, interpretation of 2022 orthophotos, remote sensing and LiDAR. Findings from this analysis will be confirmed through ground assessments by professional foresters, biologists and ISA arborists.

Detailed mapping of the trees and their condition will be produced. Remote sensing will be used to detect trees that are dead or have stressed foliage. This will produce an accurate inventory of impacts from the hemlock looper and drought. Trees that are in poor health will be mapped along with their target areas calculated using LiDAR derived heights to determine what could be at risk if they fail. LiDAR will also be used to determine fuel loading using crown bulk density of conifer trees. These findings will be assessed on the ground by experienced foresters, biologists and ISA arborists.

This analysis will form the foundation for a forest health management plan. This plan will provide options for managing the health impacts on the trees as well as the risk that has been created as a result of the looper outbreak and drought. It will set out objectives, targets and operational strategies to address tree risk and fuel loading. It will include a summary of the values at risk, constraints, and operational considerations. It is intended to provide a comprehensive plan that can be *implemented*, whereby the vegetation is physically modified, and the risk is subsequently reduced. A monitoring strategy will be included that specifies indicators and methods for measuring them over time.



3 APPROACH

The study area for this plan includes all of the forested areas of Stanley Park . The plan is intended to mitigate against the impacts of the hemlock looper on the forest’s integrity, protect the urban interface and the park from wildfire, and address the risk from trees failing. The plan will include a summary of the technology and ground based assessments. This information will be presented spatially as maps and geospatial layers that are compatible with the City of Vancouver’s GIS system. Comprehensive plans will be provided to address the Hemlock looper outbreak, wildfire threat and tree risk. The following sections provide a summary of the methods proposed to complete this project.



3.1 Technology based forest health assessment using drones, orthophotos, remote sensing and LiDAR inventory

Diamond Head has completed a preliminary LiDAR-based analysis of the trees in Stanley Park. Preliminary results indicate that there are ~30,000 trees growing in forested areas of the park. The assessment of this number of trees requires that the efficiencies of technology are used. LiDAR will be used to identify individual trees, their heights, the extent of their crowns as well as the bulk density of the fuels.

Remote sensing from leaf-on 2022 orthophotos and a multi-spectral satellite image will be used to analyze the reflectance of trees that have been stressed by the Hemlock looper outbreak and drought throughout the park. Diamond Head will acquire a 6-band, 30 cm resolution Pleiades-Neo satellite image captured in August of 2022. The image contains a very important red-edge band, placing it between the visible red and near-infrared bands on the electromagnetic spectrum. Multiple studies on conifer stress and mortality have shown that the reflectance of conifer needles changes rapidly in the red-edge band depending on health conditions (Eitel et al., 2011; Masaitis et al., 2013). A healthy conifer needle has more chlorophyll and reflects more light energy in the red-edge sliver of the spectrum. Higher reflectance means a higher spectral value in this wavelength. Dead or stressed vegetation reflects less in the red-edge band, with the ability to detect vegetation stress even before it becomes visible to the human eye. Diamond Head will derive Red-Edge NDVI (Normalized Difference Vegetation) and Red-Edge Chlorophyll raster indices to assess the health condition of all Stanley Park trees.

Field ground assessments will be used in combination with low-altitude drone flights, allowing foresters to confirm the accuracy of the remote sensing assessment results. Diamond Head is actively using drones to assess the impacts of the looper on the trees in the City of North Vancouver and the Capilano watershed.

The results from this analysis will be an inventory of every tree in the park including whether it is deciduous or coniferous, its location, its height, canopy extent, and stress level of the foliage. The results from this analysis will be used to create forest polygons of stands that are similar in composition. It will also provide an inventory of all ~30,000 trees along with their condition class.

Accurate estimates of Canopy Bulk Density (CBD) will be achieved using a predictive multi-variable regression model (Chamberlain et al., 2021; Erdody and Moskal 2010) that combines field data, LiDAR, and high-resolution near-infrared imagery as inputs. All statistical analyses, model building, model selection, and accuracy assessment will be done in the software package R. We will use representative field plots to calculate field CBD which then will be used in the model development process as the dependent variable. Both LiDAR and near-infrared imagery-derived metrics will be considered as potential independent (predictor) variables. We will perform data visualization and statistical tests to select significant predictor variables and eliminate the autocorrelation among predictor variables. To select the best-fitted model, we will investigate a combination of factors including high R^2 value, low Root Mean Square Error (RMSE), low Akaike's Information Criteria (AIC), and no collinearity. Lastly, we will compare predicted- vs field-derived CBD estimates to assess the accuracy of the final model. The output from the CBD regression analysis will be a continuous surface raster illustrating the level of fuel loading across the park. CBD in Stanley Park can be directly correlated to wildfire risk.

Chamberlain, C. P., Meador, A. J. S., & Thode, A. E. (2021). Airborne lidar provides reliable estimates of canopy base height and canopy bulk density in southwestern ponderosa pine forests. *Forest Ecology and Management*, 481, 118695.

Eitel, Jan & Vierling, Lee & Litvak, Marcy & Long, Dan & Schulthess, Urs & Ager, Alan & Krofcheck, Dan & Stoscheck, Leo. (2011). Broadband, red-edge information from satellites improves early stress detection in a New Mexico conifer woodland. *Remote Sensing of Environment*, 115(12), 3640-3646

Erdody, T. L., & Moskal, L. M. (2010). Fusion of LiDAR and imagery for estimating forest canopy fuels. *Remote Sensing of Environment*, 114(4), 725-737.

Masaitis, Gediminas & Mozgeris, Gintautas & Augustaitis, Algirdas. (2013). Spectral reflectance properties of healthy and stressed coniferous trees. *iForest - Biogeosciences and Forestry*, 6, 30-36.



Figure 1 - LiDAR analysis completed by DHC showing the trees in the park .



Figure 2 - The analysis will be supplemented and confirmed using drones which capture images of dead and dying trees.

3.2 Tree risk assessment

A tree risk management plan is required to assess tree risk in the park to the roads, public and park infrastructure. The findings from the technology-based assessment will be used to identify areas where there are potentially high risk trees. Tree heights will be used to map out zones where targets could be struck by failing trees. All of the targets in the park will be mapped including roads, walkways, trails, passive park areas and all structures and supporting infrastructure. This will provide a preliminary map of areas where there is the greatest threat from trees failing. This will be based on the target, the condition, and proximity of the trees.

DHC is currently working with Vancouver to review and update their tree risk policy. Vancouver has an obligation to mitigate the risk from trees within a reasonable amount of time after the tree risks have been identified. Due to the high number of high risk trees that are expected to be found in the park, a plan will be provided that illustrates and prioritizes the areas to be assessed in detail. Due to the implications on the City's resources, it is recommended that this plan illustrate these areas of concern, which will be prioritized based off of the likelihood of failure and consequences of failure and that the level 2 assessments of individual tree risk be completed as subsequent phases. A budget estimate and timeline associated with each assessment area will be provided to help inform resource planning. This will help guide the resources required and assist in the planning for the mitigation work.

3.3 Hemlock Looper impact assessment

In 2019, an outbreak of the western hemlock moth began across the North Shore, which has spread into Stanley Park. The larvae of this moth feeds aggressively on the needles of western hemlocks and Douglas-fir, resulting in large patches of brown, sickly-looking trees. As western hemlocks are already prone to heat stress, the defoliation from these insects places these trees under even greater pressure during periods of summer drought. Large areas of defoliated hemlocks and Douglas-fir trees are visible in many forested areas across the North shore and in Stanley Park. Many of the trees impacted by the hemlock looper moth are the largest and most prominent conifers. Most of the impacts have been to the western hemlock population, however the outbreak is so large that many mature Douglas-firs have also been affected.

Trees that are dead, dying, and showing signs of stress will be identified using remote sensing from leaf-on 2022 orthophotos and a multi-spectral satellite image. The trees in these areas are most likely struggling due to a combination of defoliation caused by the Hemlock looper and two years of summer drought. Following the analysis, professional foresters will complete a forest health assessment which documents the extent and severity of the looper impacts and the symptoms showing in the trees.

The current stage of the looper outbreak will be determined along with a prediction of the outbreak's duration and severity. At the time of year that the field work is completed, eggs will have been laid and adult moths will be dead. Evidence of dead moths, needle litter will be assessed.

The provincial entomologist, Babita Bains, will be consulted to compile regional information on this outbreak. This will include a review of the historic occurrence of western hemlock looper in Vancouver parks, the current stage of the outbreak, considerations for stand susceptibility across the parks system, and monitoring options to inform treatment response (e.g., fall egg sampling).



Photo 1 - Hemlock looper banding in North Vancouver

3.4 Wildfire Risk Assessment

Wildfire risk is likely increasing in areas of extensive mortality and foliar dieback. Dead vegetation is more flammable than live vegetation, and dead vegetation accumulations on the forest floor due to tree failure further increases forest flammability. This vegetation becomes potential fuel for wildfires, and increasing the proportion of flammable fuels in an area increases the potential wildfire risk. Identifying areas of elevated fuel loading is the first step in creating a strategic plan for mitigating wildfire risk.

Findings from the initial forest inventory will be initially used to determine the bulk density of the crown fuels within each forest polygon. This will provide an accurate quantity of conifer fuel loading within the lower mid and upper canopy of the trees. LiDAR will be used to calculate critical forest canopy structure characteristics, including canopy bulk density, stand height, canopy fuel weight and canopy base height .

The condition of fuel loading will be confirmed using the low elevation drone orthophotos. All forest polygons that have the potential to pose a high wildfire risk based on the LiDAR analysis will be visited and the wildfire risk assessed by a professional forester. Wildfire risk ratings will be determined using the 2020 Wildfire Threat Assessment methodology produced by the BC Wildfire Service. This system uses proven wildland fire behaviour principles and has close ties with the Canadian Forest Fire Danger Rating System (CFFDRS). This system focuses on fuels and proximity to values that must be protected. The wildfire threat assessment worksheet breaks up each of the components and assigns a numerical value to them. These four sub totals are then added together in order to assign a wildfire threat class to each polygon (Low, Moderate, High, or Extreme). Mapping and risk planning will be based on these threat classes.

3.5 Development of Hemlock Looper response plan

A summary assessment and response plan will developed that summarizes the forest health conditions related to the Hemlock looper outbreak. This implementation plan will be accompanied by a forest polygon map that indicates the severity of hemlock looper impacts to the trees. The plan will document the state of the forest health and information on the stage of the outbreak. This will include predictions for the next 5 years and the expected level of impact to anticipate.

It has been found that hemlocks are able to recover if less than 50% of their canopy remains. However, the impacts of drought may make recovery more difficult. There are a number of options for treatments to reduce the population of the looper. Different stages of the moth can be treated. This includes the prevention of the grubs climbing up into the trees. This can be managed by installing different types of grub bands around the stems of the trees. Other treatments focus on improving the trees access to water and nutrients. The looper reduces the amount of foliage on the tree reducing its ability to photosynthesize. Supplemental fertilization and watering can help the tree to recover from the looper impacts. The costs, effectiveness and social implications of these options will be reviewed. These will be presented as options with associated effectiveness, timelines and costs for implementation. This will include a discussion of the implications of each including social considerations, environmental impacts and costs of implementation. Tools will be provided to staff so that they can make future decisions on what level of impact on a tree warrants it being removed or treated to enhance its health. The use of aerial spray control using Btk will be discussed but will not be a recommended treatment.

3.6 Development of tree risk management plan

The technology analysis will determine where trees have died or are stressed in the park. These will be mapped along with target ranges for each tree based on its height. This spatial assessment will produce a map which illustrates the density of potential tree risk and the values that are at risk. This will be used to prioritize the areas for further assessment and to develop a tree risk management plan. This plan will recognize the City's obligation to treat trees that are identified as high risk within a defensible amount of time. Staff will be consulted to determine the available resources to treat trees, the risk posed by the trees and the targets that are highest value and most at risk. A plan will be developed that identifies treatment polygons and prioritizes them based on risk. The highest priority areas to assess and treat will be discussed along with the approximate

costing and timelines. Experienced foresters and ISA arborists with TRAQ will visit these areas to confirm their condition and provide more detailed discussion on the constraints to treatment and options to reduce the impacts on the natural integrity of the park.

3.6.1 Development of wildfire mitigation plan

A wildfire risk and management plan for the park will be developed. The results of the LiDAR analysis and ground assessments of fuel loading and wildfire behavior potential will be summarized. All polygons will be mapped to show fuel loading, fire behavior potential and threat based on values at risk in and adjacent to the park.

The highest wildfire risk areas will be identified, and mitigation options will be provided. In areas where there are accumulations of fuels, guidance will be provided for developing fuel management prescriptions. Candidate areas for fuel management prescriptions will be identified, as well as potential low impact fuel management options that should be considered. Options will focus on the lowest impact methods that will also respect the multiple other important forest values present, such as wildlife habitat, biodiversity, recreation, and cultural values.

Wildfire preparedness and response planning will be discussed with Park Board staff and the Vancouver Fire Department. Resources that are available will be reviewed within the context of the wildfire risk of different forest polygons. Recommendations will be provided to improve preparedness and suppression response in the case of a wildfire in the park.

3.6.2 Development of an implementation plan

It is unlikely that the amount of risk mitigation work required across the entire park can be carried out in a short period of time. This plan will prioritize the actions and areas to be addressed. This will provide a documented risk mitigation plan. In some areas where the risk is high and there are not enough resources available to mitigate the risk, recommendations will be made for temporary closures. This will also include predictions for areas that there are likely to be future ongoing concerns.

Removing trees and treating fuels for wildfire risk can change the habitat qualities of a forest. Large dead standing trees provide high value habitat for many species. This plan will recognize the value of the impacted trees and provide guidelines on the retention of wildlife stems. This will include height targets based on distances to targets. These will also be species-specific as some tree species decay faster than others. Treatment of fuels for wildfire often includes the removal of understory trees, pruning of lower branches and removal of ground debris. These provide cover habitat for many birds and small mammals. The implications of these treatments on wildlife habitat will be provided by a professional biologist. In sensitive areas, treatment recommendations will be adjusted to reach a compromise between risk mitigation and wildlife habitat value.

Stanley Park is almost completely surrounded by water and is an important iconic feature visible from many parts of Metro Vancouver. Changes to the forest can have an impact on the visual aesthetics of the park. The 2003 windstorm caused the blowdown of large areas in the park which were clearly visible from waterfront areas of West Vancouver and Vancouver. The LiDAR 3D digital surface model (DSM) accurately depicts trees in the park. This model can be changed to remove trees and then illustrate what that impact would look like from different vantage points. Drone footage and high quality photos from preselected vantage points can also be altered using Photoshop to illustrate the implications of the proposed treatments. We have allotted some time in our costing to prepare renderings to help display potential impacts.

Restoration recommendations will be provided for all treatment areas. This will include the management of invasive plants prior to any recommended tree work. Diamond Head has developed an invasive species inventory and management strategy for the City of Vancouver which includes Stanley Park. Best management practices for the invasives that are present in the treatment areas will be provided. Restoration recommendations will include replanting palettes based on the ecosystems types found in the Park. These will include climate adaptable species as well as plants identified by Squamish, Musqueam and Tsleil-Waututh Nations as being culturally significant.

s.13(1)

Figure 3 - Invasive plant species map produced as part of the ongoing invasive species strategy for Vancouver

An important part of this implementation plan will be a monitoring program. This will include indicators that can be used to track the health of the forest and the effectiveness of the treatment options that are used. Targets will be provided for these indicators. These will include the use of technology which can quickly assess the overall forest health impacts in the forest including drones, remote sensing and LiDAR. Permanent sample plots can be established to annually assess the health and condition of specific trees throughout the park. A sampling method will be provided for this monitoring.

The implementation of this plan will depend on the resources available for this project. A costing will be provided based on unit rates to determine the general magnitude required for each treatment area. The general level of effort and timeline will be provided to complete each treatment area. This plan and all recommendations within it will be developed by and signed off by a senior professional forester (RPF) and professional biologist (RPBio).

Optional Task – Project Management & Contract Administration

Diamond Head is available and has the capacity to provide contract administrative services. This will include the management of contract documents and project management on behalf of Vancouver Park Board, monitoring on site and managing project meetings. We have the capacity to consult with First Nations to ensure cultural resources are protected. If necessary, we can apply for and secure permitting and approvals to ensure compliance with Provincial and Federal environmental legislation. It is difficult to provide an accurate costing for project management before understanding the scope of the work to be carried out. Our team of professionals will work with Vancouver to develop an implementation plan with costing and timelines. After this is complete, a proposal can be developed for project management.

PROPOSED PROJECT TIMELINE

	NOV	DEC	JAN	FEB	MAR					
PROGRAM REQUIREMENTS										
Technology Based Forest Assessment										
LiDAR based analysis	■	■								
Remote Sensing analysis		■	■							
Crown bulk density analysis		■	■							
Ground truthing										
Drone flights				■						
Assessment of wildfire polygons				■	■	■				
Tree risk polygons assessment				■	■	■				
Forest health assessment				■	■	■				
Forest health management plan										
Consultation with staff and fire dept				■	■	■				
Development of summary maps				■	■	■	■			
Draft wildfire risk mitigation plan						■	■			
Draft Hemlock Looper plan						■	■			
Draft tree risk management plan						■	■			
Visual impact assessment							■	■		
Consultation and review with Vancouver								■	■	
Development of final document									■	■

4 FEES, RATES, CHARGES, AND OTHER COMMERCIAL CONSIDERATIONS

Team Member	Forester	Biologist	Planner	ISA Arborist	Geomatics	Consulting Time	Fees
Hourly Rate	s.21(1)						
Technology Based Forest Assessment							
LiDAR based analysis	8				48	64	s.21(1)
Remote Sensing analysis	4				34	40	
Crown bulk density analysis	16				60	72	
Subtotal						176	
Ground truthing							
Drone flights	16				16	32	s.21(1)
Foresters assessment of high risk wildfire polygons	32				8	40	
Tree risk polygons assessment	32			32	8	72	
Forest health assessment	24	24			8	56	
Subtotal						200	
Forest health management plan							
Consultation with staff and fire dept	24		16			40	s.21(1)
Development of summary maps	12			12	40	64	
Draft interm wildfire risk mitigation plan	56		16		8	80	
Draft interim Hemlock Looper assessment and response plan	56	24	8		8	96	
Draft tree risk management plan	24			24	24	72	
Visual impact assessment	16				40	56	
Consultation and review with Vancouver	16	16	16	8	8	64	
Development of final document	16	8	8	8	16	56	
Subtotal						528	
TOTAL HOURS	352	72	64	84	326	898	
TOTAL COST PER EMPLOYEE	s.21(1)						
DISBURSEMENTS							
Pleiades Neo 6-band, 30 cm satellite imagery, August 2020							\$1,000
Vehicles							\$1,200
TOTAL FEES							\$99,270
FEES + GST							\$104,234



company was founded in 2001 and has grown to include a team of 75 staff members including professional foresters, biologists, arborists, planners, designers and GIS specialists. Our team works together with the collective goal of helping our clients and the broader community to manage our urban and peri-urban ecosystems.

DHC specializes in ecological inventories and assessments of environmental features, wildlife, species at risk, invasive species, and terrestrial, riparian and aquatic habitat. We use this information to make management recommendations for the protection, restoration, and enhancement of habitat; sustainable development; park, trail and recreation programming; and risk management. Managing the urban forest is also a focus of many of DHC's projects. Properly caring for trees in our urban landscape ensures we benefit from their services while managing their associated risk.

Diamond Head works on projects that range in scale including residential and commercial developments, urban infrastructure, neighbourhood concept plans and City-wide planning strategies. We have won two national awards from the Canadian Institute of Planning for our development of New Westminister's Urban Forest Strategy (2017) and Urban Forest Climate Adaptation for Metro Vancouver (2019).

We have extensive experience working with Vancouver to help manage their assets and natural areas. At a high level we completed the Urban Forest Canopy Cover Mapping and Canopy Forecasting for Vancouver. The analysis from this work will provide a foundation for this project. We completed the Urban Forest Strategy and Public Tree Management Guidebook for the City as well as the Invasive Species Management Strategy for the Vancouver Board of Parks and Recreation. Our certified tree risk assessors regularly complete tree risk assessments for urban natural interface areas and our senior professionals are working with Vancouver to update their tree risk policy. We have previously worked in Stanley Park assisting with tree risk management and monitoring for the 2007-2008 windstorm recovery program. We also managed tree impacts related to the installation of the causeway bike lane in 2016. We are working on similar projects for Metro Vancouver to assess the impacts of the Hemlock Looper outbreak on the wildfire risk in the watersheds. In 2003 we completed a project for Metro Vancouver to assess tree and wildfire risk associated with a previous Hemlock Looper outbreak in the Coquitlam watershed.

The project staff selected for this project are collectively experienced in every aspects of the technical work and analysis required for this project. Our core project team includes six professional staff members. They will be available for the duration of the proposed project timeline. We have a large pool of additional qualified staff to draw on, including planners, arborists, biologist and foresters, should additional capacity be required.

Our core Diamond Head team includes:

- Mike Coulthard (BFS, RPF, RPBio), Project Manager, Forest Ecology, Biology, Wildfire
- Trevor Cox (B.A., MCIP, RPP, ISA Cert. Arb), Arboriculture + Forest Ecology
- Conor Corbett (MSFM, RPF, ISA Cert. Arb), Wildfire, Fire Behavior, Fuel Prescriptions
- Mike Harrhy (MSFM, RFP, ISA Cert. Arb, BIT), Forest Ecology, Tree Risk
- Vlad Romanescu (MGEM), GIS analysis
- Nguyet-Anh Nguyen (M.Sc.), GIS analysis

More information about our team members' experience is provided in Section 3 of this proposal.

4.1 Work Experience

Our team has extensive experience working on forest and tree health, wildfire hazard assessments, forest management plans and restoration prescriptions with municipal and regional governments of various sizes and facing a diversity of challenges and opportunities. In the following pages, we outline project examples of similar scope. Additional details can be provided upon request.

Hemlock Looper Outbreak – Fuel Management Prescription for the Capilano Watershed (2021)

Client: Metro Vancouver

Key personnel: Conor Corbett, Mike Coulthard, Mike Harray

DHC is currently in discussion with Metro Vancouver to develop a Fuel Management Prescription (FMP) that will reduce the wildfire threat posed by than outbreak of hemlock looper in the Capilano Watershed. The study area is 81 hectares and is strategically located to take advantage of natural and man-made barrier to wildfire spread, which can be enhanced through fuel treatment. Treatment in this area is intended to protect the Capilano Watershed, and also the key pieces of infrastructure that support the functioning of this watershed. This FMP will set out objectives, targets and operational strategies to reduce the fuel loading and fire behavior potential in the strategically identified area. The FMP will also include a summary of all the values at risk, constraints, and operational considerations in the study area. It will be a comprehensive plan that can be operationally implemented, whereby the vegetation is physically modified and the risk subsequently reduced.

City of Vancouver – Urban Forest Canopy Cover Mapping and Canopy Forecasting (2019-2020)

Client: City of Vancouver

Key personnel: Amelia Needoba, Vlad Romanescu, Nguyet-Anh Nguyen, Trevor Cox

Diamond Head Consulting was hired by the City of Vancouver to develop a canopy vector dataset using 2018 LiDAR data to estimate public and private canopy cover and accurately update 2013 estimates. From the canopy mapping, a canopy model was produced to enable future modelling using a series of planting scenarios. DHC also identified dead and dying western redcedar in Stanley Park using Google Earth imagery as well as a series of successional change visualizations to visualize changes in streets due to loss of tree scenarios.

In 2020, DHC was requested to expand the initial scope of work. This work including using i-Tree canopy to verify canopy change between 2013-2018, using i-Tree Eco to estimate ecosystem services per tree using the inventory data, updating canopy cover data to include vegetation taller than 3m and reorganizing canopy reporting into a summary report and canopy detection methodology ‘manual’ based on the 2018 approach. A final Vancouver Tree Canopy Assessment Report was developed as well as a Methodology Manual.

City of Vancouver Urban Forest Strategy and Public Tree Management Guidebook (2017-current)

Client: City of Vancouver

Key personnel: Amelia Needoba, Camille Lefrancois, Trevor Cox

DHC worked with staff from the City of Vancouver to create an Urban Forest Strategy document summarizing their city-wide approach to urban forest management. This involved taking inventory work completed in 2013 using LiDAR derived canopy data, and building on the available inventory information to develop a scientifically robust and professionally produced public document. We also developed a Public Tree Management Guidebook to provide the specifications and procedures manual to guide the Park Board’s management activities for street and park trees.

Stanley Park Causeway Bike/Pedestrian Pathway Widening (2014-2016)

Client: City of Vancouver

Key personnel: Michael Coulthard, Max Rathburn, Trevor Cox

DHC provided arboriculture services to aid in the design of a wider Stanley Park Causeway bike/pedestrian pathway. DHC worked with the design team to analyze the impacts of cut, fill and construction associated with the proposed works. Recommendations were made for tree removal and retention. Mitigation construction techniques were detailed for trees that are close to the construction zone as well as protection of the infrastructure from future root growth.

Tree Management for the Stanley Park Post Windstorm Recovery Plan (2007-2008)

Client: City of Vancouver

Key personnel: Michael Coulthard, Trevor Cox

DHC completed an inventory and assessment of all trees within and adjacent to the blowdown areas in Stanley Park. This included tree risk assessments and development of windfirming treatments. DHC were on site monitors for all restoration works in the park reporting to the City and the Province and WCB. Our firm was also hired to conduct biological monitoring of areas containing species at risk within the blowdown areas.

Metro Vancouver Tree Risk Policy and Procedures (2019-ongoing)

Client: Metro Vancouver

Key personnel: Trevor Cox, Michael Coulthard

Diamond Head Consulting Ltd. (DHC) was retained to map targets for tree risk management across seven parks and to recommend potential improvements to Metro Vancouver Regional Parks (Metro VancouverRP) tree risk management approach. This work was later expanded to apply across all Metro Vancouver departments. Having conducted tree risk assessments in most of the Metro VancouverRP system over the past fifteen years, DHC has gained an understanding of both the limitations and strengths the tree risk policy and its operational layout. Our work to recommend improvements to the tree risk management approach in Metro Vancouver was informed by meetings with Metro Vancouver staff and a review of best management practices for tree risk management across Canada. Recommendations were made for the drafting of a Tree Risk Management Policy to apply across the Corporation.

British Properties Hemlock looper/Wildfire Interface Fuel Treatment Assessment (2022)

Client: Metro Vancouver

Key personnel: Conor Corbett, Michael Coulthard,

Project Summary: DHC completed an assessment of the wildland urban interface between the Capilano Watershed and the British Properties. The hemlock looper outbreak had caused fuel accumulations in this area and created dead and dying trees that could pose a risk to the residences in this area. The purpose of this assessment was to assess the impact of recent pest outbreaks and how these may be contributing to wildfire hazard. Recommendations were made for the mitigation of threats related to the impacts on the trees in this interface area.

Manning Park Mountain Pine Beetle Hazard Tree Mitigation - Highway 3 (2019)

Client: Ministry of Transportation and Infrastructure

Key personnel: Conor Corbett, Michael Coulthard, Mike Harrhy

DHC was contracted by the Ministry of Transportation and Infrastructure (MOTI) to provide a tree risk assessment for contractors (Emil Anderson Maintenance) performing maintenance on Highway 3 from the West gate of Manning Park to Sunday Summit, just east of Eastgate. Widespread mortality of trees from both Spruce and Pine Beetles had raised concerns that these trees may constitute a safety risk to the public and workers along the highway. A majority of the area assessed was within Manning Park, requiring collaboration and consultation between DHC, BC Parks, MOTI, and Emil Anderson. Most of the area was assessed to identify single high risk trees, however certain concentrated areas of dead trees were addressed in a treatment block prescription. These prescriptions were written using the BC Parks Ecosystem Management Program Prescription Template. This project is currently in draft form awaiting MOTI and BC Parks approval.

Wildfire Risk Reduction – Sunshine Coast Natural Resource District (2020-2021)

Client: Sunshine Coast Regional District

Key personnel: Conor Corbett, Michael Coulthard

Diamond Head completed fuel treatment prescriptions for the provincial government's Wildfire Risk Reduction program around high-priority values on crown land in Texada Island and the Egmont peninsula. A total area of 27 hectares was included in 2 separate treatment areas. These FMPs meet the standards for forestry prescriptions on crown land and aim to exceed or achieve BC Wildfire Service targets for post-treatment fuel density and modelled critical surface fire intensity. To meet these standards, a detailed assessment of the treatment areas was completed including fuel loading, site and soil characteristics, environmentally sensitive features, social and First Nations values. DHC developed strategies to achieve the overall objective of sufficiently reducing the fire behavior potential in the stand and the subsequent risk posed to adjacent values. Fire behavior modeling was carried out to determine target post-treatment conditions. Specific fuel modification treatments were prescribed including tree removal, pruning and ground fuel modification.

Additional Work Experience

Additional work experience from our core team includes:

Arboriculture/Tree risk and forest health:

- Tree risk assessments for the Coquitlam Watershed after hemlock looper outbreak, Metro Vancouver, 2003-2004
- Project arborist and ecologist for Seymour-Capilano Filtration Project, Metro Vancouver 2002-2010.
- Tree Risk Assessments for Metro Vancouver's Parks for the past 15 years.
- Forest Health Assessment for Fromme Mountain, District of North Vancouver. 2011
- Consulting Arborists and Foresters for BC Hydro Vegetation Maintenance 2003-2020
- Forest Management Plan for Mundy Park, City of Coquitlam 2015
- Forest Management Plan for Central Park 2016
- Post Windstorm Tree Recovery Strategy for the City of Coquitlam 2007
- Forest Health Management Plan for Sunnyside Acres Park, Surrey 2009
- Forest Health Management Plan for Green Timbers Park, Surrey 2014
- Project arborist and forester for UBC Properties Trust, South Campus, 2003-present.
- Project arborist for the Evergreen Line, MOTI 2013
- Tree Risk Assessments in most Metro Vancouver's Parks for the past 15 years.
- Working with Metro Vancouver to review and develop new policy and procedures for Tree Risk Assessments.
- Project Arborist for BC Housing for the s̓əmiq̓'əʔelə / Riverview Lands. 2020-Present

- Review of stand stability and windthrow risk in riparian areas, City of Coquitlam. 2009
- Project arborist for Stanley Park Bike Pathway design and construction 2014-2016

Forest ecology:

- Ecosystem mapping for Boundary Bay Regional Park, Metro Vancouver 2008
- Ecosystem mapping for Burns Bog. Metro Vancouver 2021
- Ecosystem mapping for Grouse Mountain Regional Park, Metro Vancouver 2018
- Ecosystem mapping for the City of Surrey's Natural Area Parks 2013-2015
- Ecological Inventory for City of New Westminster 2019
- Ecological Inventory for City of Langley 2016
- Ecological Inventory and Environmental Sensitive Areas Strategy – City of Port Moody – 2019-2020
- Ecological Inventory and Environmental Sensitive Areas Strategy – City of Terrace – 2021-2022
- Fromme Mountain Trails Environmental Impact Assessment, District of North Vancouver 2014-2015
- Fromme Mountain Parking and Staging Areas Environmental Assessment, District of North Vancouver 2013-2014

Wildfire:

- Community wildfire protection plan and fire prescriptions for the Sunshine Coast Regional District. 2021
- Wildfire Mitigation Action Plan and Fuel Treatment Prescriptions for the City of Prince George (2019-2020)
- Wildfire management plan for Simon Fraser University (2018-2019)
- EC Manning Park Fuel Treatment Prescription (2018)
- Community Wildfire Protection Plan for District of North Cowichan (in progress)
- Community Wildfire Protection Plan for Semiahmoo First Nations (in progress)
- Community Wildfire Protection Plan for the City of Langford (In progress)
- BC Hydro Operations Wildfire Risk Management Planning and Best Management Practices
- Wildfire Management Plan for Rodgers Creek Development Area, British Properties – 2010-present
- Over 350 wildfire development permit application reports in the District of North Vancouver, West Vancouver, Maple Ridge and Coquitlam.

Urban forest planning:

- Urban Forest Climate Adaptation Plan – Metro Vancouver (won the 2019 CIP Planning Award of Excellence)
- Urban Forest Strategy – City of New Westminster (won the 2018 CIP Planning Award of Excellence)
- Wildlife Habitat Connectivity Analysis for all of Metro Vancouver 2019-2021
- We have completed Urban Forest Strategies which include forest inventory and analysis for the following Cities: City of Vancouver, City of Richmond, Township of Langley, City of Victoria, City of Abbotsford, City of Courtney-Comox, Duncan, Campbell River, Sparwood, Edmonton, Winnipeg, Bellingham, Winnipeg
- Biodiversity Strategy – City of Surrey
- Environmentally Sensitive Areas Strategy, City of Port Moody



5 PROJECT STAFF QUALIFICATIONS & EXPERIENCE

This section outlines the professional staff that will be assigned to work on the required tasks associated with this project. Collectively our project team provides:

- Decades of experience conducting tree and wildfire risk assessments and mitigation strategies for natural areas.
- Formal training and education in planning, fire science, biology, resource management and emergency preparedness.
- Practical experience in tree risk analysis, fuel management, wildfire prevention and response, and wildfire behaviour.
- Technology for efficient field data collection and fuel and fire behavior modelling.

Key team members will be available for the duration of the project and will not be changed without written permission.

Mike Coulthard, Principal, BFS, RPBio, RPF

s.22(3)(d)



Trevor Cox, Principal, B.A., MCIP, RPP, ISA Certified Arborist

s.22(3)(d)



Conor Corbett, Forester, MSFM, RPF, ISA Certified Arborist

s.22(3)(d)



Mike Harchy, Arborist & Forester, B.Sc., MSFM, RPF, ISA Certified Arborist, BIT

s.22(3)(d)



Vlad Romanescu, Senior GIS Analyst, B.E.S., MGEM

s.22(3)(d)



Nguyet-Anh Nguyen, GIS Analyst, B.Sc., M.Sc.

s.22(3)(d)



APPENDIX 1 - RESUMES

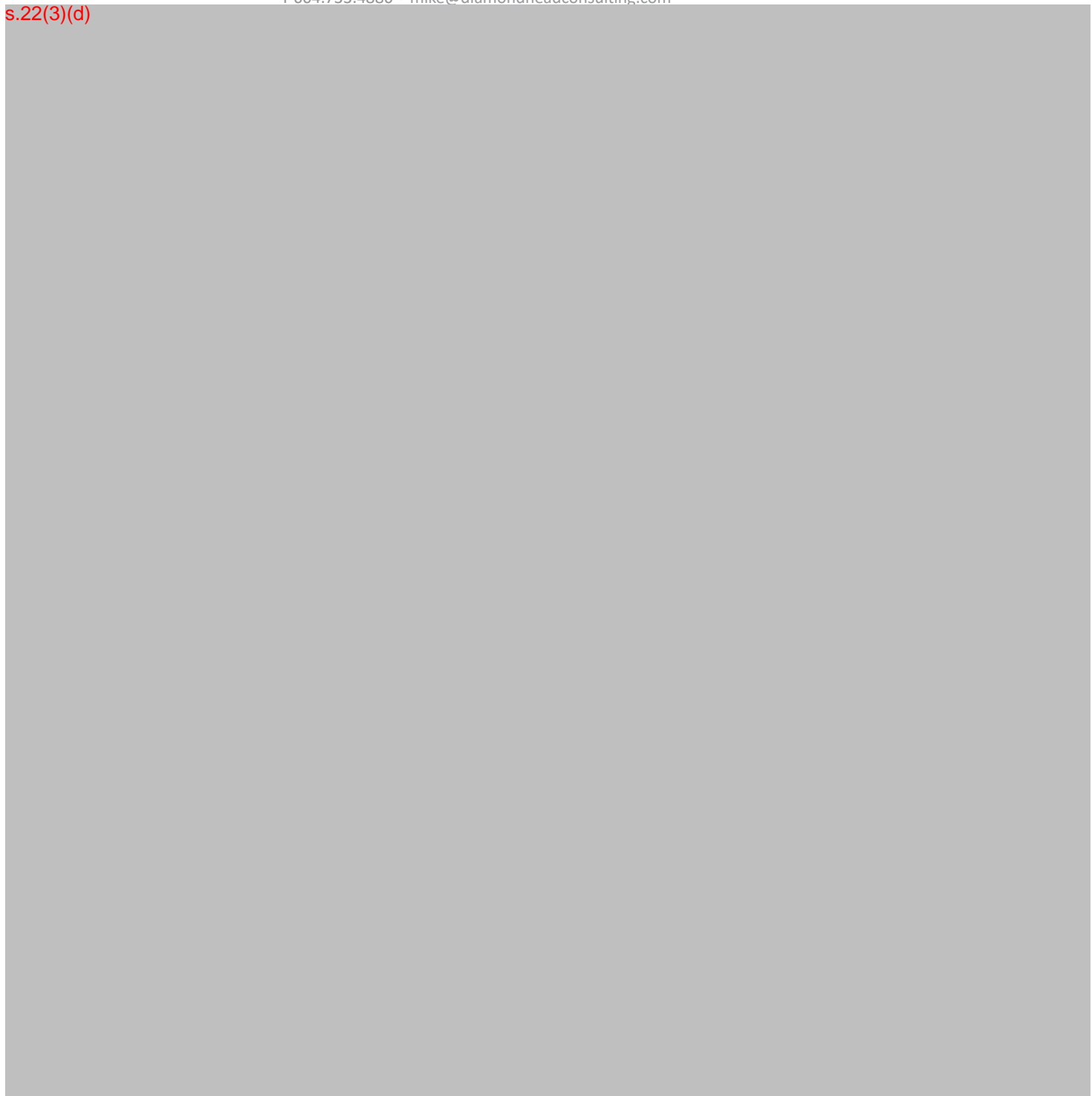


MICHAEL COULTHARD

PRINCIPAL
SENIOR FORESTER, BIOLOGIST

T 604.733.4886 • mike@diamondheadconsulting.com

s.22(3)(d)



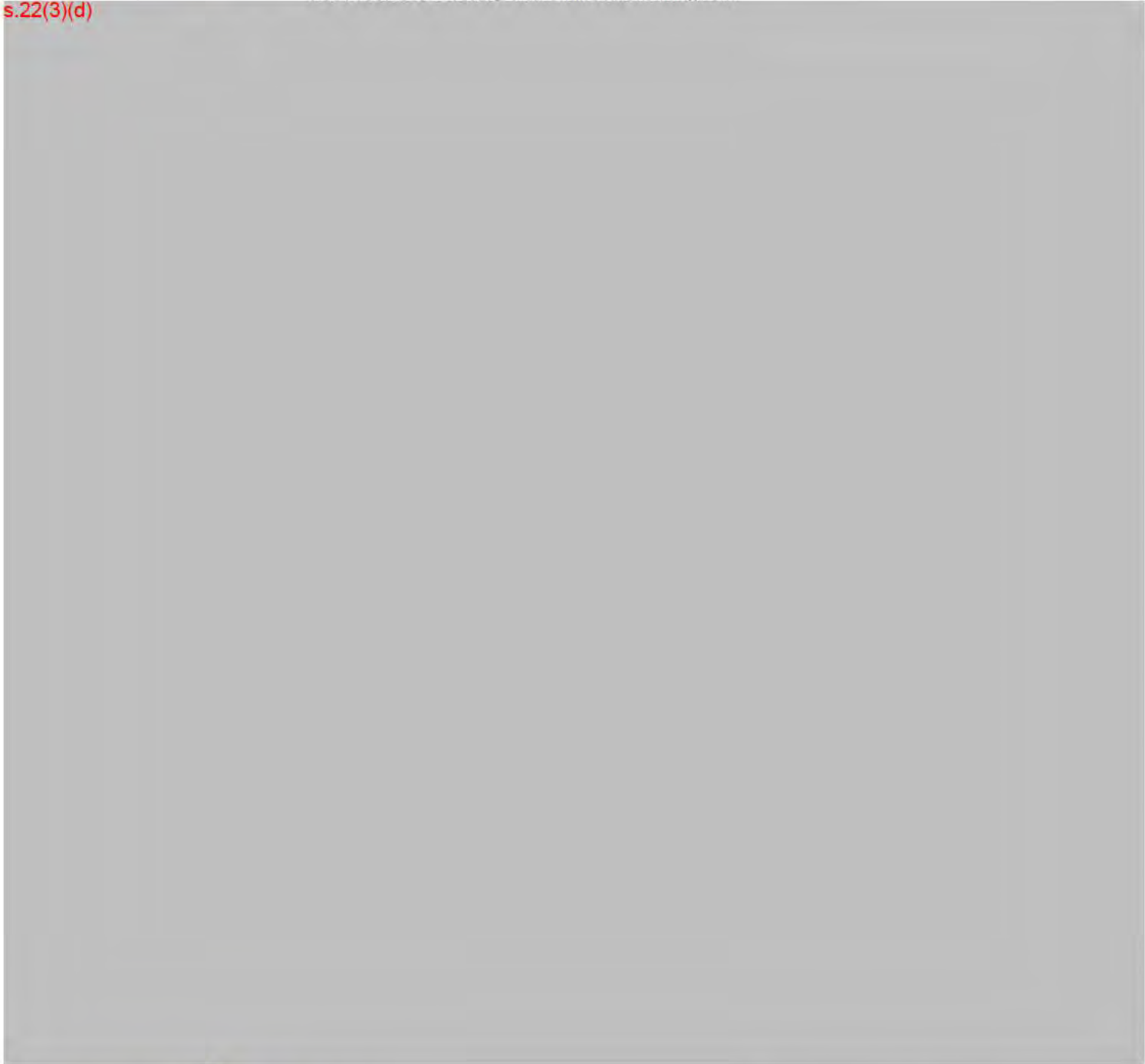


TREVOR COX

PRINCIPAL
SENIOR PLANNER/ARBORIST

T 604.733.4886 • trevor@diamondheadconsulting.com

s.22(3)(d)



3559 Commercial Street, Vancouver, BC V5N 4E8



CONOR CORBETT

WILDFIRE & FORESTRY DIVISION COORDINATOR
FORESTER AND ARBORIST

T 604.733.4886 • conor@diamondheadconsulting.com

s.22(3)(d)



3559 Commercial Street, Vancouver, BC V5N 4E8



MICHAEL HARRY

ARBORIST AND FORESTER

T 604.733.4886 • mikeharry@diamondheadconsulting.com

s.22(3)(d)



3559 Commercial Street, Vancouver, BC V5N 4E8



VLAD ROMANESCU

GIS & IT COORDINATOR
SENIOR GIS ANALYST

T 604.733.4886 • vlad@diamondheadconsulting.com

s.22(3)(d)

s.22(3)(d)



3559 Commercial Street, Vancouver, BC V5N 4E8



NGUYET-ANH NGUYEN

GIS ANALYST

T 604.733.4886 • nguyet-anh@diamondheadconsulting.com

s.22(3)(d)



3559 Commercial Street, Vancouver, BC V5N 4E8



Contact: Mike Coulthard
mike@diamondheadconsulting.com

3559 Commercial Street
Vancouver, BC
Canada V5B 4E8
T: 604.733.4886

www.diamondheadconsulting.com

DECLARATION OF SUPPLIER CODE OF CONDUCT COMPLIANCE

Complete this Declaration of Supplier Code of Conduct Compliance in the form set out below.

All proposed suppliers are to complete and submit this form to certify compliance with the supplier performance standards set out in the Supplier Code of Conduct.

The City of Vancouver expects each supplier of goods and services to the City to comply with the supplier performance standards set out in the City's Supplier Code of Conduct (SCC) <<https://policy.vancouver.ca/AF01401P1.pdf>>. The SCC defines minimum labour and environmental standards for City suppliers and their subcontractors.

Suppliers are expected to comply with the aforementioned standards upon submitting a tender, proposal, application, expression of interest or quotation to the City, or have a plan in place to comply within a specific period of time. The City reserves the right to determine an appropriate timeframe in which suppliers must come into compliance with these standards. To give effect to these requirements, an authorized signatory of each proposed vendor must complete the following declaration and include this declaration with its submission:

As an authorized signatory of ___Diamond Head Consulting___ (*vendor name*), I declare that I have reviewed the SCC and to the best of my knowledge, ___Diamond Head Consulting___ (*vendor name*) and its proposed subcontractors have not been and are not currently in violation of the SCC or convicted of an offence under national and other applicable laws referred to in the SCC, other than as noted in the table below (*include all violations/convictions that have occurred in the past three years as well as plans for corrective action*).

Section of SCC / title of law	Date of violation /conviction	Description of violation / conviction	Regulatory / adjudication body and document file number	Corrective action plan

I understand that a false declaration and/or lack of a corrective action plan may result in no further consideration being given to the submission of ___Diamond Head Consulting___ (*vendor name*).

Signature:  _____

Name and Title: Trevor Cox, Principal

Indigenous Participation

Diamond head funds a scholarship at UBC for two first nations students

- 1 – Diamond Head does not have any strategic partnerships or joint ventures with First Nations and/or Indigenous peoples
- 2 – Diamond Head is currently working for the Musqueam band helping with the master planning of Block K on IR2. They are also helping with the planning and construction of Block F at UBC. Diamond Head is completing an Environmental Management Plan for the Tsleil-Waututh Nation.
- 3 – Diamond Head will ensure that first nations contractors are considered as priority proponents during the bidding of contracts developed as part of this project. If archeological studies are required, the Squamish, Musqueam and Tsleil-Waututh Bands will be hired directly.

Supplier Diversity

Diamond Head is owned by 5 partners: 40% women

Social/Diverse Certifications: None

Enviro/Other Certifications: Forest Safety Council Certified

Do you have a Supplier Diversity program to include/consider equity-seeking businesses as your vendors/suppliers/sub-contractors?

No

7.2 Employment Equity and Workforce Diversity

1. 1. In addition to being an equal opportunity employer, please describe any policies/programs or how you advance employee equity, diversity and inclusion for under-represented populations (such as Women, Indigenous People, People with Disabilities

We have a Code of Conduct in place which communicates our core values to staff. It focuses on fostering a positive workplace that is diverse and inclusive where differences are respected and celebrated. Our Employee Policy Handbook includes a Respectful Workplace Policy to ensure all staff are treated with dignity and respect, free from bullying, harassment, and discriminations. Its intent is to provide an environment that respects and promotes human rights and personal dignity.

In advance of formal hiring processes, we have discussions around personal and unconscious bias in order to be more aware of bias and tailor our hiring process to minimize the impact of bias as much as possible. We are cognizant that our workforce could be more diverse with regard to under-represented populations, and we consider this in the hiring choices we make.

2. Do you regularly conduct an employee equity 'survey' or similar information/data collection on workplace diversity. Y/N

Yes

a. Please describe how you track/monitor your workforce diversity including frequency

We track the diversity of our workforce annually through any information our hiring team is able to provide. We also update these statistics whenever we experience a large shift in the component of our staff who work seasonally.

3. Do you source/hire from Workforce Development and/or Skill Training programs, including pre-employment support, apprenticeships or ongoing employment support, for people who are under-represented and/or face barriers to traditional employment (such as Indigenous persons, Women, youth, Minorities, People with Disabilities including mental health)? Y/N

No

4. Do you support training for career advancement and/or skills development? If yes, please describe.

Yes. All staff are provided with an annual allowance for professional development to attend training, courses, conferences or workshops. In addition, Diamond Head pays for staff's professional dues and any courses or exams necessary to maintain their relevant professional certifications.

Diamond Head offers a group professional development opportunity to all staff annually. We host monthly lunch and learns for staff. Each session focuses on either an important skill or gives staff the opportunity to do a presentation on a recent work project, their thesis or other subject of interest.

5. Do you compensate at or above a Living Wage (currently \$20.91/hr). Do you provide non-mandatory benefits (i.e. extended health) to your employees?

All our professional staff are compensated above the living wage for Metro Vancouver. Our operational crew leads and crews specializing in knotweed treatment are compensated at or above the living wage; however our unspecialized operational crews are compensated just below the living wage at \$19 per hour.

Yes, we provide the following non-mandatory benefits:

- Annual health spending account (HSA)
- Professional development and personal field gear allowance
- Paid sick days – 3 additional beyond the BC ESA minimum for COVID related absences.
- Vacation pay above BC ESA minimums
- Professional dues

7.3 Workforce Diversity

Overall Workforce Diversity:

% Women 45%

% Indigenous Peoples 1%

% Ethno-cultural People 32%

% People with Disabilities 4%

% LGBTQ2+ 11%

Leadership/Management/Executive Workforce Diversity:

% Women 40%

% Indigenous Peoples 0%

% Ethno-cultural People 0%

% People with Disabilities 0%

% LGBTQ2+ 40%



CERTIFICATE OF EXISTING INSURANCE

Section 2 through 8 – to be completed and executed by the Insurer or its Authorized Representative

- THIS CERTIFICATE IS ISSUED TO: City of Vancouver, 453 W 12th Avenue, Vancouver, BC, V5Y 1V4
and certifies that the insurance policy (policies) as listed herein has/have been issued to the Named Insured and is/are in full force and effect.
- NAMED INSURED (must be the same name as the Proponent/bidder and is either an individual or a legally incorporated company)
Diamond Head Consulting Ltd.
BUSINESS TRADE NAME or DOING BUSINESS AS
Diamond Head Consulting Ltd.
BUSINESS ADDRESS
3559 Commercial Street, Vancouver, BC V5N 4E8
DESCRIPTION OF OPERATION
Duties usual and customary to the practice of the insured

3. PROPERTY INSURANCE (All Risks Coverage including Earthquake and Flood)

INSURER <u>Northbridge General Insurance Corporation</u>	Insured Values (Replacement Cost)	-
TYPE OF COVERAGE <u>Commercial Property</u>	Building and Tenants' Improvements	\$ <u>1,044,195</u>
POLICY NUMBER <u>s.15(1)(l)</u>	Contents and Equipment	\$ <u>66,657</u>
POLICY PERIOD From <u>06/01/2022</u> to <u>06/01/2023</u>	Deductible Per Loss	\$ <u>5,000</u>

4. COMMERCIAL GENERAL LIABILITY INSURANCE (Occurrence Form)

Including the following extensions:	INSURER	<u>Northbridge</u>	<u>General</u>
<input checked="" type="checkbox"/> Personal Injury	POLICY NUMBER	<u>s.15(1)(l)</u>	
<input checked="" type="checkbox"/> Property Damage including Loss of Use to	POLICY PERIOD	From <u>06/01/2022</u>	
<input checked="" type="checkbox"/> Products and Completed Operations	Limits of Liability (Bodily Injury and Property Damage Inclusive)		
<input checked="" type="checkbox"/> Cross Liability or Severability of Interest	Per Occurrence	\$ <u>10,000,000</u>	
<input checked="" type="checkbox"/> Employees as Additional Insureds	Aggregate	\$ <u>10,000,000</u>	
<input checked="" type="checkbox"/> Blanket Contractual Liability	All Risk Tenants' Legal Liability	\$ <u>500,000</u>	
<input checked="" type="checkbox"/> Non-Owned Auto Liability	Deductible Per Occurrence	\$ <u>1,000</u>	

5. AUTOMOBILE LIABILITY INSURANCE for operation of owned and/or leased vehicles

INSURER _____	Limits of Liability -
POLICY NUMBER _____	Combined Single Limit \$ _____
POLICY PERIOD From _____ to _____	<i>If vehicles are insured by ICBC, complete and provide Form APV-47.</i>

6. UMBRELLA OR EXCESS LIABILITY INSURANCE (Damage Inclusive)

INSURER _____	Per Occurrence	\$ _____
POLICY NUMBER _____	Aggregate	\$ _____
POLICY PERIOD From _____ to _____	Self-Insured Retention	\$ _____

7. PROFESSIONAL LIABILITY INSURANCE

INSURER _____	Limits of Liability
POLICY NUMBER _____	Per Occurrence/Claim \$ _____
POLICY PERIOD From _____ to _____	Aggregate \$ _____
	Deductible Per Occurrence/Claim \$ _____

If the policy is in a "CLAIMS MADE" form, please specify the applicable Retroactive Date: _____

8. OTHER INSURANCE

TYPE OF INSURANCE <u>Errors & Omissions</u>	Limits of Liability
INSURER <u>Beazley Canada Ltd.</u>	Per Occurrence \$ <u>2,000,000</u>
POLICY NUMBER <u>s.15(1)(l)</u>	Aggregate \$ <u>2,000,000</u>
POLICY PERIOD From <u>06/01/2022</u> to <u>06/01/2023</u>	Deductible Per Loss \$ <u>25,000</u>
TYPE OF INSURANCE _____	Limits of Liability
INSURER _____	Per Occurrence \$ _____
POLICY NUMBER _____	Aggregate \$ _____
POLICY PERIOD From _____ to _____	Deductible Per Loss \$ _____

SIGNED BY THE INSURER OR ITS AUTHORIZED REPRESENTATIVE

Dated September 12, 2022

PRINT NAME OF INSURER OR ITS AUTHORIZED REPRESENTATIVE, ADDRESS AND PHONE NUMBER

Jordan Fellner, 400-4350 Still Creek Drive, Burnaby, BC V5C 0G5 604-269-1000