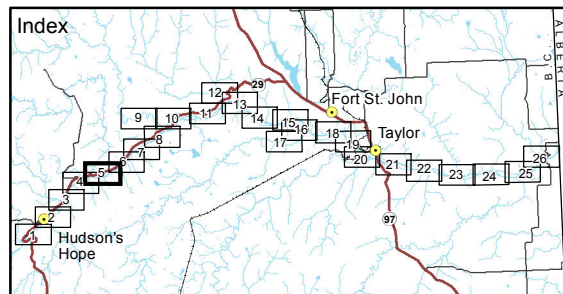
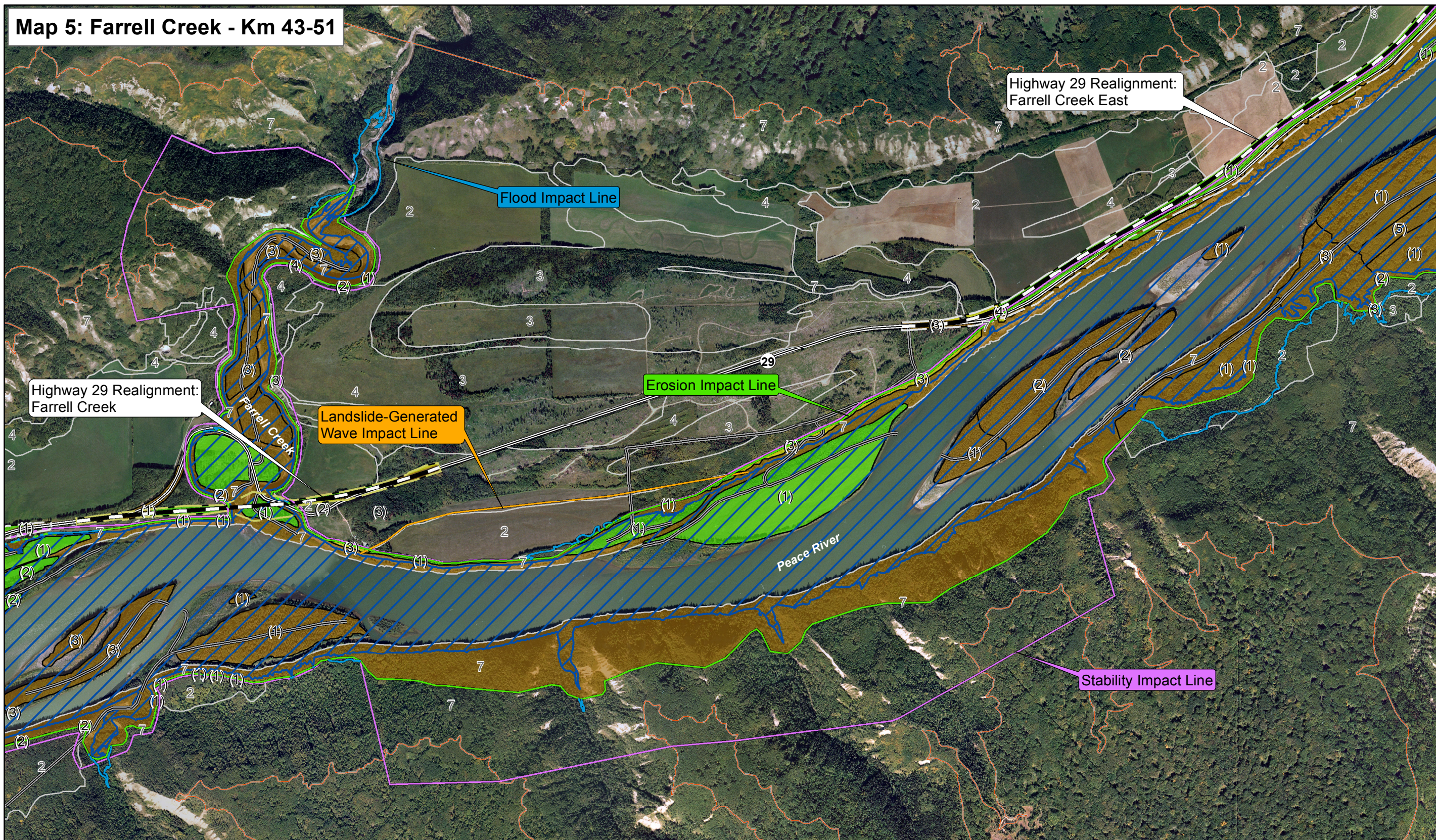


Kilometre	Current Conditions	Reservoir Conditions and Preliminary Impact Lines Related to the Proposed Site C Reservoir
43-51	<p>Location</p> <p>This map sheet covers from approximately river kilometre 43 to 51 (measured downstream from the W.A.C. Bennett Dam). Farrell Creek is located near the upstream end of the map sheet near river kilometre 44.</p> <p>Geology and Topography</p> <p>The proposed reservoir would extend about 3 kilometres up Farrell Creek where the reservoir shoreline would primarily be located in silty shale bedrock.</p> <p>Downstream of Farrell Creek, the north riverbank comprises terraces in sand and gravel and interbedded sand, silt and clay. Most of the slopes are moderately steep to steep and are subject to natural erosion and shallow landslides.</p> <p>Immediately opposite Farrell Creek, the south riverbank predominantly comprises a terrace in sand and gravel.</p> <p>Between approximately river kilometre 45 and 49, the south bank increases in height and comprises moderately steep slopes in interbedded sand, silt and clay that are covered by a layer of colluvium (slide debris). There is evidence that large landslides have occurred on these higher slopes in the past.</p> <p>Further downstream the south bank comprises a low-lying sand and gravel terrace.</p> <p>Highway 29 and Other Infrastructure</p> <p>Highway 29 is located along the north bank of the river.</p>	<p>Proposed Reservoir</p> <p>Within this map sheet, the proposed Site C reservoir would have a width ranging from about 400 metres to 1,000 metres. Based on the river surface elevation at the time of topographic survey, the reservoir would cause an increase in water depth over river conditions ranging from about 21 metres at the upstream end to about 26 metres at the downstream end.</p> <p>Preliminary Impact Lines</p> <p>Most of the proposed reservoir shoreline comprises steep slopes and the reservoir shoreline and the flood impact line would be located close together in aerial-view when the reservoir is first filled.</p> <p>Exceptions include between approximately river kilometre 46 and 47 along the north bank and between kilometre 49.5 and 51 on the south bank. At these locations the ground elevation is relatively low and the flood impact line extends further inland. On rare occasions, flooding of these low-lying areas could occur due to wind generated waves combined with high reservoir levels, or from small landslide-generated waves.</p> <p>The erosion impact line around the banks of Farrell Creek is typically located near the crest of the slope while the stability impact line is typically located less than 25 metres from the crest of the slope.</p> <p>Downstream of Farrell Creek the north bank of the proposed reservoir shoreline would predominantly be in sand and gravel until approximately river kilometre 47. Further downstream, it comprises interbedded sand, silt and clay with a cap of sand and gravel. The predicted amount of shoreline erosion in the sand and gravel over the life of the project is typically less than 20 metres while the predicted amount of erosion in the interbedded sand, silt and clay shoreline is typically less than 65 metres.</p> <p>Low-lying terraces downstream of Farrell Creek could potentially be affected by waves caused by landslides originating from the south bank of the proposed reservoir. Consequently, a landslide-generated wave impact line has been defined in this area. It roughly follows the 472 metre contour east of Farrell Creek. The likelihood of landslide-generated waves reaching the landslide-generated wave impact line over the life of the project is considered extremely low.</p> <p>Highway 29 Preferred Realignment – Farrell Creek</p> <p>The preferred alignment across Farrell Creek is shown in this map sheet.</p> <p>Highway 29 Realignment – Farrell Creek East (Potential)</p> <p>Between approximately river kilometre 49 and 51, Highway 29 is located on the reservoir side of the erosion and stability impact lines. At some locations, natural erosion and landslide processes are already encroaching on the highway. BC Hydro is proposing to realign the highway further inland, pending further geotechnical analysis.</p>
	<p>Agriculture Assessment</p> <p>Improved (irrigated and/or drained) agricultural land capability ratings are provided for the Site C project component areas where additional soil survey work has been undertaken as part of the Agriculture Assessment.</p> <p>For remaining lands outside the Site C project component areas, including the Peace River valley downstream of the Site C dam, unimproved agricultural land capability ratings are provided. The unimproved ratings reflect published agricultural capability maps from the 1970s, based on an assumed low climatic moisture deficit (CMD) during the growing season in the range of 34 mm. However, subsequent climate studies have confirmed much drier conditions in the Peace River valley, with a CMD in the range of 148 mm, which results in a Class 3 unimproved climatic capability rating. With irrigation, it is likely that Peace River valley soils downstream of the Site C dam historically rated as Class 2 or Class 3 with aridity or soil water holding capacity limitations, which would now be rated as unimproved Class 3 due to climatic limitations, would improve to Class 2 or Class 1 with irrigation.</p>	<p>Land Use Within Preliminary Impact Lines</p> <p><i>BC Hydro has developed an approach to land use on private property within the impact lines. The approach focuses on public safety, maximizing flexibility for land owners, and minimizing the amount of land required by the project. BC Hydro's approach would be as follows:</i></p> <ul style="list-style-type: none"><i>BC Hydro would purchase land between the current river shoreline and the area required for the proposed reservoir, up to the Maximum Normal Reservoir Level (461.8 metres above sea level)</i><i>No new residential structures would be permitted within impact lines</i><i>Non-residential structures could remain, pending site specific geotechnical assessment</i><i>Within the Stability Impact Line, existing residential structures could remain for a period of time, at the owner's request and provided a site-specific geotechnical assessment determines that it is safe to do so</i><i>Within the Flood, Erosion or Landslide-Generated Wave Impact Line, existing residential structures would not be permitted to remain, to protect public safety</i><i>Other activities such as agriculture, grazing and trapping could continue within the impact lines</i> <p><i>The establishment of reservoir impact lines is intended to ensure public safety while maximizing land use flexibility, and to minimize the amount of land required by the project. BC Hydro will purchase the property rights required for the impact lines. Where impacts and implications on zoning, land use and property acquisition cannot be avoided, BC Hydro will identify and evaluate options for mitigation.</i></p> <p><i>BC Hydro is meeting directly with property owners whose land may be impacted to discuss their specific property interests.</i></p>
	<p>Peace River Valley Definition</p> <p>BC Hydro defined the Peace River Valley as a spatial area, reflecting the Peace River mainstem from the Peace Canyon Dam to the B.C.-Alberta border. The upper edge of the Peace River Valley is defined as the crest of the top of high bank slopes, typically between El. 620 and 850m. The purpose of spatially defining the valley was to provide a consistent area for use where relevant in the Environmental Impact Statement.</p>	

Map 5: Farrell Creek - Km 43-51



Map Notes:

1. Datum/Projection: NAD83/UTM Zone 10N.
2. Orthophotos created from 1:40,000 scale photography taken Sept. 2007; 1:20,000 scale photography taken June, 2007; TRIM, Bing Maps Aerial 2012.
3. Proposed maximum normal reservoir level (full supply level-461.8m) from Digital Elevation Models (DEM) generated from LIDAR data acquired July/August, 2006. The surface area of the reservoir will change over time after reservoir filling as a result of shoreline erosion and deposition of sediment.
4. Preliminary flood impact line is based on an elevation of 466 m and is only shown when located outside of the preliminary erosion impact line.
5. Exact extent of Hudson's Hope Berm yet to be determined.
6. The amount of water level fluctuation downstream of the proposed dam will be dependent on factors such as the flow volume, depth, width and slope of the river.

Legend

- Proposed Reservoir
- Peace River Valley Definition
- Highway 29
- Access Routes
- Preferred Highway Realignment
- Preferred Highway Realignment Right-Of-Way
- Preferred Highway Realignment Corridor

Preliminary Impact Lines

- Preliminary Flood Impact Line
- Preliminary Flood Impact Line - Subject to final highway design
- Preliminary Erosion Impact Line
- Preliminary Erosion Impact Line - Subject to final highway design
- Preliminary Landslide-Generated Wave Impact Line
- Preliminary Stability Impact Line
- Preliminary Stability Impact Line - Subject to final highway design

Agriculture

- Agriculture Utility Class
- High
 - Moderate
 - Low
- Agriculturally Improved Capability Class (eg. with irrigation)
- (1) Capability Class 1-7 (Dominant)
- Unimproved Capability Class
- 1 Capability Class 1-7 (Dominant)

0 0.5 1 km

SITE C CLEAN ENERGY PROJECT		BC Hydro		
		Preliminary Impact Lines, Highway 29 Realignments & Agriculture Assessment		
Date	March 2013	DWG NO	1016-C14-B6192	R 1

The Site C Clean Energy Project requires environmental certification and other regulatory permits and approvals before it can proceed to construction. The information presented in these maps reflects current planning for the Site C Clean Energy Project and is subject to change as the project continues to be further defined.