

List of Mitigations for Cosh Creek Blocks

Block	Mitigation Measures
Block C5	<p><u>Dispersed Retention.</u> Regarding dispersed retention, the following mitigative measures will be taken: 1) Leave all aspen and birch regardless of condition. 2) Leave large diameter standing snags unless they are a worker safety hazard, in which case a 3m stub can be left. 3) Leave 25-35 conifers per hectare uniformly across the entire opening using the following parameters: a) All trees will be dominant or co-dominant. B) Species preference will be Subalpine Fir&gt;White Spruce&gt;Lodgepole Pine. C) All trees will be single or in small aggregates of 2-3 trees. D) All trees will be above average diameter for the stand, and preferably some of the largest diameter trees will be included (low height to diameter ratio for wind firmness). E) Spacing will vary to allow operational flexibility but will be roughly 17 to 20m between trees or aggregates. f) Most of the trees will be of good form and vigor (straight with healthy crowns). In addition, the following non-merchantable trees will be left in all V17, V21, &amp; V22 types: 1) Leave any scattered White Spruce (&lt;7m tall, &gt;40% live crown and 13.5cm DBH) of good form and vigor where it is operationally feasible to do so.</p>
	<p><u>Temporary Access:</u> Rehabilitation of temporary access roads includes: 1) removal of culverts, cleaning of ditches and restoration of natural drainage; 2) ripping of excessively compacted areas; 3) re-spreading of overburden and replanting. All construction and harvesting debris will be scattered away from seasonal draws and natural drainage patterns will be maintained immediately after harvesting. Rehabilitate all roads and landings that have been designated as temporary access and included with the net area to be reforested.</p>
	<p><u>Riparian Reserve and Riparian Management Zones</u> The Cosh Creek, a Class 3 stream, and two small Class 4 streams (labeled Stream 'B' and 'C' on the site plan map) are located within the vicinity of this block; therefore, a 30 m reserve zone and a 70 m management zone will be applied to the streams.</p>
	<p><u>Wildlife Values</u> The contiguous landscape level Forest Ecosystem Network (FEN) will provide interior forest habitat for late seral species (Marten, Boreal Owls, etc.), while internal reserves and/or dispersed on-block retention provides stand structural diversity, visual screening, and "edge effect" throughout the harvest area for early seral species (Moose, Bear, etc.). In addition, both dispersed and aggregated retention will provide for biodiversity through "life boating", "enrichment" and "connectivity" at the stand level until this block returns to mature forest. Dispersed and aggregated retention also provides transitional elements between late and early seral stand structures that has been shown to increase utility of an area to both early and late seral species.</p>
	<p><u>Visual Quality</u> This block has been classified as having potential visual sensitivity from viewpoints along the Alaska Hwy. A Digital Terrain Model (DTM) has been completed for this block to help determine the level of variable retention that will be required. Based on the results of the DTM it has been found that the southeast corner of Block</p>

	<p>C5A is highly visible from the Alaska Highway however, dispersed retention of 25-35 trees/hectare in C5A, combined with the 35.5 ha of aggregated retention, is sufficient to ameliorate visual concerns. The existing visual quality will also improve since the retention proposed in Block C5 will help to feather the edges of the existing cut-blocks (also highly visible), allowing them to better blend in with adjacent stands.</p>
	<p><u>Season of Harvest:</u> The preferred season of harvest is winter, although there is a summer option. The following are criteria to be met for summer harvesting: 1) All access routes must be upgraded to allow for summer haul; 2) Harvesting must be done during dry soil conditions to minimize site degradation; 3) Minimize duff disturbance to reduce aspen suckering (i.e., use a dispersed skidding pattern, do not blade skid trails, if available use rubber tired skidders); 4) Access would become permanent for any road that access more than one landing. In the case of Block C5, this would include the C5-2 Road to the junction with the C5-3 Road (the remaining roads, or sections of roads, would remain temporary access).</p>
	<p><u>Reforestation:</u> Prompt reforestation with large stock, provides the best chance of circumventing potential aspen and brush competition problems. Monitor plantation annually and provide remedial action if brush or aspen prevents achievement of free growing status.</p>

Block	Mitigation Measures
Block C9	<p>Regarding dispersed retention, the following mitigative measures will be taken: 1) Leave all aspen and birch regardless of condition. 2) Leave large diameter standing snags unless they are a worker safety hazard, in which case a 3m stub can be left. 3) Leave 10-20 conifers per hectare uniformly across the entire opening using the following parameters: a) All trees will be dominant or co-dominant. b) Species preference will be Subalpine Fir&gt;White Spruce&gt;Lodgepole Pine. c) All trees will be single or in small aggregates of 2-3 trees. d) All trees will be above average diameter for the stand, and preferably some of the largest diameter trees will be included (low height to diameter ratio for wind firmness). e) Spacing will vary to allow operational flexibility but will be roughly 20 to 30m between trees or aggregates. f) Most of the trees will be of good form and vigor (straight with healthy crowns). To supplement this mature tree retention the following non-merchantable trees will be left in V16 types: 1) Leave random clumps of Subalpine Fir advanced regeneration (&lt;7m tall &amp; &lt;13.6cm DBH), where operationally feasible. These clumps will preferably be associated with the mature leave trees or aggregates for maximum effect and ease of harvesting (i.e., minimize the amount of non-merchantable Subalpine Fir slash by retaining the natural clumps of trees that currently exist in these stand types). In addition, the following non-merchantable trees will be left in V22 types: 1) Leave any scattered White Spruce (&lt;7m tall, &gt;40% live crown and 13.5cm DBH) of good form and vigor where it is operationally feasible to do so.</p>
	<p><u>Temporary Access:</u> Rehabilitation of temporary access roads includes: 1) removal of culverts, cleaning of ditches and restoration of natural drainage; 2) ripping of excessively compacted areas; 3) re-spreading of overburden and replanting. All construction and harvesting debris will be scattered away from seasonal draws and natural drainage patterns will be maintained immediately after harvesting. Rehabilitate all roads and landings that have been designated as temporary access and included with the net area to be reforested.</p>
	<p><u>Riparian Reserve and Riparian Management Zones</u> Stream J has a 30 m reserve zone and a 70 m management zone associated with it.</p>
	<p><u>Wildlife Values</u> The contiguous landscape level Forest Ecosystem Network (FEN) will provide interior forest habitat for late seral species (Marten, Boreal Owls, etc.), while internal reserves and/or dispersed on-block retention provides stand structural diversity, visual screening, and "edge effect" throughout the harvest area for early seral species (Moose, Bear, etc.). In addition, both dispersed and aggregated retention will provide for biodiversity through "life boating", "enrichment" and "connectivity" at the stand level until this block returns to mature forest. Dispersed and aggregated retention also provides transitional elements between late and early seral stand structures that have been shown to increase utility of an area to both early and late seral species.</p>

	<p><u>Visual Quality</u> Variable Retention harvesting using dispersed (10-20 trees/hectare) and aggregated retention will minimize the visual impact of this block. This block has low visual concerns as it is naturally screened by adjacent stands and land formations.</p>
	<p><u>Season of Harvest:</u> The preferred season of harvest is winter, although there is a summer option. The following are criteria to be met for summer harvesting: 1) All access routes must be upgraded to allow for summer haul; 2) Harvesting must be done during dry soil conditions to minimize site degradation; 3) Minimize duff disturbance to reduce aspen suckering (i.e., use a dispersed skidding pattern, do not blade skid trails, if available use rubber tired skidders); 4) Access would become permanent for any road that access more than one landing.</p>
	<p><u>Reforestation</u> Preparation objectives would be to create plantible spots, promote soil warming and retain or mixing in organic material. Suitable alternatives would be chain drag, disc trench, screef &amp; raw plant. Excavator rake/pile or spot burning would be options if slash levels are excessive. Microsite plant pine and spruce 2+0 310 or equivalent stock. If raw planting, obstacle plant for soil warmth.</p>

Block	Mitigation Measures
Block C12	<p><u>Dispersed Retention.</u> Regarding dispersed retention, the following mitigative measures will be taken: 1) Leave all aspen and birch regardless of condition. 2) Leave large diameter standing snags unless they are a worker safety hazard, in which case a 3m stub can be left. 3) Leave 25-35 conifers per hectare uniformly across the entire opening using the following parameters: a) All trees will be dominant or co-dominant. B) Species preference will be Subalpine Fir&gt;White Spruce&gt;Lodgepole Pine. C) All trees will be single or in small aggregates of 2-3 trees. D) All trees will be above average diameter for the stand, and preferably some of the largest diameter trees will be included (low height to diameter ratio for wind firmness). E) Spacing will vary to allow operational flexibility but will be roughly 17 to 20m between trees or aggregates. f) Most of the trees will be of good form and vigor (straight with healthy crowns). In addition, the following non-merchantable trees will be left in all V17, V21, &amp; V22 types: 1) Leave any scattered White Spruce (&lt;7m tall, &gt;40% live crown and 13.5cm DBH) of good form and vigor where it is operationally feasible to do so.</p>
	<p><u>Temporary Access Rehabilitation</u> of temporary access roads includes: 1) removal of culverts, cleaning of ditches and restoration of natural drainage; 2) ripping of excessively compacted areas; 3) re-spreading of overburden and replanting. All construction and harvesting debris will be scattered away from seasonal draws and natural drainage patterns will be maintained immediately after harvesting. Rehabilitate all roads and landings that have been designated as temporary access and included with the net area to be reforested.</p>
	<p><u>Riparian Reserve and Riparian Management Zones</u> The Cosh Creek, a Class 3 stream, and two small Class 4 streams (labeled Stream 'E' and 'D' on the site plan map) are located within, or in the vicinity of, this block. A small portion (0.91ha) of the Riparian Management Area (RMA) of Stream 'E' lies within portions of Block C12 B, and C, while another very small portion (.03ha) of the Stream 'D' RMA touches the southern tip of Block C12A. The RMA is made up of the Riparian Reserve Zone (RRZ) that has been excluded from the harvesting boundary and the Riparian Management Zone (RMZ). The sections of RMZ that lie within the harvesting boundary will be treated as per the adjacent treatment unit (i.e. retention at 30-40 trees/ha). The entire RMA of Cosh Creek lies well outside of the harvesting boundary of this block.</p>
	<p><u>Wildlife Values</u> The contiguous landscape level Forest Ecosystem Network (FEN) will provide interior forest habitat for late seral species (Marten, Boreal Owls, etc.), while internal reserves and/or dispersed on-block retention provides stand structural diversity, visual screening, and "edge effect" throughout the harvest area for early seral species (Moose, Bear, etc.). In addition, both dispersed and aggregated retention will provide for biodiversity through "life boating", "enrichment" and "connectivity" at the stand level until this block returns to mature forest. Dispersed and aggregated retention also provides transitional elements between late and early seral stand structures that have been shown to increase utility of an area to both early and late seral species.</p>

	<p><u>Visual Quality Variable</u> Retention harvesting using dispersed and aggregated retention will minimize the visual impact of this block.</p>
	<p><u>Season of Harvest:</u> The preferred season of harvest is winter, although there is a summer option. The following are criteria to be met for summer harvesting: 1) All access routes must be upgraded to allow for summer haul; 2) Harvesting must be done during dry soil conditions to minimize site degradation; 3) Minimize duff disturbance to reduce aspen suckering (i.e., use a dispersed skidding pattern, do not blade skid trails, if available use rubber tired skidders); 4) Access would become permanent for any road that access more than one landing.</p>
	<p><u>Reforestation Site preparation V17 &amp; V22 Types:</u> If slash levels are excessive, pending a post harvest inspection, chain drag, or excavator rake/pile to create plantable spots. Otherwise, minimize disturbance to reduce potential aspen suckering. Raw plant mixed pine and spruce (2+0 410 size or equivalent) within two years of harvest is the preferred option.</p>