BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Suite 500 - 980 Howe Street
Vancouver, BC Canada V6Z 0C8
Telephone (604) 684-5900
Fax (604) 684-5909

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Kathryn Forge, Executive Director - Planning, Mitigation & Partnerships
Jesal Shah, Director - Disaster Mitigation
Emergency Management BC (EMBC)
PO Box 9201
Stn Prov Govt, Victoria BC, V8W9J1

Dear Ms. Forge and Mr. Shah,

Re: Integrated asset data model for emergency management

The purpose of this letter is to provide background and seek feedback from Emergency Management BC (EMBC) in advance of a funding application initiated by BGC Engineering and the Integrated Cadastral Information Society (ICI Society) for the flood risk assessment, flood mapping and flood mitigation planning stream of The Union of BC Municipalities (UBCM) Community Emergency Preparedness Fund. The application would be submitted by February 22, 2019. BGC is seeking feedback because the proposed work spans multiple jurisdictions and requires provincial input.

Watershed scale flood risk management supports the mandate of local, regional and provincial governments to reduce or prevent injury, fatalities, and damages during flood events. The work engages multiple stakeholders, various levels of government and subject matter specialists. Watershed scale flood risk management requires understanding, in equal measure, of both hazards and the vulnerability of the built environment to damage and loss. The damaging floods of 2017 and 2018, which included loss of life, have kept the importance of delivering effective flood management at the forefront of current public concern.

Motivated in part by projects funded through the National Disaster Mitigation Program (NDMP), BGC is building software tools that can help automate flood risk assessment and management at provincial scale. These tools will enable integration of real-time flood forecasting and pre-event actions, emergency response, long-term planning and policymaking, climate change adaptation, stakeholder communication and asset management. They leverage economies of scale to deliver more equal levels of service across BC that would otherwise be cost-prohibitive, including to rural and under-resourced areas. The current NDMP-funded work is already partially fulfilling the first recommendation of the Auditor General of British Columbia's February 2018 report, titled *Managing Climate Change Risks: An Independent Audit*, which is to "undertake a province-wide risk assessment that integrates existing risk assessment work and provides the public with an overview of key risks and priorities" (Auditor General, 2018).

One of the most significant barriers, and potential opportunities, to improve flood risk management in BC is to increase the coordination and assembly of asset data across multiple levels and sectors of government. Asset data is digital information about things of value to British Columbians, and "data models" describe how these data are organized.

Because asset data is commonly segregated between agency functional groups, and data models are not typically visible to the end-user, it is not necessarily obvious how important these data are to risk management. Without integrated asset data, it is costlier to assess vulnerability and loss because there are gaps in the necessary supporting data, or more effort is required to align data across assets and agencies. Thus, it is a resource intensive and inefficient process to develop provincial-scale, reliable models that illustrate hazard exposure, assess vulnerability, and calculate risk, in addition to providing a platform to provide web-accessible tools that can be kept up-to-date. It also is more difficult to bring tools developed for urban centres, where asset data are typically better organized, to less well-resourced and rural parts of BC.

Without asset data collaboration, flood risk assessments are done piecemeal without connection between projects, and in isolation from other types of risk assessments (i.e. for landslides, wildfires, snow avalanches, and earthquakes). The segregation of risk assessments can increase the potential for inconsistent results or the unintentional omission of a hazard, that in hindsight would be discoverable after an adverse event. Moreover, it is difficult to establish common datasets accessible to both emergency managers and those tasked with asset management. Resolving these issues would increase the efficiency and level of flood risk management services that can be provided to British Columbians.

The Integrated Cadastral Information Society (ICI Society), in partnership with BGC, would like to engage with several Regional Districts to develop an integrated asset data model. The UBCM Community Emergency Preparedness Fund includes a flood risk assessment, flood mapping and flood mitigation planning stream. Eligible activities include, "identifying locations of structures, people and assets that might be affected by flooding", which is consistent with our vision.

The funding application may be prepared by ICI Society with support of BGC, with coordinated submissions by several Regional Districts. Possible participants may include the Regional Districts of Central Kootenay, Squamish-Lillooet, North Okanagan, Columbia Shuswap, Thompson Nicola, and Cariboo. These regional districts are all currently working with BGC to complete NDMP Stream 1 flood assessments, which requires a coordinated data model of buildings and critical infrastructure spanning almost 100,000 km^2. These assessments provide the foundation and a model to incorporate asset data into flood risk management at provincial scale. The proposed asset data model would also fulfill one of the major recommendations that will come from the current work.

ICI Society already integrates cadastral and utilities data across British Columbia for most local and regional governments, and are well positioned to apply their existing role, expertise, relationships, and tools to this project. BGC contributes the earth science and software expertise to develop asset, hazard and risk models suitable for risk management. The above-listed

Regional Governments are well-positioned to contribute in that they are already participating in efforts to integrate asset data across large urban and rural regions.

We would like to discuss this initiative with EMBC in advance of funding application preparation. We would like to gauge provincial interest, define roles, and confirm that the UBCM grant is an appropriate potential funding source. If it is an appropriate funding source, we would appreciate feedback on how to structure a coordinated application across multiple jurisdictions. In addition, we are seeking early feedback to plan for long-term data management. We look forward to discussion this vision with you.

Yours sincerely,

BGC ENGINEERING INC.
per:

Kris Holm, M.Sc., P.Geo.
Senior Geoscientist

mjp

cc: Michael Porter
Eldon Wong