Implementation plan developed for:

International Forest Products

as part of

Fish Passage Culvert Assessments in the Mid-Coast TSA

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Implementation Plan

Forsite Consultants Ltd. is currently working on a fish passage assessment project within the Mid-Coast TSA. This project is focusing on high value fisheries watersheds, as identified by the provincial government, including the Bella Coola, Sheemahant, Machmell, Kilbella, and Chuckwalla Rivers. The intention of this work is to assess culverts located within these watersheds that may be acting as barriers to fish passage.

In order to identify potential structures to be assessed we conducted a GIS analysis where known fish presence information, as documented in the provincial Fisheries Information Summary System (FISS) and other databases, was overlayed upon the road networks associated with each of the river systems outlined above. We also included suspected fish streams where no known information was available (using slope threshold values which are species specific 20-30%). We also used road data provided by International Forest products to aid in sampling of priority road networks.

It is important to note that during the field data collection we noted that the majority of identified culvert sites were actually open-bottom log culvert sites which were not a barrier to fish passage. We completed assessments on all of these structures noting the potential for these structures to eventually serve as barriers to fish passage. This assessment was important as these road systems are currently not active and the Kilbella and Chuckwalla road systems have been primarily deactivated. The log culvert structures that have been left in place on these road systems have begun to show signs of stress and are likely to fail in the near future – these structure failures may serve to block fish passage. Although these structures are not closed bottom structures the potential for future barriers to fish passage to be created by these structures is high and is important to note.

For each identified culvert, we completed detailed assessments which included a host of measurements related to the characteristics of the culvert as well as the potential for the culvert to be a barrier to fish passage. Using this information we scored each site based on its potential to serve as a barrier to fish passage and identified structures which are in need of replacement or retrofit. This analysis identified two structures, BEL62 and NUS01, which are serving as barrier to fish passage (please see Appendix 1 for site photos and Appendix 2 for site maps).

Upon completion of identifying these structures, we completed a cost-benefit analysis for each of these structures which took in to account the cost to replace the structure as well as the amount of habitat that would be gained should fish passage be restored. We also considered the cost-benefit of alternative options for replacing these structures to allow for fish passage. Table 1 outlines the results of this analysis.

Table 1. Priority Structures

Site No.	Barrier Score	HGI	Proposed Solution 1	Span (m)	Cost Estimate ($K)	Proposed Solution 2	Cost Estimate ($K)	Cost Benefit 1	Cost Benefit 2
NUS01	26	15	CB	6	40	3200x10 SS	36	0.38	0.42
BEL62	21	2.5	CB	6	40	2000x10 SS	45	0.06	0.05

In order to replace these structures, the implementation plan as outlined below would see site plans developed in December 2008 (weather permitting) with referrals completed by January 2009. This would allow for structures to be purchased by March 2009 in anticipation of structure replacement for the summer of 2009.

Table 2. Implementation Plan Timeline

Site No.	Planning	Site Plans	Referrals	Structure Purchase	Replacement
NUS01	November 2008	December 2008	January 2009	March 2009	Summer 2009
BEL62	November 2008	December 2008	January 2009	March 2009	Summer 2009

Appendix 1. Priority Site Photos

Site No. BEL62
Moderate quality fish habitat stream with suitable rearing habitat. 50mm fish noted within stream.

Culvert Dimensions: 600 mm x 10.0 m
Stream Width: 2.8 m
Fish Habitat Quality: Moderate

BEL62 – Outlet

BEL62 – Inlet

BEL 62 – Upstream

BEL62 – Downstream

BEL62 – Barrel

Site No. NUS01

Moderate quality habitat stream with potential for rearing and over wintering upstream and downstream of culverted site. Fish seen within creek.

Culvert Dimensions: 800 mm x 10.0 m
Stream Width: 1.2 m
Fish Habitat Quality: Moderate

NUS01 – Upstream

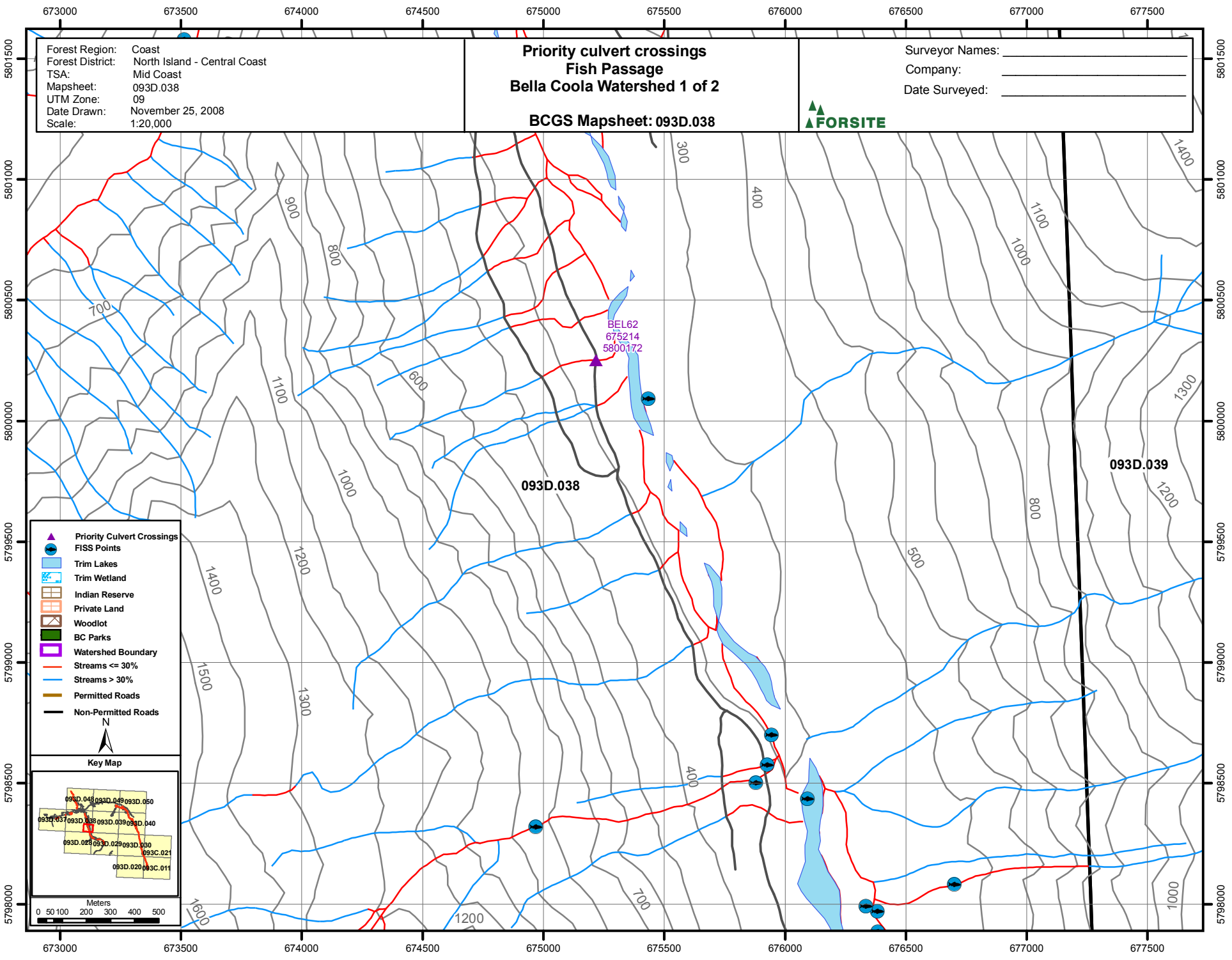
NUS01 – Downstream

NUS01 – Inlet

NUS01 – Outlet

NUS01 – Barrel

Appendix 2. Site Maps


Forest Region: Coast
Forest District: North Island - Central Coast
TSA: Mid Coast
Mapsheet: 093D.038
UTM Zone: 09
Date Drawn: November 25, 2008
Scale: 1:20,000
Priority culvert crossings
Fish Passage
Bella Coola Watershed 1 of 2
BCGS Mapsheet: 093D.038
Surveyor Names:
Company:
Date Surveyed:
FORSITE
BEL62
675214
5800172
093D.038
093D.039
Priority Culvert Crossings
FISS Points
Trim Lakes
Trim Wetland
Indian Reserve
Private Land
Woodlot
BC Parks
Watershed Boundary
Streams <= 30%
Streams > 30%
Permitted Roads
Non-Permitted Roads
N
Key Map
Meters
0 50 100 200 300 400 500
673000
673500
674000
674500
675000
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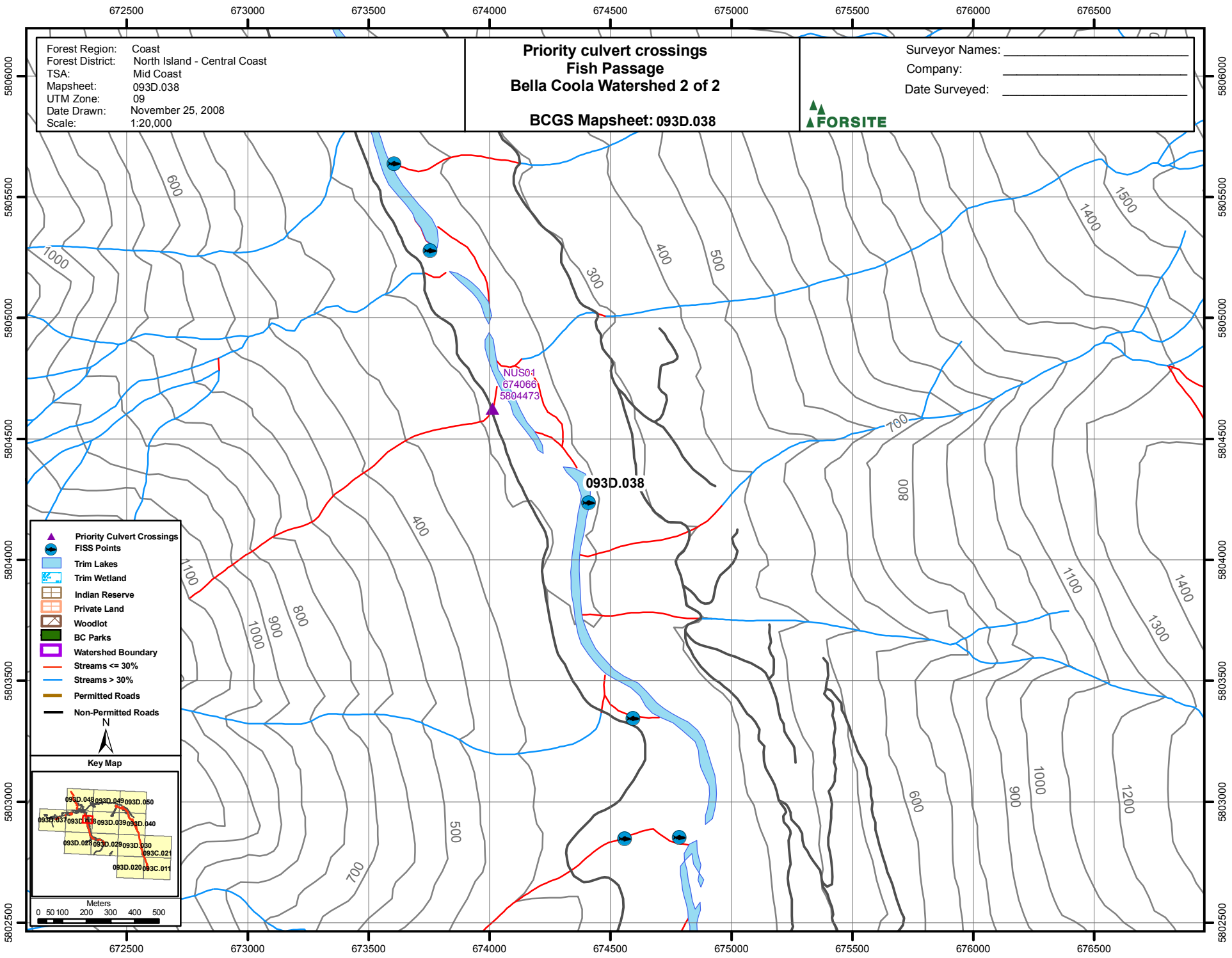
Forest Region: Coast
Forest District: North Island - Central Coast
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Mapsheet: 093D.038
UTM Zone: 09
Date Drawn: November 25, 2008
Scale: 1:20,000
Priority culvert crossings
Fish Passage
Bella Coola Watershed 2 of 2
BCGS Mapsheet: 093D.038
Surveyor Names:
Company:
Date Surveyed:
FORSITE
NUS01
674066
5804473
093D.038
Priority Culvert Crossings
FISS Points
Trim Lakes
Trim Wetland
Indian Reserve
Private Land
Woodlot
BC Parks
Watershed Boundary
Streams <= 30%
Streams > 30%
Permitted Roads
Non-Permitted Roads
N
Key Map
Meters
0 50 100 200 300 400 500
672500
673000
673500
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