

Community Resilience and Adaptation Funding Tool (CRAFT)

Fraser Valley Regional District

Submission Details for DRIF-FP-1034 Back **General Info** Step 1 **Project Contact Information** First Name Last Name Position/Title Department Katelyn Hipwell Manager of Planning EA Planning Phone Email 604-702-5066 khipwell@fvrd.ca **Additional Contacts** First Name Last Name **Position/Title** Graham Daneluz **Director of Planning & Development** Department Phone Email 604-702-5046 EA Planning & Development gdaneluz@fvrd.ca **Partnering Proponents** Is this a regional project? No If yes, please provide context below (Optional) What is the title of the Project? Landslide Hazard Assessment at Boston Bar & Risk Management Framework for Catastrophic Landslides

https://portal.dmap-craft.gov.bc.ca/fp-submission-details/DRIF-FP-1034

What is the main deliverable of this project? Please see section 3.1 of the Program Guide for guidance on this question.

The main deliverable of this project will be a hazard assessment of a newly identified large landslide above the community of Boston Bar. The project will also provide a list of recommendations for risk reduction activities at the landslide site, which may include policy changes, future engineered risk reduction measures, and/or risk monitoring options.

Land Details

Step 2

Will the project will be in BC on land that the proponent has legal access to either through ownership, right of way, or other at the time the Shared Cost Agreement is signed?

Yes

If No, please provide context below

(Optional)

Is the proponent a First Nation/local government/regional district in British Columbia who has the authority and ownership to develop, implement, maintain and operate the proposed project?

Yes

Will the proponent own and be able to operate and maintain the resulting infrastructure (if applicable) over the long term?

Not Applicable

Please provide context below

The proposed project does not involve infrastructure.

In the case of a First Nations proponent, a resolution from its band council or council/board, or the appropriate authorization/endorsement as determined by the eligible proponent's governance structure?

Not Applicable

In the case of a local government proponent, a resolution from its council/board?

Yes

Please provide context below

Resolution from the FVRD Board: THAT the Fraser Valley Regional District Board direct staff to submit a full proposal for a funding application for Landslide Hazard Assessment at Boston Bar & Development of Risk Management Framework for Rapid Landslides through the Disaster Innovation and Resilience Funding Program; AND THAT the Fraser Valley Regional District Board direct staff to engage with Boston Bar First Nation and Boothroyd First Nation as part of the proposal submission; AND FINALLY THAT the FVRD will provide for the overall management of the grant should the proposal submission be approved.

Project Area

Step 3

Location Description

The FVRD is the third most populated and one of the fastest growing regional districts in BC. The FVRD has an estimated population of 337,000 (2021 Census) and a total land mass of 13,361 km². The FVRD's jurisdiction includes eight Electoral Areas which exist within an intricate and overlapping network of Indigenous territorial boundaries, interest areas, reserve lands, and administrative precincts. The proposed project area is located in the Fraser Canyon (FVRD Electoral Areas A & B), with a particular focus on the mountain slope above the unincorporated community of Boston Bar. The study area includes reserve lands belonging to Boston Bar First Nation and is adjacent to Boothroyd Indian Band's Sam Adams 12 reserve. We recognize that many other communities have interests in this area, as indicated by the Province's Consultation Areas Map. Electoral Area A is the northeastern-most area in the Fraser Valley Regional District. It is bounded by the Thompson Nicola Regional District to the north and east, and Electoral Area B to the south. This area is part of the Fraser Canyon and has a climate reflective of that geography, with hot summers and cold winters. Highway 1 transects this Electoral Area and the community of Boston Bar, connecting the Lower Mainland to the interior and northern regions of the province. The geotechnical assessment will involve a detailed assessment of the Boston Bar landslide complex and will also include a preliminary inventory of known landslides within the project area that can be utilized for further assessment.

Estimated Size of Project Area

Area Size Unit of Measure

12 SqKm

Related Hazard(s)

Geohazards (for example, avalanche, landslide), Other

Other

Landslide Complex (rockfall, rockslide, and rock avalanche hazards)

How is the community/project area susceptible to the identified related hazards? This can include natural hazards, impacts, and/or specific events.

Recorded landslides have occurred predominantly on the mountainous slopes adjacent to the Fraser River. The landslides include debris flows, surficial soil slides, and rock falls. Numerous historic landslides in the electoral area intersect or are located upslope of property and development permit areas. These areas may pose a hazard to downslope assets. The communities of Boston Bar, Canyon Alpine, and North Bend are developed at the base of steep slopes that are susceptible to shallow slope failures and, less likely, rock falls. Boston Bar has historically experienced rockfall and debris slide hazards, as identified by Thurber (January 12, 1989, attached).

How might the people in your community be impacted by the hazard(s) directly or indirectly. Include vulnerable populations where applicable.

Should any part of this landslide fail rapidly, it could result in life safety threats to persons in homes at the base of the slopes. Additionally, rapid or slow landslide movement could damage homes, other commercial and institutional buildings, local infrastructure (Boston Bar Water System), and major national infrastructure (Trans Canada Highway, CN/CPKC Railways). Indirect damages could also be incurred: • Loss of access due to road blockages • Lost access to critical facilities such as the police station and ambulance station • Economic loss due to loss of transportation corridors (Highway 1, local roads, and railways) for goods and services. There are approximately 140 buildings in the potentially affected area, with an estimated population of 180 persons (Open Building Population Layer Canada, 2021 Canadian census data). The potentially affected area includes reserves of the Boston Bar Indian Band, although there are no mapped buildings within these reserves.

Estimated Number of People Impacted

0 - 500

Critical Infrastructure Impacted

Is there critical infrastructure that will or may be impacted by the hazards you have listed?

Yes

Infrastructure

Impact

Hwy 1 & North Bend Bridge Damage/Lost access due to road blockages

Infrastructure Impact

CN/CPKC Rail Damage/Economic loss

Infrastructure					
FVRD Boston Bar Water System Water Mains					
Impact					
Damage/Lost acce	ss to safe water suppl	у			
Infrastructure		Impact			
Boston Bar Elemer	ntary-Secondary Schoo	Damage/Lost access to critical facility			
Infrastructure	Impact				
Canada Post Office	e Damage/Lost acc	ess to critical facility			
Infrastructure	Impact				
RCMP Station	Damage/Lost access	to critical facility			
Infrastructure	Impact				
BCEHS Station	Damage/Lost access	to critical facility			
Infrastructure	Imp	oact			
Boston Bar North I	Bend Fire Hall Dan	mage/Lost access to critical facility			

Project Plan

Step 4

Anticipated Project Dates	
Anticipated Project Start Date	Anticipated Project End Date
2025-05-01	2026-06-30

Project Description

This project aligns with the DRIF's program goal by improving the FVRD's understanding of risk presented to existing community settlement areas by known and unknown geohazards. The project, involving a detailed assessment of landslide hazards will assist FVRD in understanding vulnerabilities to people and infrastructure and implications of the hazard on risk management policy. This project aims to understand a newly identified large landslide hazard in proximity to the community of Boston Bar and Boston Bar First Nation reserves. The project will also support longterm disaster risk reduction by examining existing risk management policies for large catastrophic landslide hazards in the Fraser Valley Regional District. The proposed project aligns with DRIF's goals by providing new landslide assessment data to the communities and fostering the ongoing risk reduction partnerships between FVRD and First Nations. This proposed project will seek to understand: - What is the current

activity state of the landslide (is it actively moving, as would be highlighted through field work and topographic change analysis)? - What is the likelihood that the landslide could accelerate? - If the landslide does accelerate, what are the credible scenarios of that movement (continued creeping, or sudden rapid failure)? - With these credible scenarios in mind, what are the developed areas in Boston Bar exposed to these hazards?

Proposed Activities	Anticipated Duciest Staut	Anticipated Duciest Fud		
Activity	Date	Date		
Project	2025-04-01	2025-05-30		
Related tasks (i.e. "sub activities")	Deliverables/Products			
Issue Project for REP	Project awarded to			
Activity	Anticipated Project Start	Anticipated Project End		
Project	Date	Date		
hoject	2025-06-02	2025-06-27		
Related tasks (i.e. "sub	Deliverables/Products			
activities")	Refine project			
Project Kick-off	parameters			
Activity	Anticipated Project Start	Anticipated Project End		
Assessment	Date	Date		
	2025-06-02	2025-12-31		
Related tasks (i.e. "sub	Deliverables/Products			
activities")	Remote sensing data			
Techical Assessment	collection (e.g., InSAR,			
	lidar change analysis);			
	Field assessment of landslide bazard:			
	Develop regional			
	inventory of landslide			
	hazards (extents,			
	volume, runout distance)			
Activity	Anticipated Project Start	Anticipated Project End		
Assessment	Date	Date		
	2025-06-02	2025-12-31		
Related tasks (i.e. "sub	Deliverables/Products			
activities")	Hazard assessment			
Technical Assessment	including rockfall,			

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Activity Assess	ment	rockslide, rock avalanche hazards; Estimation of runout extents of credible landslide scenarios; Identify community assets exposed to potential landslide scenario Anticipated Project Start Date	Anticipated Project End Date	
		2025-06-02	2025-12-31	
Related	tasks (i.e. "sub	Deliverables/Products		
activitie Develo manag the site	s") p potential risk ement options for e	Order of magnitude cost estimate; application and limitations of each option; identification of potential funding mechanism		
Activity		Anticipated Project Start	Anticipated Project End	
Project	:	Date	Date	
		2026-02-02	2026-02-27	
Related activities	tasks (i.e. "sub s")	Deliverables/Products Draft technical report		
Report Activity	Ing	SUBMITTED TO FVRD	Anticipated Project Fnd	
Comm	unications	Date	Date	
Comm		2026-03-02	2026-03-31	
Related activities	tasks (i.e. "sub s")	Deliverables/Products Presentation of draft		
Presen	tation	report to FVRD and steering committee		
Activity		Anticipated Project Start	Anticipated Project End	
Project		2026-05-04	2026-05-29	
Related	tasks (i.e. "sub	Deliverables/Products		
activities	s")	Final technical report		
Report	ing	submitted to FVRD		

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Activity Proponent	Anticipated Project Start Date	Anticipated Project End Date		
community(ies) engagement and public education	2026-06-01	2026-06-30		
Related tasks (i.e. "sub activities") Engagement	Deliverables/Products Community engagement presentation			
Presentation Activity Project	Anticipated Project Start Date	Anticipated Project End Date		
Related tasks (i.e. "sub	Deliverables/Products	2020-05-29		
activities")	Review existing			
Risk Management Framework	catastrophic landslide hazard policy, and facilitate policy review workshop with FVRD staff			
Activity	Anticipated Project Start	Anticipated Project End		
Project	Date	Date		
	2026-05-04	2026-06-30		
Related tasks (i.e. "sub	Deliverables/Products			
Recommendations	Potential policy recommendations; checklist of emergency management actions for appropriate response if a major catastrophic landslide shows accelerated movement and/or imminent hazard			
Activity	Anticipated Project Start	Anticipated Project End		
Project	Date	Date		
	2026-05-04	2026-06-30		
Related tasks (i.e. "sub	Deliverables/Products			
activities")	Recommendations and quidance to FVRD			

respecting development and building approvals.

What type of foundational or previous work led to the proposed solution?

Initial Identification of Large Landslide from lidar data, Electoral Area A Geohazard Report, Previous geohazard inventory of Boston Bar, FVRD Hazard Acceptability Thresholds, Electoral Area A and B hazard mapping inventory

How was the need for the project identified?

In fall 2023, new lidar data was acquired by the federal government for the study area. Geotechnical engineering consultants identified the presence of a large landslide complex above the community of Boston Bar. To the best of our knowledge, this landslide complex was previously unknown or undocumented. See memorandum from BGC Engineering Inc. to FVRD, dated September 10, 2024.

What is included in this project to address the identified risk(s) and/or hazard(s)?

This project will provide foundational understanding of a large landslide hazard in and above the community of Boston Bar. The technical portion of the project will seek to understand the possibility of the landslide to enter developed areas of Boston Bar. Additionally, the project will provide options for risk reduction measures for this landslide hazard, which may include policy change recommendations. The proposed solution is a detailed assessment of the landslide hazards to inform disaster risk reduction measures. Fraser Valley Regional District (FVRD) will be undertaking an official community plan (OCP) update within electoral areas A and B. As part of this process, FVRD has engaged geotechnical consultants to undertake a geohazard inventory in the project area. In the early stages of this project, a previously undocumented 3 km wide landslide was identified above the community of Boston Bar. This landslide has the potential to transform into rapid landslides that could affect developed areas. Historical rapid landslides such as this have resulted in loss of life and ecological consequences (e.g., 1914 Hell's Gate landslide, Texas Creek rockslide, Hope Slide). Using the Boston Bar landslide as a case study, FVRD also desires to review existing hazard acceptability thresholds (attached) for major catastrophic landslides. The intent of this project is to: • Assess the landslide hazard and its potential consequences to the community of Boston Bar. • Identify risk management actions to reduce potential risks to community values. • Using the Boston Bar landslide as an example, review FVRD's current hazard acceptability thresholds (attached) for major catastrophic landslides to understand if changes are required to the risk management policy. • Develop a checklist of emergency management actions for monitoring of rapid catastrophic landslides.

How does this project improve the understanding of disaster risk and invest in disaster risk reduction to improve resilience?

The intent of this project is to: • Assess the landslide hazard and its potential consequences to the community of Boston Bar. • Identify risk management actions to

reduce potential risks to community values. • Using the Boston Bar landslide as an example, review FVRD's current hazard acceptability thresholds for major catastrophic landslides to understand if changes are required to the risk management policy. • Develop a checklist of emergency management actions for monitoring of rapid catastrophic landslides. The following activities of the project contribute to understanding disaster risk and disaster risk reduction: • Field assessment of the landslide hazards, including helicopter overflights. • Refinement of the regional inventory of large rapid landslide hazards, including estimations of extents, volumes, and runout distances. • Acquisition and processing of satellite data to understand recent landslide movement. • Hazard assessment of the Boston Bar landslide identified in BGC's memorandum (September 10, 2024) including rockfall, rockslide, and rock avalanche hazards. • Estimation of the runout extents of credible landslide scenarios. • In collaboration with FVRD and First Nations, identify community assets exposed to credible landslide scenarios. • Provide a list of potential risk management options for the landslide, including an order-of-magnitude cost estimate, applications and limitations of each option, and identification of potential grant funding mechanisms. Presentation of the hazard assessment and potential risk management options to FVRD, Boston Bar residents, and Chief and Councils. • Provide summary of pros and cons of existing policy and recommendations for policy amendment and facilitate a workshop with FVRD staff to discuss this case study. • Develop a checklist of emergency management actions for appropriate response if a major catastrophic landslide shows signs of accelerated movement and/or imminent hazard.

What is the rationale for your funding request? This may include recent history, such as evacuation orders and flooding events, as well as threat levels and/or any evidence of how the hazard is being assessed.

Prior to 2023, lidar data in the project area was limited to small sections of the Fraser River Canyon. In fall 2023, new lidar data was acquired by federal agencies including to the height of land adjacent to Boston Bar. As part of the ongoing assessment of geohazards in electoral areas A and B, BGC Engineering Inc. (BGC) identified a large landslide landform above the community of Boston Bar (appended memorandum dated September 10, 2024). BGC interprets from the lidar data that the landslide complex contains different zones of landslide mechanisms (rockfall, rockslide, earthflow, potential rock avalanche). Should part or all of this landslide complex fail rapidly, debris could enter developed areas. Historical landslides such as these have previously occurred within Fraser Canyon and Fraser Valley that resulted in ecological damages and loss of life (e.g., 1914 Hell's Gate landslide, Texas Creek rockslide, Hope Slide). As this is a newly identified landslide, funding is being sought to understand the threat level to the community of Boston Bar and the Boston Bar First Nation. Preliminary screening for additional geohazards in the Fraser Canyon is currently being completed by FVRD.

To what extent were alternate project options considered?

FVRD understands that further geotechnical assessment of the identified hazard feature is the next step in further characterizing the hazard and understanding implications on FVRD's existing risk management framework (attached). FVRD sought an understanding from BGC as to the level of effort required to undertake a study of this scope and scale to determine if the work could be undertaken within the FVRD workplan, using available budgetary resources. The scale and scope of the necessary assessment is beyond what can feasibly be undertaken by FVRD or landowners. At the recommendation of BGC, FVRD sought out available grant opportunities.

Engage

Step 5

Have you meaningfully engaged with local First Nations regarding this project proposal?

Yes

Describe engagement

The study area includes reserve lands belonging to Boston Bar First Nation and is adjacent to Boothroyd Indian Band's Sam Adams 12 reserve. We have engaged both communities to share our intent to pursue this funding and study the newly identified landslide complex. We recognize that many other communities have interests in this area, as indicated by the Province's Consultation Areas Map, and we are committed to broader engagement if the proposed project moves forward. Boston Bar First Nation has provided a letter of support from Chief Robertson. During the fieldwork component of the project, expenses have been estimated for one or two Indigenous monitors to participate in the fieldwork. FVRD will work with Boston Bar and Boothroyd First Nations to determine if there are Knowledge Holders available to provide expertise to the project.

Have you effectively engaged with neighbouring jurisdictions, and other impacted or affected parties (for example, equity organizations, agricultural sector, critical infrastructure owners) as appropriate for the project?

Yes

List impacted or affected parties that have been engaged with

Ministry of Transportation and Transit, Canadian National Rail, Canadian Pacific Kansas City Rail

Describe engagement

FVRD shared information pertaining to the preliminary identification of the landslide hazard and advised that grant opportunities would be pursued in order to undertake further assessment of the hazard feature. FVRD is committed to regular information

sharing throughout the project. FVRD also requested letters of support from each party. Additionally, the work plan proposes a public community meeting at the conclusion of this project, which will be an opportunity for property owners to meet and learn about this landslide hazard.

How does the proposed project contribute to a comprehensive, cooperative, and regional approach?

FVRD understands that Lytton First Nation is currently undertaking a regional geohazard study of the Fraser Canyon between Lillooet and Hope, BC. The outcomes of this proposed project would benefit regional understanding of rapid catastrophic landslides that could affect communities and critical infrastructure. FVRD also understands that Natural Resources Canada (Geological Survey of Canada) has identified this area as critical corridor for the movement of people and goods in the province of BC, and an area requiring increased understanding of potential landslide impacts. Given these above items, FVRD intends to discuss partnerships with First Nations, infrastructure owner/operators, and applicable provincial and federal agencies, as warranted.

Climate Info

Step 6

Does the project incorporate future climate conditions and consider climate change in the project methodology, including considering future impacts of the project on the environment?

Yes

Describe how the project will incorporate future climate conditions and consider climate change in the project methodology, including considering future impacts of the project on the environment.

Large rapid landslides may be controlled by long-term climatic signals, and the project will consider climate change with the following methods: • Historical satellite data will be acquired and analyzed as far back as possible (typically 2017 onwards) to compare climatic signals (temperature, precipitation, etc.), as well as the influence of the 2021 atmospheric river. • The ongoing electoral area assessment project will provide information on known landslides within the study area. Where possible, we will compile information on landslide ages and potential climatic triggering mechanisms. If a climatological trigger is identified elsewhere in the region and similar conditions are observed at these landslides, the project can incorporate this understanding into the assessment.

Has your project used/consulted any Climate Change assessment tools?

No

Regs & Permits

Step 7

Will the project be completed to acceptable provincial guidelines and standards? This may include guidelines, standards, and assessments related to various factors, such as archeology, the environment, finances, and so on.

Yes

List Provincial Standards relevant to the Project

Standards Category

Environment - Mapping and Landscape

List Provincial Standards relevant to the Project

Canadian Society of Landscape Architects – Canadian Landscape Standard, Specifications for Airborne LiDAR for the Province of British Columbia

Standards Category

Environment - Seismic

List Provincial Standards relevant to the Project

Professional Practice Guidelines – Seismic Assessment and Seismic Design of Dikes in BC Guidelines, Professional Practice Guidelines – Use and Development of Seismic Microzonation Maps in B.C.

Standards Category

Environment - Water (includes Rivers, Flooding, etc.)

List Provincial Standards relevant to the Project

BC Water Sustainability Act, Coastal Flood Risk Assessment Guidelines for Buildings & Infrastructure Design, Coastal Floodplain Mapping – Guidelines and Specifications, Dike Design & Construction Guidelines: Best Management Practices for BC, Engineers and Geoscienists of BC (EGBC, aka APEGBC) - Flood Mapping in BC: APEGBC -Professional Practice Guidelines V1.0

Standards Category

Other

List Provincial Standards relevant to the Project

Engineers and Geoscientists of B.C. (EGBC) - Landslide Assessments in British Columbia

Please provide context below

As this is a newly identified landslide that may affect more than 50 single-family lots, EGBC would recommend a Class 3 assessment for slowly creeping landslides, such as rock creeps in soft rocks and earth flows. This would typically require subsurface investigation, such as drilling, and installation of monitoring equipment such as inclinometers and piezometers. Given the very large extent of this landslide, these subsurface investigations would likely cost more than \$1,000,000. As there is relatively little currently known about this landslide, and the expense of subsurface investigation, FVRD is proposing to complete some components of the Class 3 assessment, with the intention of answering the following questions: - What is the current activity state of the landslide (is it actively moving, as would be highlighted through field work and topographic change analysis)? - What is the likelihood that the landslide could accelerate? - If the landslide does accelerate, what are the credible scenarios of that movement (continued creeping, or sudden rapid failure)? - With these credible scenarios in mind, what are the developed areas in Boston Bar exposed to these hazards? The answers to these questions will guide the risk management recommendations, which may include recommendations for additional site investigation and subsurface investigation.

Will applicable regulated Qualified Professionals be providing technical guidance or oversight on the project. It is understood that not all projects will require regulated Qualified Professionals. If this is not applicable to the project, please select "N/A" below.

Yes

Select any applicable regulated Qualified Professionals who will be providing technical guidance or oversight on the project.

Professional engineer, Professional geoscientist

Additional context can be provided below:

The project will be completed by professional engineers and/or geoscientists that will follow the EGBC provincial guidelines for landslide assessments.

Please list any Knowledge Holders (including Elders and Cultural Practitioners), experts, professionals or others who will be providing oversight, advice, or expertise to the project.

During the fieldwork component of the project, expenses have been estimated for one or two Indigenous monitors to participate in the fieldwork. FVRD will work with Boston Bar and Boothroyd First Nations to determine if there are Knowledge Holders available to provide expertise to the project.

Will the project meet the necessary regulatory requirements?

No

Explain the steps taken for this project to meet regulatory requirements. Include details of discussions with applicable agencies, as well as related considerations, such as fisheries windows, right of way, and so on.

The project will be completed by professional engineers and/or geoscientists that will follow the EGBC provincial guidelines for landslide assessments.

Is this project designed to meet all of the requirements for permits, licenses and authorizations?

No

Provide details about these requirements, including any permits, licences, or authorization that have been requested or granted.

Not applicable.

Project Results

Step 8

Will the project be for broad public use or benefit?

Yes

Please expand on why or why not

The identified hazard feature spans the length of the community of Boston Bar, with the potential to impact numerous property owners, residents, services & businesses, as well as several critical infrastructure stakeholders. The technical report will be publicly disclosed when available. One of the driving factors behind completing this project is that it will form foundational understanding for property owners and infrastructure in the Boston Bar area. A geotechnical assessment of this scale would typically be cost prohibitive for individual property owners. Additionally, multiple geotechnical assessments of the same landslide landform, as would be required under existing FVRD risk management policies, may result in inconsistent recommendations for risk management. The work plan proposes a public community meeting at the conclusion of this project, which will be an opportunity for First Nations, property owners, and residents to understand this landslide hazard.

Will this project reduce costs? For example, emergency response costs, recovery costs, and so on.

Yes

If yes, what types of costs will this project reduce? (select all that apply)

Site specific geohazard assessment for property owners within the study area

Explain how these costs will be reduced by the project, if applicable?

This comprehensive assessment provides cost efficiencies for property owners in the area potentially affected by landslide, reducing the need for site-specific investments in hazard assessments. This hazard assessment will also inform future land use planning and assist the FVRD in directing future development away from hazards, increasing the resiliency of the community and reducing future emergency response and recovery costs.

Will this project produce co-benefits? For example, cultural co-benefits, environmental co-benefits, social co-benefits, and so on.

No

In what way will the proposed project increase resiliency during and after a natural disaster/event? For example, coordination and engagement, knowledge, new infrastructure, and so on.

Coordination and Engagement

Please provide context below

This proposed project will complete both a technical evaluation of the landslide hazard above the community and examination of existing risk management polices to understand if resiliency is incorporated into the risk reduction measures. Additionally, given the significant potential risks to multiple provincial and federal critical infrastructure, this project will build resiliency through coordination and engagement with First Nations, infrastructure owners/operators, and FVRD.

Project Risks

Step 9

Will project complexity risks be mitigated during this project? For example, a highly technical or complex project, a remote geographic location, unpredictable weather, and so on.

Yes

If yes, which project complexity risks will be mitigated during this project? (select all that apply)

Highly technical or complex project, Unpredictable weather

How will project complexity risks be mitigated during this project, if applicable?

Given the highly technical and complex nature of the project, FVRD intends to select an appropriate proponent for this project through a competitive RFP process. Proponents will be required to follow provincial guidelines for landslide assessments. Additionally, FVRD intends to form a steering committee with local and technical expertise to oversee the project and review major project outcomes and decisions. Given the mountainous terrain in the study area, the project may encounter weather challenges such as snowfall, wildfire, and rainfall. The project timeline allows for flexibility in completing field work during the summer months.

Will project readiness risks be mitigated during this project? For example, land hasn't been acquired, potential issues with permits or authorizations, non-DRIF funding sources are not secured, and so on.

No

Will project sensitivity risks be mitigated during this project? For example, project has received negative media attention, certain stakeholders have been vocal about the project, and so on.

Yes

If yes, which project sensitivity risks will be mitigated during this project? (select all that apply)

Potential for negative impacts to property values and development potential, Potential for impacts to First Nation cultural activities within study area

How will project sensitivity risks be mitigated during this project, if applicable?

The project and its outcomes may cause concerns about reduced property values. FVRD is prepared to navigate these challenges through transparency and proactive information sharing with property owners and stakeholders. The project intends to engage potentially affected property owners through community engagement events. As best as possible, these events will be facilitated using trauma-informed and conflict de-escalation techniques. FVRD recognizes that the study area includes reserve lands. FVRD will ensure timely information sharing pertaining to known hazard risks in order for First Nations to consider the risk potential to cultural activities and traditional land uses within the study area.

Will project capacity challenge risks be mitigated during this project? For example, limited human resources or technical expertise to complete the project, and so on.

Yes

If yes, which project capacity challenge risks will be mitigated during this project? (select all that apply)

Technical Expertise

How will the project capacity challenge risks be mitigated during this project, if applicable?

FVRD will seek proposals through a competitive process for the geohazard assessment and enter into a contract with a proponent who demonstrates the capacity and technical expertise required to undertake the identified scope of work .

By completing this project, is risk being increased or transferred to any parties or to the environment?

No

Budget

Step 10

Total Project Cost

\$345,434.00

Eligible DRIF Program Funding Request from EOI

\$286,320.00

Year-over-Year DRIF Funding Request

Fiscal Year	Estimated Amount

2025/2026 \$287,317.00

Fiscal Year Estimated Amount

2026/2027 \$58,117.00

Total DRIF Program Funding Request

\$345,434.00

Your updated DRIF program funding request is different from the eligible amount in your EOI. Explain what has changed.

The revised cost estimate reflects a refined work plan and accounts for Indigenous and community engagement. It also reflects a reduced economy of scale from geohazard assessment works proposed by Lytton First Nation that will not proceed.

Does the project have other funding sources?

No

Other Funding Sources

Excess Funding

\$0.00

Describe how the project activities are cost effective (for example, locally sourced resources, shared contract resources, minimalized travel)

Current FVRD risk management policies could result in multiple geotechnical assessments of the same landslide hazard feature, conducted on a site-specific basis. A single comprehensive hazard assessment is a more efficient way to sufficiently characterize the hazard. A geotechnical assessment of this scale would typically be cost prohibitive for individual property owners.

Are there previous emergency response costs that the proposed project is designed to mitigate?

No

Do cost considerations apply to this project? For example, cost stacking, in-kind contributions, phased costs, and so on.

Yes

If yes, which cost considerations apply?

Cost stacking

Explain cost considerations, if applicable

Preliminary screening for additional geohazards in the Fraser Canyon is currently being completed by FVRD with a value of \$60,000.

Attach Files Step 11			
Detailed cost est	imate		
File nameCommentFVRD DRIF Cost Estimate_FY.xlsxIncludesSite plan, if applicable to the type of project b		Comments Includes costs by fiscal year. Of project being proposed	Download
File name	Comments		
Site Map.pdf	Site map of proposed study area above community of Boston Bar.		
Download			

Preliminary design, if applicable to the type of project being proposed (Optional)

Is resolution document available to attach to this form now?

Yes

Resolution Document

File name

Resolution 6.4- CLOSED DRIF Program- Invitation for Full Proposal of BB Landslide (January 30, 2025).pdf

Comments

Resolution in support of DRIF Proposal Submission from FVRD Board

Download

Download

Other Supporting Documentation

File name

(102) 1989 01 12 - REPORT- Thurber, Various Lots (Boston Bar), Area A.pdf

Comments

Download Background geohazard information for study Area.

File name

2020 FVRD Hazard Acceptability Thresholds.pdf

Comments

FVRD risk management framework for consideration of geohazards. **File name**

BC MOTT Letter of Support - Boston Bar Large Landslide Complex Assessmen....pdf

Comments

Download

Letter of support. **File name**

2024 09 10 - Boston Bar Landslide Memo from BGC Engineering Inc..pdf

Comments

Download

Preliminary identification of hazard feature. **File name**

2025 01 27 - LETTER - FVRD Slide Research Support.pdf

Comments Letter of Suppo	Download st Nation				
Summary & Consent					
Authorized Representative Contact Information First Name Last Name Position/Title Department					
Jane	Doe	Manager of Planning	EA Planning & Development		
Phone	Email khipwell@fu	rd bc ca			

For disaster mitigation funding support, contact: EMCR.DisasterMitigation@gov.bc.ca.

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UI vrelease-1.2.2API vrelease-1.2.2

Disater Resilience and Innovation Funding (DRIF) program Detailed Cost Estimate - Stream 1

Lead Proponent Name (LG or FN):	Fraser Valley Regional District	
EOI Number:	DRIF-EOI-1068	
Full Proposal Number:	DRIF-FP-1034	
Project Title:	Landslide Hazard Assessment at Boston Bar and Developing	gRisk
Cost Estimate Developed By:	BGC Engineering and Fraser Valley Regional District	
Date of Cost Estimate:	12-Feb-25	

			Eligible Costs		Ι	<u>г г</u>			
Task Number	Task Name	Cost Category	Description	Resource (if applicable)	Units	Quantity	Unit Rate (\$)	Total Cost	FY
	1 Project Management	Project Planning	Project Reviewer	Principal Qualified Professional	Hours	8 \$	365.00 \$	2,920.00	25/26
	1 Project Management	Project Planning	Project Manager	Senior Qualified Professional	Hours	60 \$	312.00 \$	18,720.00	25/26
	1 Project Management	Project Planning	Project Engineer	Senior Qualified Professional	Hours	8 \$	287.00 \$	2,296.00	25/26
	1 Project Management	Project Planning	Project Engineer	Intermediate Qualified Professional	Hours	8 \$	231.00 \$	1,848.00	25/26
	1 Project Management	Project Planning	Emergency Management Consultant	Project Support	Hours	36 \$	235.00 \$	8,460.00	25/26
	2 Hazard Assessment including Fieldwork	Assessment	Project Reviewer	Principal Qualified Professional	Hours	12 \$	365.00 \$	4,380.00	25
	2 Hazard Assessment including Fieldwork	Assessment	Project Manager	Senior Qualified Professional	Hours	8 \$	312.00 \$	2,496.00	25
	2 Hazard Assessment including Fieldwork	Assessment	Project Engineer	Senior Qualified Professional	Hours	80 \$	287.00 \$	22,960.00	25
	2 Hazard Assessment including Fieldwork	Assessment	Project Engineer	Intermediate Qualified Professional	Hours	140 \$	231.00 \$	32,340.00	25
	2 Hazard Assessment including Fieldwork	Assessment	GIS Analyst	Project Support	Hours	12 \$	194.00 \$	2,328.00	25
	2 Hazard Assessment including Fieldwork	Assessment	Topographic change detection (InSAR, lidar)	Other	Lump Sum	1 \$	22,000.00 \$	22,000.00	25
	2 Hazard Assessment including Fieldwork	Assessment	Fieldwork (consultant general expenses, helico	Other	Lump Sum	1 \$	20,000.00 \$	20,000.00	25
	2 Hazard Assessment including Fieldwork	Assessment	Indigenous monitor	Cultural/Environmental/Indigenous Mo	rHours	60 \$	150.00 \$	9,000.00	25
	3 Hazard Exposure Assessment	Assessment	Project Reviewer	Principal Qualified Professional	Hours	2 \$	365.00 \$	730.00	25
	3 Hazard Exposure Assessment	Assessment	Project Manager	Senior Qualified Professional	Hours	8 \$	312.00 \$	2,496.00	25
	3 Hazard Exposure Assessment	Assessment	Project Engineer	Senior Qualified Professional	Hours	8 \$	287.00 \$	2,296.00	25
	3 Hazard Exposure Assessment	Assessment	Project Engineer	Intermediate Qualified Professional	Hours	12 \$	231.00 \$	2,772.00	25
	3 Hazard Exposure Assessment	Assessment	GIS Analyst	Project Support	Hours	16 \$	194.00 \$	3,104.00	25
	3 Hazard Exposure Assessment	Assessment	Emergency Management Consultant	Project Support	Hours	8 \$	235.00 \$	1,880.00	25
	4 Policy Review and Recommendations	Assessment	Project Reviewer	Principal Qualified Professional	Hours	8 \$	365.00 \$	2,920.00	25
	4 Policy Review and Recommendations	Assessment	Project Manager	Senior Qualified Professional	Hours	20 \$	312.00 \$	6,240.00	25
	4 Policy Review and Recommendations	Assessment	Project Engineer	Senior Oualified Professional	Hours	80 \$	287.00 \$	22,960.00	25
	4 Policy Review and Recommendations	Assessment	Project Engineer	Intermediate Oualified Professional	Hours	32 \$	231.00 \$	7,392.00	25
	4 Policy Review and Recommendations	Assessment	GIS Analyst	Project Support	Hours	4 \$	194.00 \$	776.00	25
	4 Policy Review and Recommendations	Assessment	Emergency Management Consultant	Project Support	Hours	120 \$	235.00 \$	28.200.00	25
	4 Policy Review and Recommendations	Assessment	Workshop (consultant disbursements)	Other	Lump Sum	1 \$	600.00 \$	600.00	25
	4 Policy Review and Recommendations	Assessment	Workshop (catering and meeting room fees)	Other		1 \$	500.00 \$	500.00	25
	5 Reporting Deliverables	Assessment	Project Reviewer	Principal Oualified Professional	Hours	24 \$	365.00 \$	8.760.00	25/26
	5 Reporting Deliverables	Assessment	Project Manager	Senior Oualified Professional	Hours	40 \$	312.00 \$	12.480.00	25/26
	5 Reporting Deliverables	Assessment	Project Engineer	Senior Qualified Professional	Hours	40 \$	287.00 \$	11.480.00	25/26
	5 Benorting Deliverables	Assessment	Project Engineer	Intermediate Qualified Professional	Hours	80 \$	231.00 \$	18,480,00	25/26
	5 Benorting Deliverables	Assessment	GIS Analyst	Project Support	Hours	60 \$	194.00 \$	11.640.00	25/26
	5 Benorting Deliverables	Assessment	Emergency Management Consultant	Project Support	Hours	60 \$	235.00 \$	14,100,00	25/26
	6 Steering Committee and Board Presentation	Communications	Project Beviewer	Principal Qualified Professional	Hours	2 \$	365.00 \$	730.00	26
	6 Steering Committee and Board Presentation	Communications	Project Manager	Senior Qualified Professional	Hours	12 \$	312.00 \$	3 744 00	26
	6 Steering Committee and Board Presentation	Communications	Project Engineer	Senior Qualified Professional	Hours	2 \$	287.00 \$	574.00	20
	6 Steering Committee and Board Presentation	Communications	Emergency Management Consultant	Project Support	Hours	12 \$	235.00 \$	2 820 00	20
	7 Community Engagement	Proponent Community(ies) Engage	Project Reviewer	Principal Qualified Professional	Hours	12 \$	365.00 \$	1 /60 00	20
	7 Community Engagement	Proponent Community(ies) Engage	r Project Manager	Senior Qualified Professional	Hours	36 \$	312.00 \$	11 232 00	20
		Proponent Community(ies) Engage		Senior Qualified Professional	Hours	50 \$ 1 \$	287.00 \$	1 1/8 00	20
	7 Community Engagement	Proponent Community(ies) Engage		Intermediate Qualified Professional	Hours	4 ψ 24 \$	231.00 \$	5 544 00	20
	7 Community Engagement	Proponent Community(ies) Engage	rGIS Analyst	Project Support	Hours	24 3	10/ 00 \$	3,544.00	20
	7 Community Engagement	Proponent Community(ies) Engage	r Emergency Management Consultant	Project Support	Hours	24	134.00 P	5 640 00	20
	7 Community Engagement	Proponent Community(ies) Engage	Community Monting (consultant expenses)	Othor		24 \$ 1 m		5,640.00	20
	7 Community Engagement	Proponent Community(ies) Engage	Community Meeting (consultant expenses)	n Other		1 0		2 000 00	20
			Community meeting (catering and meeting roo			1 \$	2,000.00 \$	2,000.00	26
	N								
TIOTAL CLIGIBLE COSIS							12	343,434.00	

Management Framework for Rapid Landslides