ENVIRONMENTAL FIELD PROCEDURE - 04

ROADS, BRIDGES AND CULVERTS

Purpose and Scope

This Environmental Field Procedure (EFP) applies to all BC Timber Sales (BCTS) licensees, permittees, and contractors (LPC), including their employees, agents, and subcontractors, involved in permanent and temporary road, bridge and culvert construction, maintenance, inspection, and deactivation within the scope of the BCTS Environmental Management System (EMS). It describes procedures to reduce the risk of negative impacts of these field activities on the environment. This EFP does not replace the requirements of legislation, licences, permits, and contracts.

Road, Bridge and Major Culvert Inspections

1. Understand all applicable inspection and engineering requirements. Know which sites and structures require assessments. Assessments must be done by those trained and professionally competent.
2. Review all relevant assessments prior to inspection. Understand their management implications.
3. Review or walk the project area, as well as the surrounding area of influence, to ensure all relevant field information is collected, complete, reported and mapped.
4. Understand and use the appropriate inspection form. Record all inspection results, identifying any deficiencies or additional inspection requirements and submit to the project supervisor.

Road Construction, Maintenance and Deactivation

1. Have a project plan (e.g., road layout and design, plans and profiles, deactivation, maintenance).
2. Ensure compliance with applicable timing windows and other specifications (e.g., fisheries windows, community watersheds, migratory birds, wildlife, recreation).
3. Ensure safety signage is posted on sites as required.
4. Construct and maintain the road to ensure the structural integrity of the road prism and clearing width are protected, the drainage systems are functional, and the road is safe for industrial use.
5. Report to the project supervisor any road conditions which may adversely affect the environment (e.g., siltation of streams, lakes or other water bodies, or deterioration of the road).
6. Incorporate considerations for extreme weather events and climate change to ensure functionality of roads and protection of the environment.
7. Have appropriate water control measures on roads at locations where there is a risk of erosion, impacts to water quality, classified stream or fish habitat.
8. Before equipment demobilization or prior to temporary or seasonal shutdown, and/or when precipitation is occurring in an amount causing erosion of surface material:
    a. Install back-up cross ditches at culvert locations.
    b. Establish water-bars and breach grader berms to disperse runoff.
    c. Perform site clean-up to ensure water management features (culverts, ditches) are clean of introduced logging debris and functional.
9. Maintain natural surface drainage patterns. Avoid directing water onto unstable slopes or erodible soils; direct water to stable slopes and/or armour outfalls with rock.
10. Minimize the impact on water quality and site productivity:
    a. Operate during favourable weather and site conditions. Know the project shutdown criteria.
    b. Install culverts and other drainage structures concurrently with subgrade construction.
    c. Utilize sediment control measures as required (e.g., silt fences, hay bales, rock armouring, swales, water bars or sediment ponds).

d. Clean introduced debris from ditches, streams and culverts on an on-going basis before any impact can occur.
e. Ensure road surface drainage is directed to drainage structures and is not impeded.
f. Minimize erosion potential of exposed soil surfaces by seeding of disturbed areas.
g. Seeding must be at appropriate times and with an appropriate mix of seed to ensure effectiveness and avoid the spread of invasive species.

11. Control blasting to minimize fly-rock damage and slope instability. Adhere to blasting timing windows.
12. Know the locations of end-haul and spoil sites.
13. Do not remove gravel or other fill from Riparian Management Areas. Avoid constructing pullouts in Riparian Management Areas.
14. When re-establishing natural drainage patterns during road deactivation, the road fill should be removed down to the natural ground level. Cut and fill slopes must be left in a stable condition.
15. Prepare professional conformance and assurance statements if required for road design, construction, maintenance and deactivation.

Bridge or Culvert Installation, Maintenance and Removal

1. Have a project plan deemed appropriate by a qualified professional (e.g., installation, deactivation, maintenance).
2. Bridges and major culverts (greater than or equal to 2000mm) require a coordinating registered professional and professional of record to oversee, design, inspect and sign-off the project.
3. Comply with timing windows, legislation and other specifications (e.g., *DFO Fisheries Act* "projects near water" requirements and guidance, fisheries windows, community watersheds, migratory birds, wildlife, blasting, stakeholders).
4. Construct and maintain bridges and culverts in accordance with the project plan. Ensure bridges and culverts are structurally sound, appropriate and safe for industrial use.
5. When working on crossings, know the stream classification, management zone and associated prescription. During construction of temporary access trails, minimize the impact to water features.
6. Minimize the impact on water quality and site productivity:
   a. Install culverts and other drainage structures concurrently with subgrade construction.
   b. Utilize sediment control measures as required (e.g., silt fences, hay bales, rock armouring, swales, water bars, or sediment ponds).
   c. Clean introduced debris from ditches, streams and culverts on an on-going basis, and before any blockages can occur.
   d. Incorporate considerations for extreme weather events and climate change to ensure functionality of roads and protection of the environment.
   e. Minimize erosion potential of exposed soil surfaces by seeding of disturbed areas.
   f. Seeding must be at appropriate times and with an appropriate mix of seed to ensure effectiveness and avoid the spread of invasive species.
7. Operate during favourable weather and site conditions. Know the project shutdown criteria.
8. Temporary structures such as log bundles must be removed prior to unfavourable conditions.
9. Avoid placing erodible materials on bridge decks, in stream channels or on flood plains. Clean bridge decks and remove erodible materials.
10. Maintain natural surface drainage patterns. Avoid directing water onto unstable slopes or erodible soils; direct water onto stable slopes and/or armour outfalls with rock.
11. Armour culvert inflows, outflows and fill slopes to minimize erosion as required. It is a good practice to pre-mark inlet and outlet culvert locations to ensure appropriate road prism fit. Culvert installation should consider skew, slope and percent of embedment as designed.
12. Dispose of wood culvert/bridge debris in designated sites outside riparian management areas.

13. Ensure professional conformance and assurance statements are prepared for bridges and major culverts by the professional of record (POR).

Fire Hazard Assessment and Abatement

1. Complete hazard assessments at prescribed intervals and complete abatement in accordance with the *Wildfire Act* and Regulation. Submit assessment to BCTS upon request.
2. If burning is part of the plan for abatement, ensure required notification is made, approvals received and conditions followed. Ensure burn area is safe from escape and clear of hazardous or sensitive areas. Monitor burned sites for extinguishment.

Stop Work – Contact Your Project Supervisor and BCTS Representative if:

- There is a hazardous material spill, uncontrolled fire or erosion/landslide event.
- There is uncertainty about the project plan, the responsibilities or the location of hazardous or sensitive areas.
- A previously unidentified resource feature, resource value or sensitive area is found (e.g., species of management concern, bear den, wildlife habitat feature, culturally modified trees).
- Unfavourable weather or site conditions could cause environmental damage.
- Conditions have the potential for immediate environmental damage.
- There is reason to believe the project plan will not work.