



**ROUTINE EFFECTIVENESS EVALUATION
TSA 37
Bougehey Bay**

TFL Forest Limited

for:

Doug Reeve

by:

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December 6, 2005

Dossier 05.0229

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1.0 SYNOPSIS

Madrone Environmental Services Ltd. (Madrone) has completed a second, low-intensity post-works inspection of 22.9 km of road deactivation in the Boughey Bay area, TSA 37. The deactivation works had been completed in October 2003. Routine Effectiveness Evaluations (REEs) were completed by Michael Cullen Geotechnical the following November (2003) and by Madrone in September 2004. This 2005 post-works inspection is a follow-up to the 2003 and 2004 REEs.

The majority of the assessed deactivation is successfully achieving the objectives of preventing mass wasting, limiting sedimentation into creeks, and reestablishing natural drainage networks. Several identified minor exceptions are listed below.

1.1 Monitoring Recommended

- Boughey Branch B-1, Stations 18–19 and 27–30.
- Boughey Branch B-1A, Stations 16 and 18.
- Boughey Branch B-3, Stations 7–12 and 99–100.

2.0 INTRODUCTION

Madrone Environmental Services Ltd. (Madrone) was retained by TFL Forest Ltd., under Forest Investment Account contract 6435003a, to conduct a Routine Effectiveness Evaluation (REE) along 22.9 km of road deactivation in the Boughey Bay area in Johnstone Strait, approximately 25 km northwest of Sayward and 15 km west of Port Neville. The field assessments were performed by Brian Roberts, M.Sc., P.Ag, P.Geo., and assisted by Wanda Miller, B.Sc., G.I.T., in September 2005 for the following roads.

Location	Road Identifier	Road Length (km)	Year Deactivated
Boughey Bay	B M/L	4.2	2003
Boughey Bay	B M/L SW	2.8	2003
Boughey Bay	B1	1.9	2003
Boughey Bay	B1A	1.2	2003
Boughey Bay	B2	0.9	2003
Boughey Bay	B3	6.7	2003
Boughey Bay	B3A	1.2	2003
Boughey Bay	B3-2	0.6	2003
Boughey Bay	B3-2A	0.2	2003
Boughey Bay	B3-3	1.4	2003
Boughey Bay	B4	1.2	2003
Boughey Bay	B5	0.6	2003

2.1 Scope

The purpose of this REE is to assess if the road deactivation works are achieving their objectives of preventing mass wasting, preventing sedimentation into creeks, and reestablishing natural drainage networks. To do this, we looked for evidence of actual mass wasting, erosion, and natural drainage and fish passage impediment that had occurred since the works were completed, or was obviously imminent. The assessments are specifically not intended to assess the appropriateness of the deactivation prescriptions, or the conformance of the actual works with the prescriptions.

To the extent that the works are failing to achieve their objectives, we assessed the need for remedial works.

2.2 Assessment Method

The work was completed in conformance with the FIA General Standards¹ (April 1, 2003) and the FIA Activity Specific Standards for Road Deactivation, Gully and Landslide Rehabilitation Projects, Version 5, Effective November 20, 2003.²

A visual qualitative assessment was carried out for all deactivation works on the subject roads. The great majority of the deactivated roads were field checked on foot. Where deemed appropriate, road segments on gentle slope gradients and/or with no previous issues were inspected from helicopter or other suitable viewpoints.

The assessment utilized site-level indices to determine the effectiveness of the deactivation works. The indices used were:

- Presence/absence of fill slope failures.
- Presence/absence of large cut slope failures or failures that impact on streams.
- Degree of road surface erosion scouring.
- Extent to which water is confined to intended channel.
- Extent of scouring or erosion in water crossings.
- Potential for fish passage in creeks with high potential for fish presence.

3.0 EVALUATION RESULTS

The results of the REE are presented in detail in Table 1. Only those locations where there is evidence that the deactivation works are failing to achieve their objectives are included in the table. Table 1 also includes recommendations for further detailed evaluation, action, or monitoring, if warranted.

¹ General FIA Standards, Ministry of Forests, Land Base Investment Program, Effective April 1, 2003.
<http://www.for.gov.bc.ca/ftp/hfp/external!/publish/FIA%20Documents/Standards/FS1001.pdf>

² FIA Activity Standards Document. Ministry of Forests, Version 3: 2003/2004, Land-base Program, Infrastructure Component, Roads Activity Area Standards for Environmental Maintenance Projects on Non-status Forest Roads Posted to FIA Web Site on November 20, 2003.
<http://www.for.gov.bc.ca/ftp/hth/external!/publish/Engineer/fia-activity-standards-fish-passage.pdf>

Table 1. Road Deactivation Effectiveness Observations

Road/Station	Observations	Recommended Detailed Evaluation/Action	Monitoring Recommended?
BOUGHEY BAY			
Boughey M/L – Stations 1–8 viewed from helicopter; Stations 9–end walked.			
Stations 4–6	Minor erosion at culvert outlet. Armoured channel with low future sedimentation potential.		No
Station 9	Minor erosion at culvert outlet. Armoured channel with low future sedimentation potential.		No
Station 23	No significant change since last report. Minor erosion down grade for approx. 50 m from through-cut. Sedimentation potential is low.		No
Station 41	Previously reported channel obstruction is not blocking flow. Deactivation meeting objectives.		No
Branch B M/L SW – Walked.			
Station AF	Previously reported potential blockage to fish passage from woody debris not observed. Deactivation meeting objective.		No
Station AG	Previously reported potentially blocks fish passage from woody debris not observed. Deactivation meeting objective.		No
Branch B-1 – Viewed from Helicopter.			
Stations 1–10	No significant change since last report. Deactivation meeting objectives.		No
Stations 18–19	No significant change since last report. Creek causing minor erosion along road alignment, but not a significant sedimentation or stability concern.		Monitor
Stations 27–30	No significant change since last report. Moderate erosion along ditch line.		Monitor
Branch B-1A – Viewed from Helicopter.			
Station 2	Previously reported potential blockage to fish passage from woody debris not observed. Deactivation meeting objective.		No
Station 16	No significant change since last report. Minor erosion in cross-ditch will continue to incise and will most likely self-armour into coarse underlying material.		Monitor
Station 18	Creek runs partially along coarse road fill causing minor erosion. No stability or significant sedimentation concerns.		Monitor
Branch B-2 – Walked.			
	No significant change since last report. Deactivation meeting objectives.		No



Table 1. Road Deactivation Effectiveness Observations (*continued*)

Road/Station	Observations	Recommended Detailed Evaluation/Action	Monitoring Recommended?
Branch B-2A – Viewed from helicopter and B-2.			
	No significant change since last report. Deactivation meeting objectives.		No
Branch B3 – Walked.			
Stations 7–12	No significant change since last report. Excess, well-drained rocky fill remains on bedrock bench and is considered a moderate hazard with low consequence.		Monitor
Station 59	No significant change since last report. Historic shallow debris flow to bare bedrock appears to have stabilized.		No
Station 93	No significant change since last report. Minor erosion from surface flow across rocky soils in pullback fill.		No
Stations 99–100	No significant change since last report. Seepage along face cutslope and across road surface. Rocky fill supported by stumps. Considered moderate hazard with low consequence.		Monitor
Branch B3A – Viewed from helicopter.			
	No significant change since last report. Deactivation meeting objectives.		No
Branch B3-2 – Walked.			
	No significant change since last report. Deactivation meeting objectives.		No
Branch B3-2A – Walked.			
	No significant change since last report. Deactivation meeting objectives.		No
Branch B3-3 – Walked.			
	No significant change since last report. Deactivation meeting objectives.		No
Branch B3-4 – Walked.			
	No significant change since last report. Deactivation meeting objectives.		No
Branch B3-5 – Walked.			
	No significant change since last report. Deactivation meeting objectives.		No
Branch B4 – Walked.			
Station 5	Minor ravel of coarse pull-back material traveled 15 m downslope but did not enter creek. Significant future instability is unlikely.		No
Branch B5 – Viewed from Helicopter.			
	No significant change since last report. Deactivation meeting objectives.		No



4.0 CONCLUSIONS

No significant change in the condition of the roads was observed during this REE. As reported in 2004, many of the inspected roads exhibit some minor erosion, but the majority of the deactivation is meeting the objectives of preventing mass wasting, preventing sedimentation into creeks, and reestablishing impeded fish passage. Significant erosion and other serious post-deactivation issues are rare. However, some noteworthy areas were identified where further monitoring and/or action is recommended.

Additional monitoring is warranted at the following road locations:

- Boughey Branch B-1, Stations 18–19 and 27–30.
- Boughey Branch B-1A, Stations 16 and 18.
- Boughey Branch B-3, Stations 7–12 and 99–100.

5.0 LIMITATIONS

The observations and recommendations provided in this report are based primarily on field observation of surface conditions and limited subsurface conditions exposed in road cuts, slope failures, gullies, and/or shallow soil pits at the time the field work was conducted. No other subsurface investigation was performed, and no laboratory tests were conducted. Geological conditions other than those observed may exist on the site. If such conditions are observed, Madrone Environmental Services Ltd. should be contacted so that this report may be reviewed and amended accordingly.

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