Agriculture-Related Review of Draft Environmental Impact Statement Guidelines for the proposed Site C Clean Energy Project

Prepared for Consideration by
Peace Valley Environmental Association and
BC Women's Institute

In Preparation for Submission to
Canadian Environmental Assessment Agency
and BC Environmental Assessment Office

By

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Purpose and Terms of Reference

The purpose of this report is to provide analysis and comment on the draft Environmental Impact Statement Guidelines (draft EIS Guidelines) for the proposed Site C Clean Energy Project (Site C Project or the Project) to our clients, Peace Valley Environmental Association (PVEA) and BC Women's Institute (BCWI). This report has been written to assist our Clients in preparing their submission to the Canadian Environmental Assessment Agency (CEAA) and the BC Environmental Assessment Office (EAO) who are engaged in a cooperative environmental assessment through a Joint Review Panel, as agreed upon by Minister of Environment, Canada and Minister of the Environment, British Columbia.

Terms of Reference and Approach

In response to CEAA invitation and parameters for participant funding, both PVEA and BCWI applied for and were granted funding to participate in the public consultation opportunity to be undertaken as part of the Joint Review Panel consideration of the Site C project, the first participatory step of which is review and comment on the draft EIS Guidelines.

The specific Terms of Reference for review identified by BCWI requested focus on how the draft EIS Guidelines could be improved in the following areas:

1. adequate inventory and planning information related to soils, climate/microclimate, land capability and crop suitability for agriculture;
2. present agricultural use;
3. the Agricultural Land Reserve boundary; and
4. ecosystem and other compatible/competing land and water use parameters.

The specific Terms of Reference for review identified by PVEA requested focus on how the draft EIS Guidelines could be improved in the following areas:

1. potential foodland loss and impacts upon local/regional/provincial food security; and
2. estimates of potential economic losses, including costs related to the role of agriculture in climate change adaptation/mitigation and to other compatible land and water uses.

While recognizing the specific requirements of each Client as per their funding agreement with CEAA, the authors also desired to communicate the integrated and indivisible nature of agriculture-related issues. By agreement amongst the Clients (BCWI and PVEA) and the consultants (GG Runka Land Sense Ltd. and Wendy Holm), therefore, for this stage of the public participation process only, this report has been prepared as a joint review of the draft EIS Guidelines on agriculture-related impacts, under one Contract between PVEA, BCWI and GG Runka Land Sense Ltd.

Agriculture-Related Review of draft EIS Guidelines

The review of the draft EIS Guidelines for the Site C Project Joint Review Panel is based upon the document as released by CEAA/EAO April 10, 2012. Table 1 contains specific Client-focused analysis and comment.

Table 1: Agriculture-Related Review of Site C Project draft EIS Guidelines

Draft Environmental Impact Statement Guidelines (selected sections)	Agricultural Land Use-Related Comments for specific attention of BC Women's Institute (Gary Runka P.Ag. and Joan Sawicki)	Agriculture Economics-Related Comments for specific attention of PVEA (Wendy Holm, P.Ag.)
3.3.4 Transmission Line to Peace Canyon The EIS will describe the facilities required to connect to the bulk transmission system, including access roads required for clearing, construction and maintenance of the transmission line.	Description needs to include assessment of farm/ranch-specific impact on existing as well as future potential cultivated agriculture and/or livestock grazing operations, based on consideration of full range of cropping options.	See comment under 3.3.6 and 17.5.4.
3.3.5 Access Roads and Rail The EIS will describe the permanent and temporary access routes required for access to the Project site and other Project components including a description of the temporal aspects of road use (e.g. traffic management plans, expected traffic patterns and volumes for different phases of Project development, deactivation schedules). The EIS will also describe any improvements that would be required to existing roads and rail. Maps showing the access roads and rail will be provided.	As for section 3.3.4 related to both permanent and temporary road/rail access, including reclamation/restoration of temporary and maintenance of permanent road/rail access	See comment under 3.3.6 and 17.5.4.
3.3.6 Highway 29 Realignment The EIS will describe alternative highway realignment options and a rationale for selection of the preferred options. The EIS will describe the proposed sections of Highway 29 that would be realigned. The description will include the approximate length of bridges and causeways at watercourse crossings, clearance between bridges and the reservoir and the factors considered in alignment selection. Drawings showing the preliminary design of the bridges and causeways for each section of Highway 29 that has to be realigned will be included in the EIS. The EIS will identify any driveways, properties or existing crown tenures that may need entirely new access routes constructed as a result of the highway realignment.	As for sections 3.3.4. and 3.3.5 above; site-specific potential farm/ranch impact needs to be an analysis criteria for consideration of options, including all stages of design, construction, reclamation, restoration and maintenance associated with the proposed Hwy 29 realignment. See also comment under section 16.2.4.	Detailed maps will be required showing changes as they relate to existing agricultural uses and farm unit boundaries in order to properly evaluate economic impact on agriculture, including but not limited to: incremental farming costs if farm operations are bisected; economic risk of spread of non-indigenous and invasive plants; cost of new gates and fencing to contain livestock and/or protect field crops; increased farm management costs arising from partitioned fields, weed contamination and potential impact on field drainage and irrigation; loss of isolation and potential impact on crop economics (e.g. removal of certified seed production as a crop option). See also comment under 17.5.4.

Draft EIS Guidelines section	*Agricultural Land Use – Related Comments*	*Agriculture Economics-Related Comments*
3.3.9 Construction Phase Activities The EIS will describe the expected construction sequence and activities for each Project component. A description of the information to be provided is listed below. The EIS will describe the following activities for construction of the **dam and generating station:** *(see Draft EIS Guidelines for list of 25 activities*) The EIS will describe the following construction activities for **reservoir preparation**, including: *(see Draft EIS Guidelines for list of 10 activities*) The EIS will describe the following construction activities for the connection to the **transmission system**: *(see Draft EIS Guidelines for list of 8 activities*) The EIS will describe the following construction activities for **access roads and rail to the dam site**: *(see Draft EIS Guidelines for list of 4 activities*) The EIS will describe the following construction activities for each section of **Highway 29** that has to be relocated or modified: *(see Draft EIS Guidelines for list of 9 activities*) The EIS will describe the following construction activities for each **quarried and excavated material source:** *(see Draft EIS Guidelines for list of 6 activities*) The EIS will describe how the **construction contracts** will include: • Commitments to perform all construction activities in accordance with the Project Environmental Management Plan • The process to be followed for upgrading any bridges required to meet load capacity	The majority of the currently listed 62 activities required to be described for the various construction components will impact both existing agricultural land use and potential future agricultural options. Therefore, descriptions need to be adequate for evaluation of these potential impacts, taking into account soil/climate capabilities, crop range and specific crop suitabilities. See comments under section 16.2.4.	Related to dam and generating station construction activities: • Re: modifications to access, rail, haul routes - see comments under sections 3.3.6 and 17.5.4. • Re: slope stabilization - need detailed maps of slopes requiring stabilization in order to properly evaluate economic implications for drainage and field management on existing and future farms abutting. Related to reservoir preparation construction activities: • Re: access routes – see comments under sections 3.3.6 and 17.5.4. Related to construction to connect to the transmission system, see comments under section 3.3.6. Related to construction activities for access roads, rail to the dam site and modifications to Highway 29. See comments under sections 3.3.6 and 17.5.4. In addition, need data showing proposed traffic modification, boundaries of existing farms and length of time required for modification activities in order to assess implications of changed and disrupted traffic patterns on farming costs. Related to excavation and stockpiling of unsuitable material, see comments under sections 3.3.6 and 17.5.4.

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
3.3.10 Operations Phase Activities **Maintenance activities along the transmission lines and access roads (e.g. vegetation management and dust control) will be described in EIS.**		Description of maintenance activities need to consider farm cost implications of vegetation management and dust control activities on economic risk of spread of non-indigenous and invasive plants; cropping options (e.g. organic production) and farming costs (e.g. providing access).
4.2.2 Characterization of Viable Alternatives to the Project The EIS will describe the major financial, technical, environmental, and economic development attributes of the supply-side and demand-side alternatives. <u>Financial and technical attributes can include:</u> • Firm energy and dependable capacity • Cost of supply, including a description of Project capital costs and operating costs • Technology status and potential in-service date • Resource quality (i.e. intermittency or flexibility of generation) • Uncertainties and risks associated with development of the resource option, including deliverability risk <u>Environmental attributes can include:</u> • Land footprint • Freshwater footprint • Marine footprint • Local air emissions • GHG emissions <u>Economic development attributes can include:</u> • Employment • Gross Domestic Product • Government Revenues	Environmental attributes should be broadened to read Environmental and Land Use attributes. In addition, the Land footprint is not discriminating enough without specifying the requirement to consider both a Food Security footprint and an Ecosystem/Biodiversity footprint (which, along with the Freshwater footprint, encompasses fish, plants and animals that are part of local food diets) as a basis of comparison of alternatives to the Project.	List of attributes is missing any reference to social development attributes, including impact on local food security (supply); local food accessibility (price); food nutrition (quality, accessibility); personal and household wellness, security and happiness and impact on social and economic fabric of the farming community. Gross Domestic Product measurement is inadequate to accommodate social development attributes. A more broad-based Genuine Progress Indicator approach is required to take into account the role of food production in sustaining healthy and resilient communities.

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
4.2.3 Evaluation of Alternatives to the Project The EIS will describe the methodology used to identify whether and how, the Project can be seen as the preferred option based on consideration of the environmental, economic and technical benefits and costs. The comparison of Site C to other options can be through an integrated resource planning methodology as follows: Portfolio analysis - The methodology will evaluate alternative portfolios, each of which can meet the Proponent's customers' electricity needs. These portfolios will be composed of discrete identified resources. Scenario-based - The methodology will evaluate alternative portfolios under a range of potential future conditions. Characterization of uncertainties and risks - The methodology should characterize the uncertainties and risks associated with the alternative portfolios under consideration.	The integrated resource planning methodology needs to include the vision of the Valley without the Project, based on understanding of the role of agriculture in coexistence with other compatible land and resource uses and in sustaining a healthy and resilient rural community. See comments under sections 8.5.3.1 and 23. Range of potential future conditions need to consider the implications of climate change on community resilience. As per CEAA Guidance Document applied to other Environmental Assessment Projects, the characterization of uncertainties and risks need to be based on the Precautionary Principle related to the interrelationship between climate change, food production/security and community sustainability.	The draft EIS Guidelines fail to adequately address the social benefits and costs related to food production. See comment under section 4.2.2. Potential future conditions should include various climate change scenarios. Future agro-economic damages should not be discounted in present value analysis.
6.1 Provincial Agencies, Departments and Organizations The EIS will list the provincial agencies, departments and organizations that will be involved in the Project's environmental assessment process. A summary of the issues and concerns identified by provincial, local and regional government agencies will be provided in the EIS. Detailed agency comments and the Proponent responses will be provided in an issues tracking table to be prepared by the Proponent and posted on the Agency's and BCEAO's website.	The BC Agricultural Land Commission needs to be specifically sited as required, both on the list and on the issues/concerns tracking table. See comments under section 6.4.	Given the unique microclimate and enhanced range of cropping options within the Valley, communities in Yukon and Northwest Territories are also stakeholders in matters of food security, nutrition and accessibility to fresh vegetables that can be produced on lands that would be lost or impacted by the Project. See comment under 16.2.3.

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
6.4 Permitting The EIS will list applicable federal, provincial, and municipal or regional licences, permits and approvals required for the construction and operation of the Project, and will identify: • the activity requiring regulatory approval • the name of the permit or regulatory approval • the applicable legislation in each case • the regulatory agencies responsible for each permit or approval A preliminary list of key licences, permits and approvals is provided in the Project Description Report accepted by the BCEAO and the Agency in August 2011.	The BC Agricultural Land Commission (ALC) was not included in the Project Description Report referred to in this section of the draft EIS Guidelines. This is a major oversight. With its legislated mandate (and requirement) to protect agricultural land, promote provincial food security and support farm communities within the designated Agricultural Land Reserve ((ALR), the ALC has an established, legal application process under which it considers proposals for exclusion of lands from the ALR or non-farm proposals within the ALR. The Project proponent must be required to address the implications of this provincial farmland preservation legislation.	
8.3.1 Identification of Candidate Valued Components – Step 1 The EIS will describe, as Step 1, the process for identification of candidate-valued components ("candidate VCs"). Candidate VCs will be selected based on interests and concerns raised by the public and Aboriginal groups prior to the submission of the EIS, and input obtained during consultation with the public, government agencies and Aboriginal groups leading up to submission of the EIS to the Agency and the BCEAO. In doing so, the Proponent will seek to identify those components that are valued: • For environmental, economic, social, heritage or human health reasons • As land or resources currently used by Aboriginal persons for traditional purposes Identification of candidate VCs will include the following: • Interests and concerns raised by Aboriginal groups • Interests and concerns raised by the public • Regulatory status • Protected status • Preservation of biodiversity	Based on the required process for identification of candidate VCs, the legislative mandate of the ALC and the restrictions imposed by the ALR (see comments under sections 6.1 and 6.4) requires the following amendments to the draft EIS Guidelines: • 'food security' to be added to the list of 'reasons'; • 'preservation of agricultural land' to be added as a candidate VC. In addition,' Preservation of biodiversity' should include food biodiversity (fish, wildlife, native plants) and, given its uniqueness (i.e. 'Value'), Valley microclimate needs to be added as a candidate VC.	

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
• Rarity or special status • Sensitivity to disturbance or pollution • Important ecological role • Transboundary Issue • Human Health		
8.4 Assessment Boundaries **8.4.1 Spatial Boundaries** The EIS will describe the spatial boundaries within which each of the potential adverse effects of the Project will be assessed. The Proponent has proposed specific spatial boundaries throughout the draft EIS Guidelines. The federal government and the BC Environmental Assessment Office are seeking input from the public on the proposed spatial boundaries before finalizing the Draft EIS Guidelines. The spatial boundaries will be presented as described in the spatial boundary tables in the VC specific effects assessment sections in these draft EIS Guidelines. Spatial boundaries will also describe the relevant administrative and technical boundaries, where applicable. These spatial boundaries will be defined based on applicable discipline guidance documents (e.g., BCMOE 2008, BCOGC 2009). Spatial boundaries descriptors are listed in Table 8.2. **8.4.2 Temporal Boundaries** The EIS will present the rationale for the temporal boundaries to be used to assess potential adverse effects of the Project relevant to each VC.	Spatial and temporal boundaries associated with potential impact on agriculture will vary between and perhaps even within specific agricultural commodities. (e.g. forage-based livestock operations versus heat-loving vegetable horticulture versus cool season root crops). The draft EIS Guidelines on establishment of spatial and temporal boundaries need to take into account the full range of cropping options (unique microclimate/soil combination) within the Valley bottom/lower slope complex.	
8.5.2.2 Identification of Mitigation Measures The EIS will describe the technically and economically feasible measures that the Proponent is proposing to mitigate any potential significant adverse effects of the Project.	See comment under section 16.2.4.	In keeping with the Precautionary Principle that has been included in CEAA Guidance Documents related to other Projects under assessment, the ability of proposed mitigation measures to resolve the "potentially significant adverse effects" should be subject to risk analysis to ensure residual damage assessment reflects the potential that mitigation measures may fail (e.g. assessment needs to be properly risk-weighted). "Significant' needs to be more clearly defined.

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
8.5.3 Cumulative Effects Assessment The EIS will provide an assessment of the cumulative effects that are likely to result from the Project in combination with other Projects or activities that have been or will be carried out. Federal and provincial guidance will be consulted (e.g., Agency 2007c, BCEAO 2010, 5 Hegmann et al. 1999). A cumulative effects assessment of the Project on a VC will be conducted if the potential residual adverse effect of the Project on that VC has a spatial and temporal overlap with a residual effect of another Project. The EIS will describe the cumulative effects assessment methodology, which will follow the method outlined above for the Project-specific VC effects assessment, and will include the following steps: • Determination of spatial and temporal boundaries • Consideration of other Projects and activities and identification of Project interactions • Description of cumulative effects • Identification of mitigation measures • Characterization of cumulative residual effects • Determination of significance of cumulative residual effects	The Cumulative Effects Assessment methodology is inadequate. It does not take into account: • Incremental natural resource loss impacts (see comments under 16.1); • Cumulative impact of loss of unique microclimate area upon overall biological productivity (see comments under section 9.3.1); • Agricultural and other land/water resource user perspective of accumulated proposed reservoir flooding, slope stability, soil erosion, sedimentation and surface/groundwater impact (see comments under section 9.1.1); or • Incremental impact upon community sustainability and resilience (i.e. incremental impact of all combined natural resource, environmental, economic and social impacts.) See also comments under sections 14.1, 16.1, 17.1, 19.1, 23.3 and 23.4.	Draft EIS Guidelines methodology does not recognize that cumulative residual effects are not simply additive or linear, but incremental and exponential. Must also include assessment of risk and proposed monitoring of success/failure of measures taken to mitigate
8.5.3.1 Spatial and Temporal Boundaries Cumulative effects will be assessed within an RAA as proposed by the Proponent defined for each VC. The spatial boundaries of the RAA will be based on: • where possible interactions with other Projects or activities overlap. • for ecological boundaries, they will be ecologically defensible (e.g., wildlife range boundaries) The adequacy of data will be assessed in terms relevant to the purpose of the cumulative effects assessment. The Proponent has proposed the following approach to cumulative effects assessment. The federal government and the BC		

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
Environmental Assessment Office are seeking input from the public on the proposed approach to cumulative effects assessment before the Draft EIS Guidelines are finalized. To assess the cumulative effects that are likely to result from the Project in combination with other Projects or activities that have been or will be carried out, the Proponent will present the following in the EIS: **Baseline Case**: The Baseline Case will demonstrate the current status of the VC. In doing so, it will reflect the effect of all Projects and activities that have been carried out. **Future Case without the Project:** To identify the potential adverse effects of Projects and activities that will be carried out, the Future Case without the Project will be developed to predict the status of the VC by taking into account the Baseline Case and Projects and activities that are at least as foreseeable as the Project. This will demonstrate the potential residual effects of Projects and activities that have been and will be carried out. **Project Case:** To demonstrate the cumulative effects that are likely to result from the Project, the Project Case will demonstrate the status of the VC, taking into account the residual effects of the Project that are likely combined with those identified in the Future Case without the Project.	Future Case without the Project needs to be broadened to encompass the retention of all natural resource attributes (that will be lost/impacted should the Project proceed), including agriculture a) as a sector; b) in coexistence with other compatible land and resource uses and c) in its role in sustaining a healthy and resilient, rural community. See comments under sections 4.2.3 and 23.	All three case scenarios must include consideration of factors such as climate change, effect of peak oil on price of imported food, food security and community resilience within a local, regional and provincial context.
8.5.3.3 Analysis of Cumulative Effects **Description of Potential Cumulative Effects on VCs** The EIS will describe the potential cumulative effects on VCs, including the following: **Site C Clean Energy Project Draft Environmental Impact Statement Guidelines** Volume 2 – Assessment Methodology and Environmental Effects Assessment • Overview of the Project or activity • Status of Project or activity • Spatial and temporal boundary • Potential residual cumulative effects	See comment under sections 8.5.3, 16.2.4 and 23.	See comments under section 8.5.2.2 and 8.5.3.

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
Identification of Cumulative Effects Mitigation Measures If cumulative effects are identified, the EIS will recommend possible regional approaches to mitigation. **Characterizing Residual Cumulative Effect** The EIS will characterize the residual cumulative effects using the approach outlined for the Project-specific effects assessment described in Section 8.5.2 and the criteria provided in Table 8.3. **Significance of Residual Cumulative Effects** In the EIS, the Proponent will provide its assessment of the significance of any residual adverse cumulative effect that may result from the Project, in combination with other Projects, and the rationale for its assessment.		
9.1.1 Geology, Terrain and Soils The EIS will describe the physiographic and topographic setting and the stability of the terrain within the Project activity zone. The EIS will contain a description of bedrock and surficial geology, key landforms (such as mountains, uplands, slopes, terraces and streams), existing and predicted changes to seismic conditions, and geotechnical and geochemical processes (such as erosion, slope stability and acid rock drainage) that may affect land or resource use. This will include: *(intervening text …….)* Predicted changes to shoreline erosion and slope stability due to the Project will be assessed based on the results of shoreline classification. A series of reservoir impact lines will be prepared to delineate areas where limitations on residential land use or other measures may be required to manage public safety.	In addition, proposed reservoir impact safe lines should delineate areas where risk limitations exist for farm buildings, cultivated agriculture (including irrigation), livestock grazing, field access, surface water drainage, surface erosion hazard), use of farm machinery and other agriculture-related infrastructure requirements.	
9.1.2 Land Status, Tenure, and Project Requirements The EIS will: • Identify land ownership by area of private, the Proponent owned, and Crown land within the Project activity zones • Provide a summary of land tenure within the Project activity zones, with potential effects to tenured areas or activities to be assessed in accordance with Section 16 Land and Resource use • Provide maps illustrating the ownership, tenure and land		To accurately measure the impact of the alienation of farmland, draft EIS Guidelines should include evaluation, not only of existing crown grazing rights but also of potential future rights on Crown lands as well as on Proponent-owned lands.

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
• management areas with the Project activity zone • Describe the requirements to acquire or obtain new rights over private or government owned property to construct and operate the Project • Describe the approach for acquiring private property and rights to Crown land		
9.2.1 Surface Water Regime The EIS will describe existing surface water hydrology conditions in the Peace River. The Proponent proposes that the spatial boundary would be from Peace Canyon Dam downstream to Peace Point, Alberta. The EIS will describe existing surface hydrological features (reservoirs, rivers, tributaries), watershed boundaries, mean annual flows, and flood zones. The Proponent proposes that the spatial boundary would be from the Peace River down to Peace Point, Alberta, and the main drainage tributaries to the proposed reservoir (Lynx Creek, Farrell Creek, Halfway River, Moberly River). The EIS will describe in detail the hydraulic models that will be used to predict the potential changes in the hydrological regime as a result of the Project. The EIS will describe the following information for each model used: • input parameters and assumptions • outputs provided by the model • basis of the model methodology • the level of confidence • purpose for the model Models, as well as additional quantitative and qualitative assessment methods as required, will be used to describe: • the proposed reservoir (volume, bathymetry, maximum and minimum surface areas, active storage volume, and residence time)	Draft EIS Guidelines need to require determination of current agricultural water use and future agricultural water use needs (both quantity and quality), based on range of crop suitability, potential irrigation and/or livestock requirements and associated domestic use. Models also required to describe the implications for competing water users, including agricultural, both present and potential future.	Inadequate attention in the Draft EIS Guidelines given to assessment of anticipated impact of changes in surface and subsurface water levels on irrigation capacity and management for area farmers, both during the construction phase and following the completion of the Project - including mitigation measures and economic impact on farm management practices, cropping options and farm returns.

Draft EIS Guidelines section con't	*Agricultural Land use-Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
• anticipated changes in the hydraulic regime during construction (e.g., channelization, diversion, reservoir filling, and commissioning), including predicted ranges of water levels with inundation mapping for the construction head pond during channelization and diversion phases • seasonal flow patterns of post-construction flows, water levels, wetted widths, and average cross-sectional velocity statistics at selected locations on the Peace River downstream of the proposed dam to Peace Point, Alberta • expected frequency and range of water levels for the Project reservoir. A representative flow record will be used to assess hydrological conditions during construction and operation phases.		
9.2.3 Groundwater Regime The EIS will contain a description of the following existing conditions and potential changes to the groundwater regime. The Proponent proposes the spatial boundary to be from Peace Canyon Dam to the proposed Site C dam site: • location of water wells, infrastructure, contamination, and land use that could be affected by changes to the groundwater regime • development of a series of two-dimensional cross-sections at representative reservoir locations where reservoir filling could affect slope stability, land or • resource use • in the cross-sections, subsurface geology, aquifers and water table positions will be estimated for the baseline and reservoir conditions. Estimates will be based on a literature review, surface mapping, historic and recent geotechnical drilling, water well data, instrumentation monitoring results installed for the Project, aquifer tests (specifically single well rising and falling head tests), lab testing and two-dimensional numerical groundwater flow results	See comments under section 16.2.4. Requirement to monitor groundwater changes needs to be included within the EIS Guidelines.	See comment under section 9.2.1.

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
• qualitative extrapolation of the results of the two-dimensional cross-sections to lands nearby and adjacent to the reservoir using shoreline classification, geological fence diagrams and other available relevant hydrogeological information along the reservoir • the potential adverse effects of Project construction and operations on groundwater quality will be evaluated qualitatively by assessing the potential changes to groundwater chemistry due to the release of substances related to non-natural sources (known or potential contamination) or natural sources (geologic materials)		
9.2.5 Fluvial Geomorphology and Sediment Transport The EIS will present information regarding the existing conditions and predicted Project-related changes to fluvial geomorphology and sediment transport. The Proponent proposes the spatial boundary to be the Peace River between the Peace Canyon Dam and Peace Point, Alberta. The Proponent proposes the reservoir technical study area to extend from the Peace Canyon Dam to the proposed Site C Dam location. The Proponent proposes the downstream technical study area to extend from Site C to Peace Point, Alberta. The fluvial geomorphology and sediment transport investigations will characterize baseline conditions of the following parameters: • Suspended sediment characteristics and transport rates in the Peace River and tributaries in the reservoir technical study area and in the downstream technical study area within the anticipated extent of Project-related effects as determined from existing information • Bed material characteristics and bedload transport rates in the Peace River and tributaries in the reservoir technical study area and in the downstream technical study area within the anticipated extent of Project-related effects as determined from existing information • Historical locations, patterns, and rates of channel erosion and deposition in the downstream technical study area The sources of information reviewed will include: Channel mapping from remote sensing imagery (aerial photographs and satellite imagery)	Assessment of impact of sedimentation (e.g. on irrigation infrastructure), turbidity, water quality and channel erosion and deposition on existing and potential future agricultural use needs to be required for the area downstream of the proposed Site C dam.	

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
• Water Survey of Canada streamflow records • Project streamflow, turbidity and suspended sediment records • Project bed material sampling and bedload transport calculations • Any other relevant information The EIS will also present the results of predictive modelling, including a discussion of model reliability, used to characterize the potential changes in fluvial geomorphology and sediment transport and will consider the following: • Suspended sediment dynamics (inflow, deposition and outflow) in the proposed reservoir • Suspended sediment concentrations and tributary sediment mixing in the Peace River downstream of the proposed reservoir. The Proponent proposes the spatial boundary to be to Peace Point, Alberta • Bed material mobilization in the proposed Site C tailrace area • Channel erosion and deposition downstream of proposed Site C dam site. The Proponent proposes the spatial boundary to be to Peace Point, Alberta The EIS will describe the approaches used for predictive analyses of these parameters.		
9.3.1 Microclimate The EIS will present information regarding the existing conditions and predicted Project-related changes to the microclimate. The Proponent proposes the spatial boundary to be the Peace River Valley and at the Fort St. John airport. The Proponent proposes the microclimate technical study area to be defined by the results of preliminary modelling that indicated the spatial extent of potential Project changes to meteorology and microclimate. This area the Proponent proposes is the segment of the Peace River Valley from upstream of Hudson's Hope to downstream of Taylor, includes the predicted extent of the reservoir, and includes the Fort St John airport. This length is buffered by a rectangular shape with the edges between 10 to 20 km away from the reservoir's water surface.	See comments under sections 8.3.1, 16.2.3 and 16.2.4.	See comments under sections 16.2.3 and 16.2.4.

Draft EIS Guidelines section con't.	***Agricultural Land Use – Related Comments con't.***	***Agriculture Economics-Related Comments con't.***
The Proponent proposes to use the most current 30-year climate normals and hourly meteorological observations, both from Fort St John Airport, to characterize baseline climate conditions. For parameters not provided in standard climate normal format (e.g., absolute humidity), the hourly data for the 30-year period will be summarized in a format consistent with the climate normals provided by Environment Canada. This will include the following parameters : • Temperature: Annual average, extreme minimum and maximum, daily average, minimum and maximum by month • Precipitation - Annual and monthly total precipitation • Wind speed - Monthly and annual average, monthly extreme maximum • Relative and absolute humidity - Monthly and annual average humidity • Fog - Monthly and annual hours of potential fog The climate monitoring network in the Peace River Valley between Hudson's Hope and Taylor installed by the Proponent will be used to improve the understanding of microclimate parameters, including precipitation levels, wind speed and direction, air temperature, barometric pressure, humidity, solar radiation, and heat flux. The Proponent proposes to use the Weather Research and Forecast model to assess and evaluate potential changes in microclimate due to the proposed reservoir. The Weather Research and Forecast Model is a mesoscale numerical weather prediction system designed to serve both operational forecasting and atmospheric research needs. It is suitable for a broad spectrum of applications across scales ranging from metres to thousands of kilometres. It allows practitioners the opportunity to conduct simulations reflecting either real data or idealized configurations. The EIS will describe the model, including a discussion of the level of confidence of the predictions of the model, and its input and outputs. Inputs to the model that will be described in the EIS include: meteorological data and geophysical inputs that define land use category and terrain.		

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
14 ECONOMIC EFFECTS ASSESSMENT The EIS will summarize the economic effects based on the methodology described in Section 8 of these Draft EIS Guidelines. Technical data will inform the economic effects assessment. The interests of Aboriginal groups will be presented in the EIS in accordance with Section 15 and Section 20 of these Draft EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate additional baseline information as made available. **14.1 Valued Component Scoping and Rationale** Economic effects arise from changes to economic transactions, such as the Project's use of goods and services, employment of direct and indirect labour, and contracting and business opportunities, as well as Project-induced changes to government revenues. Government revenues will be reported in the Project Benefits section. Economic VCs and rationale for selection are described in Table 14.1.		There is inadequate reference to agriculture as an economic driver in the selection of Valued Components. 'Interaction with Project Components and Activities' column of Table 14.1 fails to recognize there will also be economic losses to local government revenue, labour market and regional economic development through the reduced agricultural opportunity due to the Project. i.e. The selection of Valued Components ignores the potential economic contribution of agriculture to the local and regional economy, jobs, food security, social well being and community resiliency.
14.4.5 Summary of Residual Effects on Regional Economic Development The EIS will summarize residual effects in a table format as shown in Table 8.4		See comment under section 14.1 above. In the absence of adequate reference to agriculture as an economic sector in the draft EIS Guidelines and given that analysis of agriculture economics-related impacts is dependent on agriculture baseline information, see comments under 16.2.3.
16.1 Valued Component Scoping and Rationale (Table 16.1) The land and resource use VCs are agriculture, forestry, oil, gas and energy, minerals and aggregates, harvest of fish and wildlife resources, outdoor recreation and tourism, navigation (air and water), and visual resources. Section 23.4 will summarize in a table format the renewable resources that have been considered in the various sections of the EIS. Table 16.1 outlines the rationale for selection of VCs in the Land and Resource Use section.	While the Agriculture Valued Component of Table 16.1 makes reference to the Agriculture Land Reserve under 'Federal and Provincial Regulations and Guidelines', it does not give the status and emphasis required by the legislation. See comments under sections 6.1 and 6.4. Under 'Interaction with Project Components and Activities', the focus needs to be on the loss of an area with a unique agricultural microclimate as this is the critical 'change' to the agricultural land base and crop/livestock production opportunities.	

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
16.2.3 Agriculture Baseline The agricultural baseline information will provide an understanding of the current agricultural land base, operations and systems, including the following key indicators:		
• Agricultural land capability ratings, using updated field observations or existing provincial mapping, and updated climatic capability using current climate data (see Kenk and Cotic 1983)	Inadequate reference within baseline key indicators to providing an understanding of the unique agricultural microclimate from the perspective of its impact on land capability, crop suitability, food biodiversity (fish, wildlife, native plants) and overall biological productivity of the Valley. See also comments under section 9.3.1.	
• Agricultural suitability of lands within the Project activity zone for growing different crops, determined using updated or available capability ratings, and rated as well suited, suited or not suited for various crops using methodologies similar to the former Gough et al. (1994)		Needs to include baseline information on potential changes in microclimate (temperature, precipitation, wind, humidity, fog) to enable assessment of impact on current and future cropping options, productivity, farm management costs and farm returns
• Agricultural utility ratings, to reflect the likelihood of each area being used for agricultural production in the future. The rating will be based on land capability ratings, as well as constraints to agricultural use (such as location, access, parcel size, land ownership or tenure, and land use plans or designations).	At best, determination of agricultural utility is subjective, as it is both time and future condition-dependent. The criteria suggested need to be both broadened and placed in this context.	
• Agricultural land use, determined from recent air photos of the Project area, Crown land tenures, field observations and land owner/operator interviews • Agricultural tenure on Crown lands, including range tenures and grazing licenses, determined from provincial data sources, within and near the Project activity zone.	It is also critical to clearly identify all proponent-owned and tenured Crown lands (BC Hydro Reserve impacted), including dates of purchase, in order to assess this as a factor in present agricultural land use.	Need information not only on existing range tenures and grazing licenses but also on potential for future expansion of same.
• Current and expected future agricultural operations and practices, determined through interviews with owners and operators of potentially affected agricultural operations, as well as through review of agricultural census information for the LAA as proposed by the Proponent	Approach and methodology to provide baseline information on current and expected future agricultural operations is inadequate. This needs to be carried out within the context of the provincial priority to preserve farmland, encourage farming and enhance food security as expressed through the Agricultural Land Commission Act and the provincially designated Agricultural Land Reserve. See also comments under sections 6.1, 6.4 and 8.3.1.	Baseline information on potential future agricultural operations and practices must take into account various climate change scenarios and their effect on crop options and productivity, peak oil and its effect on cost of food imported into the region (which changes comparative advantage and economics of local food production).
• Local and regional agricultural economic activity, determined through interviews with owners and operators, relevant agricultural associations, representatives of agriculturally related industries and representatives of government agencies		Need to include baseline metrics (gross income, farm input costs, net income) of Valley farm economy, including the reasons for current level of production of climatically adapted crops (e.g. impact of proponent-owned and tenured Crown lands). In addition, baseline information needs to be provided on both the direct and indirect impacts of farm sector economic activity on regional community and economy (i.e. multiplier effect).

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
• Local and regional food production and consumption estimates, determined through interviews with owners and operators of potentially affected agricultural operations, relevant agricultural associations, representatives of agriculturally related industries and representatives of government agencies.	Missing is any reference to consulting food consumers and public interest groups working to promote local food production and consumption.	More rigour is required in the methodology of determining production/consumption estimates in order to be able to assess impact of the Project. For example, the percentage – and trends over past decade - of community food needs provided by local product to local, regional and other more northern communities. i.e. "local" and "regional" should take into account the ability of this unique cropping range area to more competitively supply certain foods to northern communities as transportation (and therefore food) costs escalate. Hence northern communities may be considered both a stakeholder and a new or expanded market.
16.2.4 Potential Effects of the Project and Proposed Mitigation The EIS will assess how the Project has the potential to adversely affect agriculture. The potential to adversely affect agriculture will be assessed by taking into account the potential for the Project to result in changes to the following key aspects: • An estimate of the loss of agricultural land, including a description of these changes to the agricultural resource base on a local, regional and provincial scale • Description of effects to individual farm operations, including loss of land, effects to farm infrastructure, and changes to farm activities • Quantification of Projected immediate and longer-term effects to local, regional and provincial agricultural economies. This will include estimating changes in agricultural costs and revenues at the farm level, changes in opportunities for potential new agricultural economic activity, and changes to primary and secondary agricultural economic activity • Identification of potential changes to local food production and any changes to the ratio of food production to food consumption (a measure of food self-reliance) Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.	The draft EIS Guidelines are deficient in the following areas in terms of the key aspects that are to be used to assess Project impact on agricultural land use: • The framework for assessing Project impact on agriculture needs to be more directly grounded on the significance of the loss of agriculture land with a unique microclimate and a subsequent wider range of cropping options compared to other agriculturally capable lands elsewhere in the region or, in fact, elsewhere in the northern half of the Province. • In addition to agricultural land loss due to the Project, consideration must be given to agricultural lands (and existing and potential future) farm operations impacted – but not actually lost – due to the Project. • Missing is potential impact on water for agriculture irrigation (including high water quality horticulture enterprises), livestock and other farm/ranch operations. • Changes to groundwater volumes and levels as a result of the Project will not only impact existing and future agriculture groundwater uses but also increase risks – e.g. related to safe lines for cultivation, irrigation, livestock watering and agriculture infrastructure (e.g. field access) • Changes to farm activities need to take into account agriculture transportation requirements, including moving product to market, bringing supplies to farms/ranches, moving livestock and/or farm equipment from one part of farm/ranch unit to another.	The draft EIS Guidelines are deficient in the following areas in terms of the key aspects that are to be used to assess Project impact on agriculture economics: • In evaluating farming potential of region, must include negative impact of potential changes in microclimate (temperature, precipitation, wind, humidity, fog) on future cropping options, productivity, and farm returns. • Assessment of anticipated impact of changes in surface, subsurface and groundwater water levels on irrigation capacity and management for area farmers, both during the construction phase and following the completion of the Project – including mitigation measures and economic impact on farm management practices, cropping options and farm returns. • Implications of changed and disrupted traffic patterns on farming costs. See comments under sections 3.3.9 and 17.5.4. • Economic evaluation of slope stabilization initiatives on drainage and field management of existing farms abutting perimeter. See comments under section 3.3.9. • Impact of farmland alienation on existing farm infrastructure, economics of scale within the farm community, including potential farm community without the Project. (Primary and secondary effects). • Impact of loss of Valley farmland from the ALR on local, regional and provincial foodland capacity, now and in future under various climate change scenarios.

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
The EIS will describe Project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.	• In terms of potential mitigation measures, the proponent needs to be required to address the feasibility of mitigating the loss of unique microclimate agricultural lands i.e. How is it possible to recreate Valley microclimate characteristics elsewhere?	• The ability of cumulative mitigation measures to resolve adverse effects should be subject to risk analysis to ensure residual damage assessment reflects the potential for failed mitigation measures. (e.g. is properly risk-weighted). See comments under 8.5.2.2 and 8.5.3.
17 SOCIAL EFFECTS ASSESSMENT The EIS will summarize the social effects based on the methodology described in Section 8 of these Draft EIS Guidelines. Technical data will inform the social effects assessment. The interests of Aboriginal groups will be presented in the EIS in accordance with Section 15 and Section 20 of these Draft EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate additional baseline information as made available. **17.1 Valued Component Scoping and Rationale** Social considerations include potential adverse effects of the Project on the workforce, on local population, housing and community services, including health, emergency, education and transportation. Table 17.1 outlines the rationale for the selection of social VCs.	The VC selection in Table 17.1 takes an unrealistically narrow definition of 'social", ignoring both the contribution of a vibrant, diverse agricultural community (that includes the unique Valley cropping opportunities) to social well-being, community sustainability and resilience as well as the unique role that Valley bottom lands play in community culture, heritage and lifestyle opportunities – e.g. local access to food diversity in the broadest sense (including climate-adapted cultivated crops, wild fish, wildlife food species and native plants) plus recreational opportunities (e.g. hiking, river boating, photography, enjoyment of visual and spiritual resources).	Social effects assessment must include future impact on: • food security (supply) both locally and in northern communities • food accessibility (price) • food nutrition (quality, accessibility) • social and economic fabric of farming community • cumulative impact of the above on household and community wellness, well-being, security, happiness, resilience. • impact of withdrawal of land from ALR on capacity and resilience of provincial agricultural land base. See also comments under section 4.2.2.
17.5 Transportation **17.5.1 Transportation Spatial Boundaries** The Proponent proposes the LAA and RAA as described in Table 17.5. **17.5.2 Transportation Temporal Boundaries** The EIS will describe the temporal boundaries, which will reflect the methodology described in Section 8 of these Draft EIS Guidelines. **17.5.3 Transportation Baseline** The EIS will describe current road and rail transportation conditions, using the following key indicators: • Road traffic volumes • Road traffic counts • Road accident rates • Regional Road restrictions • Rail movements	Transportation baseline needs to consider agriculture interface. See comments under sections 3.3.5 and 3.5.6.	

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
Information sources will include published studies and statistics, and information made available to the Proponent from the private sector, local, regional and provincial organizations and governments, as well as traffic counts conducted by the Proponent. **17.5.4 Potential Effects of the Project and Proposed Mitigation** The EIS will assess how the Project has the potential to adversely affect transportation.		
The potential to adversely affect transportation will be assessed by taking into account the potential for the Project to result in changes to the following key aspects: • Road and rail transportation in the LAA as proposed by the Proponent • The need to develop and use regional road and rail transportation routes for the movement of equipment, materials and people • Specific transportation plans proposed by the Proponent • Local road and rail traffic forecasts of vehicle and rail movements, with specific reference to intersections near the City of Fort St. John, and to specific rail sidings and yards The results of the assessment of the Project on population and demographics, the workforce accommodation plan, and assumptions about workforce shift schedules during construction will be used to assess the effects on transportation Should potential adverse effects be identified, the potential mitigation measures will be identified and will include a description of how the mitigation measures can address the potential adverse effects.	Transportation impacts need to consider agriculture interface. See comments under section 16.2.4.	Detailed maps will be required showing changes related to existing agricultural uses and farm unit boundaries in order to properly evaluate economic impact on agriculture, including but not limited to: incremental farming costs if farm operations bisected; economic risk of spread of non-indigenous and invasive plants; cost of new gates and fencing to contain livestock and/or protect field crops; increased farm management costs arising from partitioned fields, potential weed contamination and potential impact on field drainage and irrigation; loss of isolation and potential impact on crop economics (e.g. removal of certified seed production as a crop option).
The EIS will describe Project residual effects, and cumulative effects, if applicable, using the residual effects characterization described in Table 8.3. A statement of significance will be provided.		Mitigation measures must be risk-weighted. Cumulative residual economic effects are not simply additive or linear; but rather, incremental and exponential.

Draft EIS Guidelines section con't.	*Agricultural Land Use – Related Comments con't.*	*Agriculture Economics-Related Comments con't.*
19 HEALTH EFFECTS ASSESSMENT The EIS will summarize the human health effects based on the methodology described in Section 8 of these draft EIS Guidelines. Technical data will inform the effects assessment on human health. The interests of Aboriginal groups will be presented in the EIS in accordance with Section 15 and Section 20 of these Draft EIS Guidelines. Where Aboriginal groups have identified interests in a VC, the Proponent will incorporate additional baseline information as made available. **19.1 Valued Component Scoping and Rationale** The health VC and rationale for its selection is described in Table 19.1. The selected VC is based on health values with potential interaction with the Project, regulatory requirements, and heath assessment guidelines (e.g., HC 2010a, HC 2010b, HC 2011).		The 'Interaction with Project Components and Activities' fails to take into account the influence of ready access to diverse and nutritious food upon human health. See comments under sections 4.2.2 and 17.
23.3 Cumulative Environmental Effects The EIS will provide an assessment of the potential cumulative adverse effects that are likely to result from the Project in combination with other Projects or activities that have been or will be carried out. **23.4 Capacity of Renewable Resources** The EIS will describe the type of renewable resources that may be significantly adversely affected by the Project.	A key deficiency in the draft EIS Guidelines is the failure to require the Proponent to address the full scope of 'cumulative effects', including not only cumulative effects of the proposed Project related to past and potential future projects (including impact of the long-standing Flood Reserve but also the cumulative (incremental) effect of the sum total of all individual impacts associated with this Project. See comments under section 8.5.3. In order to capture the full impact of the proposed Project, the impact assessments carried out under sections 9 to 19 inclusive must then be cumulatively assessed in the context of what may best be defined as Valley/Community (including First Nations' Communities) well-being, sustainability and resilience. See also comments under sections 4.2.2, 4.2.3, 8.5.3, 9.2.1, 9.2.5, 16.2.4 and 17.1.	See comment under section 8.5.3. Farming is a holistic process dependent on a well balanced and flourishing natural ecosystem and therefore Project impact on capacity of renewable resources has the potential to impact agricultural potential and operations. For example, if losses in biodiversity occur, this can upset the balance of the ecosystem and result in loss of farm productivity with negative economic consequences. This can be particularly serious for production reliant on organic and sustainable farming practices (specific market niche).
24 SUMMARY OF POTENTIAL RESIDUAL EFFECTS OF THE PROJECT The EIS will summarize each residual environmental, economic, and social, heritage or health effect in a table format as shown below.	'Land and Resource Use (including agriculture and unique microclimate) need to be added to the list of areas to be assessed for residual effects in Table 24.1 – based on the expanded list of candidate VCs (see comment under section 8.3.1) and according to criteria identified in Table 8.3.	

Summary and Conclusions

The proposed Site C Project is a large development with wide-ranging and significant impacts that will irreversibly alter the Peace River Valley and adjacent Community….forever. In keeping with our assigned tasks, Table 1 provides comments on draft EIS Guidelines deficiencies related to both specific aspects, such as inventory and planning information baseline, present agricultural land use, the Agricultural Land Reserve and potential economic losses to agriculture; and broader aspects, such as food security, ecosystem and other compatible/competing land/water uses and climate change. (Key sections most directly related to our Terms of Reference are draft EIS Guidelines sections 6, 14, 16 and 23.)

The following summarizes our key issues and concerns related to the draft EIS guidelines.

Key Agriculture Economics-Related Concerns *(for specific attention of PVEA)*

1. The draft EIS Guidelines do not adequately recognize the unique capabilities and strategic importance of Peace River Valley agriculture. The unique microclimate of the Valley, combined with its northern latitude (long hours of sunshine during the growing season) and suitable soils combine to make Peace River Valley farmland extremely productive. This is of strategic importance to both the region and the province. Evaluation of the potential loss of Valley farmland must take into consideration the unique and irreplaceable nature of the resource and the consequent economic and strategic impact thereof.
2. There is inadequate reference and recognition of agriculture as an economic driver in the selection of Valued Components. The draft EIS Guidelines also fail to recognize there will also be economic losses to local government revenue, labour market and regional economic development through the reduced agricultural opportunity due to the Project. i.e. The selection of Valued Components ignores the potential economic contribution of agriculture to the local and regional economy, jobs, social well-being and community resiliency. It also ignores the economic impact of land alienation and attendant reduction in farming activities on the local agricultural infrastructure pre and post farm gate.
3. The draft EIS Guidelines do not recognize the temporary and ongoing impact of the disruption caused by the construction process and temporary and permanent infrastructure changes (roads, transmission corridors, access ways) on the economics of farming.
4. The potential impact of biodiversity loss on the economics of farming is not adequately identified in the draft EIS Guidelines.
5. The draft EIS Guidelines do not recognize the impact of land alienation on food security (local, regional, provincial), nutrition, food accessibility/affordability and the potential to provide food to other northern communities. Gross Domestic Product

measurement is inadequate to accommodate social development attributes. A more broad-based Genuine Progress Indicator approach is required.

6. Despite the reference to Cumulative Effects Assessment, the parameters of impact assessments in the draft EIS Guidelines are linear and do not recognize either the combined or the incremental effects of multiple impacts. (The whole is greater than the sum of its parts.)
7. The draft EIS Guidelines mitigation methodology is inadequate. The ability of proposed mitigation measures to resolve the "potentially significant adverse effects" should be subject to risk analysis to ensure residual damage assessment reflects the potential that mitigation measures may fail. 'Significant' needs to be more clearly defined and assessment needs to be properly risk-weighted.

Key Agriculture Land Use-Related Concerns *(for specific attention of BCWI)*

1. A major deficiency in the draft EIS Guidelines is the failure to recognize the regulatory framework of the provincial Agricultural Land Reserve (ALR) within which a significant amount of the land that will be lost due to reservoir flooding or directly/indirectly impacted for future agricultural use is located. With its legislated mandate (and requirement) to protect agricultural land, promote provincial food security and support farm communities within the provincially designated ALR, the BC Agricultural Land Commission has an established, legal application process under which it considers proposals for exclusion of lands from the ALR or non-farm proposals within the ALR. The draft EIS Guidelines do not currently identify 'food security' or 'preservation of agricultural land' as Valued Components nor specifically require the Project proponent to address the implications of this provincial farmland preservation legislation.
2. There is inadequate consideration within the draft EIS Guidelines regarding the significance of the Valley microclimate from the perspective of agricultural land capability (range of cropping options), crop suitability, food biodiversity (fish, wildlife, native plants) and overall biological productivity – and, specifically, its uniqueness compared to other agriculturally capable lands elsewhere in the region or, in fact, elsewhere in the northern half of the Province.
3. While the draft EIS Guidelines require assessment of potential agricultural land loss due to the Project, there is inadequate priority given to agricultural lands (and existing and potential future) farm operations impacted – but not actually lost – due to the Project. This includes, but is not limited to, the need to more directly take into account agriculture transportation requirements (e.g. moving product to market, bringing supplies to farms/ranches, moving livestock and/or farm equipment from one part of farm/ranch unit to another) and risk limitations associated with reservoir safe lines (e.g. location of farm buildings, use of farm machinery, field access, surface water drainage and erosion hazard).

4. The draft EIS Guidelines do not adequately recognize the need to assess current agricultural water use and potential future agricultural water use needs (both quantity and quality), based on unique microclimate range of crop suitability, potential irrigation and/or livestock requirements and associated domestic use.
5. The draft EIS Guidelines take an unrealistically narrow definition of 'social' impact assessment, ignoring both the contribution of a vibrant, diverse agricultural community to social well-being, community sustainability and resilience as well as the unique role that Valley bottom lands play in community culture, heritage and lifestyle opportunities - e.g. local access to food diversity in the broadest sense (including climate-adapted cultivated crops, wild fish, wildlife food species and native plants) plus recreational opportunities, such as hiking, river boating, photography and enjoyment of the visual and spiritual resources of the Valley.
6. A key deficiency in the draft EIS Guidelines is the failure to require the Proponent to address the full scope of 'cumulative effects', including not only cumulative effects of the proposed Project related to past and potential future projects (including impact of the long-standing Flood Reserve) but also the cumulative (incremental) effect of the sum total of all individual impacts associated with this Project.

Joint Conclusion

Based on this analysis, it is our opinion that the draft EIS Guidelines would be an insufficient tool to properly assess and address the impacts of the proposed Site C Project upon agriculture - in the broadest context as captured in our combined terms of reference, including, by implication, 'agriculture' as an essential component of Community well-being, sustainability and resilience.