C5 FOREST MANAGEMENT PLAN 2006–2026

APPENDIX 5A. MATRIX AND FEEDBACK RECEIVED

Overview

Appendix 5 consists of two documents:

Appendix 5a contains Criteria 1-6, which comprise the C5 FMP Matrix. The Matrix was a transitory document developed by the Planning Team to establish a management framework and an initial series of proposals for managing the C5 forest. The version of the Matrix included here contains revisions that were made in response to CrowPAC, Quota Holder, and interest group feedback. This Matrix provided the basis for developing Section 4.3 in the C5 Forest Management Plan.

Appendix 5b identifies the planning issues and how the Planning Team responded to specific CrowPac, Quota Holder and public interest group comments that were received from March–June 2004. Stakeholder input was received after participants reviewed an earlier version of the C5 FMP Matrix.

Note: The contents of the *C5 Forest Management Plan 2006–2026* takes priority over wording in the matrix.

Criterion 1: Conservation of biodiversity. Conserve biological diversity by maintaining integrity, function, and diversity of living organisms and the complexes of which they are part.

RED text is used to identify Planning Team changes in response to CrowPAC review process and Quota Holder feedback.

BLUE text is used to identify changes based on discussions with Richard Quinlan (5 July 2004).

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
ELEMENT 1.1 Eco-system diversity: Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that naturally occur in the defined forest area. (CSA SFM Element 1.1) Element 1.1 represents a coarse filter approach. It will be applied at two spatial scales: at the landscape level (i.e., 1.1.1 below), and stand level (i.e., 1.1.2 below). *Emphasis will be placed on managing the C5 forest management unit at a landscape/ecosystem level. (CrowPAC)*				
1. To maintain the full range of cover groups and seral stages.	1. a) Area of each cover group by seral stage.	1. a-1) Upper and lower bounds of the area for 8 cover groups in 5 sub-regions for both the gross and net land base over a 200-year time period as defined in Appendix 1. a-2) Minimum area for 8 cover groups in each LMU for both the gross and net land base over a 200-year time period as defined in Appendix 2. a-3) Area of 4 seral	1. a-1) To maintain the species composition found in the forest, all harvested sites should be reforested to reflect the cover class proportions that existed before harvesting occurred. The original species mix and proportion can be achieved (balanced out) on a compartment basis at the end of each quadrant period. a-2) To maintain the species composition found in the forest, all harvested sites shall be reforested to reflect the species mix and species proportions that existed before harvesting occurred. The original species mix and proportion can be achieved (balanced out) over the LMU if not achievable at the cutblock level at the end of each quadrant period.	1. i) PLFD will document (through quadrant summaries) whether stand harvesting is in conformity with the spatial harvest sequence and TSA model outputs. This information will be presented at 5-year intervals in Stewardship Reports. Reports will also identify whether harvest sequences were able to maintain seral stage targets. ii) TSA model outputs will be used to determine whether harvest sequences have achieved seral stage TSA

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
		stages in 5 subregions for both the gross and net land base over a 200 year time period as defined in Appendix 3.	a-3) Harvest sequences will be tested and the preferred sequence will be adopted to maintain seral stage targets as identified in Appendix 3. ii) Timber disposition holders must adhere to the spatial harvest sequence and spatial harvest sequence policy developed by ASRD.	predictions at the end of 5 years.
2. To minimize landscape fragmentation.	2. a) Area of late post-rotation age class "interior forest" in each cover group.	2. a) Minimum hectares of early and late old forest "interior forest" for each cover group in each subregion as defined in Appendix 4.	2. i) Timber disposition holders shall adhere to the spatial harvest sequence and spatial harvest sequence policy developed by ASRD.	2. a) Success achieved in meeting the range of harvest block sizes dictated by the harvest sequence (to emulate patch sizes in the TSA model) will be addressed in 5-year Stewardship Reports.
	b) Distribution of patch sizes by seral stage in each subregion.	b) Patch size areas for each seral stage by subregion as defined in Appendix 5.		b) Comparison of the actual area of interior forest in relation to interior forest targets identified in Appendix 4 at year 5 and 10. c) Comparison of the actual harvest sequence in relation to the predicted harvest sequence at year 5. At year 10, assess whether actual patch size targets in Appendix

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
				5 have been achieved.
3. To minimize the impacts of motorized access. See Objective 6: Criterion 5 - Value 5.1	3. See Objective 6: Criterion 5 - Value 5.1	3. See Objective 6: Criterion 5 - Value 5.1	3. See Objective 6: Criterion 5 - Value 5.1	3.
1. To retain stand level structural attributes.	1. a) Amount of merchantable standing trees remaining on site, representative of the sizes and species present in a stand. b) Volume of coarse, down woody debris, standing topped trees, and snags.	1. a) 0-5% volume of standing trees shall be left within cutblocks (with an average of 3% across assigned quota holder compartments). b) Following timber harvesting, down woody debris >7.5 cm in diameter or standing topped trees >7.5 cm DBH and existing snags shall be retained at levels similar to adjacent stands of a similar forest type.	1. i) Zonal ground rules shall contain guidelines on structure retention. ii) Maintain existing snags at pre-harvest levels, or supplement them with topped trees >7.5 cm DBH. iii) During the preliminary harvest planning stage, the amount of structure that is to be retained shall be determined based on cutblock size, cutblock shape, and existing landscape character. iv) Timber disposition holders will educate equipment operators on the need for and benefits of structure retention, and ensure equipment operators are trained in harvesting practices that need to be employed for retaining structural attributes during and following timber harvesting. v) For target "a", feasible assessment techniques will be developed in conjunction with timber disposition holders to determine the volume of standing trees. vi) For target "b", timber disposition holders will complete assessments of coarse, down woody debris	1. i) Timber disposition holders are to account for structure retention following harvesting. This will be conveyed in self-reporting forms. ii) Periodic inspections carried out by PLFD staff will include an assessment of debris/structure retention on site. iii) Five-year stewardship reports will document success in attaining structure retention targets for standing trees and down, coarse woody debris. (Note: ASRD to lead in the development of an effective and acceptable means of measuring, tracking, and reporting on structure retention).

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			remaining on site after timber harvesting to determine whether a correspondence has been achieved with debris levels found in adjacent stands. ASRD staff will complete periodic inspections (as part of the normal inspection process) to confirm the level of coarse woody debris that has been retained on cutblocks following timber harvesting. vii) Site operators are to ensure that downed woody debris is scattered and distributed across the cutblock (i.e., debris piles are discouraged).	
2. To retain forest structure associated with wildfire and blowdown events.	2. a) Area of naturally disturbed forest left unsalvaged. b) Volume or area of blowdown left unsalvaged.	2. a) Fire salvage targets are identified in the current Fire Salvage Strategy: Forest Management Planning and Operations. b) Within each subregion >20% of the merchantable blowdown volume or area, for blowdown events exceeding 10 ha in size, will be retained on site.	2. i) Direction contained in the provincial Fire Salvage Strategy: Forest Management Planning and Operations will be followed. ii) The timing of salvage operations to recover blowdown trees will be subject to forest health (insects/disease) considerations.	2. Post harvest assessments to confirm structure retention will be completed by timber disposition holders for all areas salvaged.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
ELEMENT 1.2 Species diversity: Conserve species diversity by ensuring that the habitats of native species found in the defined forest area are maintained through time. (CSA SFM Element 1.2) This represents a fine filter approach. Species have been selected for biological reasons (i.e., because they have unique habitat requirements; because they are at risk) and for social reasons (i.e., they are socially desirable species).				
1. To maintain habitat quality for species which are dependent on larger landscapes.	1. Location and extent of: • high quality habitat for grizzly bear and elk calving and winter habitats; • associated movement (connecting) habitats for grizzly bears and elk.	1. ASRD will identify areas that contain high-quality habitat for grizzly bears and elk, and associated movement (connecting) habitats for these two species.	1. i) Updated maps depicting high-quality habitat for grizzly bears and elk will be prepared at 10-year intervals by FWD (in 2004 and prior to the next TSA and spatial harvest sequence iteration slated for 2015-2016). ii) When adopted, Alberta's grizzly bear recovery plan will guide future timber harvest planning and logging activities in the C5 FMU. Several action plans will be developed as part of a grizzly bear recovery strategy, including an action plan for SW Alberta. PLFD staff are expected to participate in the development of the action plan for SW Alberta. iii) A preliminary elk habitat map has been developed for the initial (2004) timber supply analysis (TSA) and spatial harvest sequence. The elk model/map contained in the *Southern Rockies Landscape Planning Pilot Study: Summary Report* — which shows the location of elk calving areas, winter habitat and migration areas — will be updated (and expanded south of Hwy. 3) by FWD staff in consultation with PLFD staff and will be incorporated in next TSA and spatial harvest sequence iteration slated for 2015-2016. iv) Beneficial management practices for elk and	1. a) Ideas for monitoring to be brought forward at a later date.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			grizzly bears will be identified in Zonal Ground Rules. v) ASRD Annual Operating Plan (AOP) checklists shall indicate that elk and grizzly bear habitat maps must be consulted when changes to the spatial harvest pattern (derived through the TSA) are being considered. vi) Operational timing restrictions that pertain to ungulate winter range shall be observed.	
2. To retain, create, and enhance habitats capable of supporting selected species.	2. a) Location and extent of high-quality habitat for the following SHARP project species: • wolverine • Harlequin Duck • Long-toed salamander • Western toad • Pileated Woodpecker • Clarke's Nutcracker	2. a) ASRD will identify areas of high-quality habitat for: • wolverine • Harlequin Duck • Long-toed salamander • Western Toad • Pileated Woodpecker • Clarke's Nutcracker	2. i) Existing Southern Headwaters At Risk Project (SHARP) species habitat suitability (HSI) maps will be consulted when reviewing spatial harvest sequence outputs. Where the proposed spatial harvest sequence may adversely affect any listed SHARP species, as indicated by an HSI map or wildlife inventory information, the spatial harvest pattern will be adjusted to minimize impacts to SHARP species. ii) Updated maps depicting high-quality habitat for SHARP species will be prepared at 10-year intervals by FWD (in 2004 and prior to the next TSA and spatial harvest sequence iteration slated for 2015-2016). iii) Beneficial management practices for SHARP species will be contained in Zonal Ground Rules.. iv) ASRD Annual Operating Plan (AOP) checklists shall indicate that elk and grizzly bear habitat maps must be consulted when changes to the spatial harvest pattern (derived through the TSA) are being considered.. v) Appendix 7 identifies the federal (national) and provincial status of various wildlife species found	2. a) FWD to pursue ongoing refinement of SHARP species habitat maps (through ground inventories and/or HSI model verification). ASRD to confirm if timber disposition holders are adhering to beneficial management practices.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			within and adjacent to the C5 FMU.	
	b) Exclusion from harvest of select tree species.	b) No harvest of: • Whitebark Pine • Limber Pine • "A" (very open) and "B" density Douglas Fir stands (in the Porcupine Hills) which lack a coniferous understorey.	b) i) Subjective deletions from the net forest land base will occur for stands in which the following species are primary and secondary: • Whitebark Pine • Limber Pine • Western Larch • "A" (very open) and "B" density Douglas Fir stands (in the Porcupine Hills) which lack a coniferous understorey. ii) To retain forest structure, Whitebark Pine and Limber Pine trees will not be cut where they are a minor component of forest stands. iii) All large, veteran, "wolf" (turkey) Douglas Fir trees that occur within scheduled stands will not be cut except when they occur on an unavoidable road alignment. iv) Prescribed fire may be considered as a management tool to promote "A" and "B" density Douglas Fir stands. v) ASRD will develop a strategy to ensure the recruitment of minor tree species (e.g., White Bark and Limber Pine). vi) Timber disposition holders will need to ensure that equipment operators are able to identify tree species that are to be retained. vii) Forest users will be encouraged to report to PLFD the locations of individual trees or tree stands	b) Timber disposition holders to report whether selected species have been harvested.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			containing: • Ponderosa Pine • Western Red Cedar • Scotch Pine. This information will be recorded in a spatial database. viii) ASRD (Forest Management Branch), Alberta Community Development, Canadian Forest Service, Parks Canada, USDA and academia are developing a common strategy to manage dwindling numbers of Whitebark and Limber Pine due to white pine blister rust and mountain pine beetle. Any action recommendations arising from this multi-stakeholder initiative will be considered by ASRD and timber disposition holders.	
	c) Number of low-density Douglas Fir ("A" and "B") stands that have been burned.	c) Two pilot burns will be completed in the Porcupine Hills within the planning period.	c) Forest Protection Division, in conjunction with PLFD, will consider undertaking low-intensity burns in Douglas Fir stands.	
1. Retain a wild forest for each tree species in each seed zone.	1. a) Number and area of *in situ* gene conservation areas for selected tree species.	1. a) Two *in situ* gene conservation areas — comprising >5000 trees (at rotation), surrounded by ≥500 m buffer — will be established for each selected tree species in the following proposed (or alternative) seed zones as they become established	1. i) Genetic resources must be managed in accordance with provincial policies (as recommended by the Alberta Forest Genetic Resources Council) and direction contained in *Standards for Tree Improvement in Alberta*. ii) Protective Notations shall be applied to all *in situ* gene conservation areas. iii) Permanent genetic conservation areas shall be identified by Forest Management Branch in	1. ASRD shall report on the status of all gene conservation areas at five-year intervals in Stewardship Reports.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
		in the future: • Crowsnest Livingstone Montane (M7.1) • Porcupine Hills Montane (M7.2) • Castle-Waterton Montane (M8.1) • Livingstone-Crowsnest Lower Sub-Alpine (LS4.2) • Castle-Waterton Lower Sub-Alpine (LS5.1) • Wilkinson-Crowsnest Upper Sub-Alpine (US4.2) • Castle-Waterton Upper Sub-Alpine (US5.1) • Bow-Crowsnest Alpine (A4.1) • Crowsnest-Waterton Alpine (A5.1) Gene conservation areas will be developed for the following species: • Lodgepole Pine • White Spruce • Alpine Fir • Douglas Fir • Limber Pine • Whitebark Pine • Western Larch.	accordance with *Standards for Tree Improvement in Alberta.*. iv) An *in situ* genetic conservation areas management plan shall identify how genetic conservation areas may change over time in response to forest ecosystem dynamics (i.e., insect and disease events, fire, stand decadence) v) Seed Zones will not be finalized until 2005 and it will take another two years to establish locations for *in situ* conservation areas. vi) To the extent possible, *in situ* conservation areas will be established in designated protected areas, with the agreement of ACD and ASRD managers. vii) Selected tree species will have conservation areas only in ecologically appropriate seed zones. viii) Size requirements for conservation areas may need to be modified for Limber Pine, Whitebark Pine, Douglas Fir and Western Larch.	

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
2. Retain wild forest genetic resources through *ex situ* conservation.	2. Number of provenances and genetic lines in *ex situ* gene banks and trials for Douglas Fir, Western Larch, Limber Pine and Whitebark Pine.	2. The number of provenances and/or genetic lines in *ex situ* gene banks must exceed: • 60 for Douglas Fir • 30 for Western Larch • 50 for Limber Pine • 30 for Whitebark Pine.	2. i) Seed and/or vegetative material collections shall be made from the target species and maintained in gene banks by ASRD. ii) Field trial(s) established with the collected materials shall be documented and maintained. iii) Provisionally, provenances shall be separated by 15 km with 100 m of elevation compensating for 3 km of horizontal distance, unless otherwise agreed by ASRD.	2. ASRD shall report on the status of *ex situ* conservation at 5-year intervals in Stewardship Reports.
3. To maintain adequate genetic diversity in seedlots used for reforestation plantings.	3. Number of unrelated parent trees represented in the seedlots used for reforestation.	3. Reforestation shall be from seedlots maintaining an effective population size of greater than 18 unrelated parents or collections made from a minimum of 30 trees, unless approved by ASRD for planting with "restricted registration" stock."	3. i) ASRD shall review registered reforestation seedlots and provide information on genetic diversity level of them. ii) Genetic diversity information shall be included in documentation of reforestation seedlots. iii) Reforestation stock shall comply with genetic diversity guidelines established by ASRD.	3. Seed withdrawals for reforestation stock production would be monitored by ASRD for compliance with *effective population* size requirement.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
ELEMENT 1.4 Protected Areas and Sites of Biological Significance: Respect protected areas identified through government processes. Identify sites of special biological significance within the defined forest area and implement management strategies appropriate to their long-term maintenance. (CSA SFM Element 1.4) VALUE: Trans-boundary effects on designated protected areas are minimized.				
1. To adopt forest management practices that maintain the ecological integrity of established protected areas.	1. a) Agreements in place.	1. a) Agreements (for managing land adjacent to protected areas) shall be developed for each designated protected area within or immediately adjacent to the C5 FMU: • Don Getty Wildland • Bob Creek Wildland • West Castle Wetlands ER • Plateau Mt. ER • Beehive Natural Area • Mount Livingstone NA • Waterton Lakes National Park.	1. i) ASRD shall coordinate forest management practices in adjacent areas with the management intents of protected areas to maintain the ecological integrity of these designated sites. ii) Discussions shall be undertaken with ACD to minimize the impacts of protected areas on adjacent forests (e.g., fire, insects, disease). iii) ASRD must ensure that appropriate forestry/silvicultural systems are adopted for lands adjacent to designated protected areas. Appropriate forestry/silvicultural systems must be outlined in agreements for individual protected areas. Direction contained in agreements must be developed by PLFD with input from affected stakeholders (e.g., ACD, timber disposition holders). Agreements may address (but are not limited to): forest health issues, roads, invasive species, logging impacts. iv) Compartment development plans and AOPs must conform with any direction contained in agreements. v) Agreements shall be reviewed on a periodic basis.	1. ASRD and timber disposition holders must verify that direction contained in agreements is being followed.
2. To retain specific	2. a) Mineral licks protected.	2. a) All known and	2. i) Natural meadows must not be reseeded using	2. Wildlife features that are

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
wildlife features.		identified mineral licks will be buffered by a 100 m no-harvest zone, or mitigated in a manner approved by Fish and Wildlife Division.	agronomic species. ii) Native seed must be used in any road reclamation work. iii) Generally, new forestry roads must avoid natural meadows.	protected by buffers must be reported at 5-year intervals in stand structure ledgers.
	b) Denning sites protected.	b) All known and identified denning sites will be buffered by a 100 m no-harvest zone, or mitigated in a manner approved by Fish and Wildlife Division.	iv) Natural meadows occurring within cutblocks must not be forested. (Tall stumps can be retained around the edge of meadows as visual cues to ensure that meadows are not forested). v) Natural meadow openings will be defined using AVI data used to complete the 2004 TSA. The extent (ha) of natural meadows, as defined using current AVI data, will be maintained until the next plan revision.	
	c) Area of natural meadows.	c) No loss of natural grasslands in cutblocks due to reforestation activities.	vi) Controlled burns can be used to maintain natural meadows to achieve wildlife and rangeland management objectives. vii) To protect the integrity of natural meadows, the following guidelines must be observed: • Forest stands surrounding individual meadows (greater than 5 ha in size) can be harvested, but unharvested (leave) stands must together account for at least 50% of a meadows lineal edge. • Unharvested leave stands can be harvested when the adjacent cutblock provides adequate wildlife hiding cover; i.e., when 3 m green up has been achieved. • Unharvested leave stands must be at least 50 m wide (deep).	
	d) Wildlife habitat around natural meadows.	d) 50% retention of temporary buffers around meadows.		
	e) Nesting sites.	e) All known, permanent nesting sites of raptors must be buffered.		
	f) Long-toed salamander		viii) To protect the integrity of meadow complexes (a meadow complex is a clustering of 3 or more meadows less than 50 m apart.), FWD staff will	

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
	and western toad production ponds.	f) 100% retention of known long-toed salamander and western toad production ponds and adjacent terrestrial habitat used by long-toed salamanders and western toads.	provide guidance on their maintenance during the AOP review stage. ix) During the AOP review stage, FWD staff will be consulted to identify mitigation measures that can be successfully adopted during timber harvesting to retain meadow complexes — without adversely affecting the AAC. x) Known nesting sites must be buffered following the minimum distance guidelines established in Zonal Operating Ground Rules (consult existing FW guidelines). xi) FWD to provide detailed information on the location of long-toed salamander and western toad production ponds. Location information will be updated by FWD at a minimum of 10-year intervals (in 2004 and prior to the next TSA and spatial harvest sequence iteration slated for 2015-2016). xii) Beneficial Management Practices and Land Use Guidelines will be developed by FWD for the long-toed salamander and western toad. These will be incorporated in Zonal Operating Ground Rules.	a) FWD to pursue ongoing refinement of SHARP species habitat maps (through ground inventories and/or HSI model verification). b) ASRD to confirm if timber disposition holders are adhering to beneficial management practices.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
3. To maintain rare plant communities.	3. a) Rare plant communities identified by ANHIC are retained — to be identified in Map 3.	3. a) All rare plant communities identified in Appendix 10 shall be protected.	3. i) ASRD shall maintain a listing (i.e., GPS locations and descriptions) of all confirmed rare plant communities found in the FMU, and shall share this information with timber disposition holders. ii) Timber disposition holders shall be made aware of the probability of encountering rare plants (by species) and unique sites (mineral licks, denning sites) at the compartment assessment stage. Timber disposition holders are responsible for identifying rare plants and noting their location in proposed cutblocks. Timber disposition holders must avoid sites or take precautionary actions to minimize impacts to sites containing rare plants and rare plant communities. iii) Zonal operating ground rules must provide direction for disposition holders on the identification and protection of rare plant communities and unique sites (mineral licks, denning sites). Timber disposition holders shall ensure that rare plant communities are not jeopardized by any silvicultural operations. The strategy shall be reviewed by ASRD during the preliminary harvest design stage and must be incorporated within AOPs or site plans. iv) Any new rare plant communities that are added to ANHIC databases following the adoption of this plan must eventually be added to Appendix 10. Updated information on rare plant communities must be provided to timber disposition holders. v) The area occupied by rare ecosystem communities may be excluded from the net forest land base and not be included in future AAC calculations/revisions.	3. Five-year Stewardship Reports shall report on the status of identified rare plant communities.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			vi) ASRD must investigate the feasibility of using ecosite phase data in the future to predict where rare ecosystems/communities might exist in the FMU.	

End Notes for Criterion No. 1

Coarse Filter

"Conservation of land areas and representative habitats with the assumption that the needs of all associated species, communities, environments, and ecological processes will be met." (Dunster 1996) The coarse filter approach is used to maintain ecological structure, composition and function across the entire FMU.

COSEWIC – Committee on the Status of Endangered Wildlife in Canada

This committee was created in 1977 out of the need to have a single, official, scientifically sound, national listing of wildlife species at risk. Species are classified as either: extinct, extirpated, endangered, threatened, or of special concern.

Cover Groups/Conifer Cover Types

Three overstorey cover groups (also called strata) contribute toward the coniferous timber supply in the C5 FMU. The conifer (C) cover group has been further stratified into 4 coniferous cover classes (types). These subdivisions are based on the leading tree species as defined by the Alberta Vegetation Inventory.

C	Forested areas with equal to or greater than 80% conifer species composition in the overstorey layer. (C equals the sum of the 4 cover types below.) Deciduous content is less than or equal to 20%.	
	C-Fa/La	Alpine Fir or Alpine Larch are the leading species according to AVI timber type.
	C-Fd	Douglas Fir is the leading species according to AVI timber type.
	C-Px	Lodgepole, Whitebark or Limber Pine are the leading species according to AVI timber type.
	C-Sx	White Spruce or Engelmann Spruce are the leading species according to AVI timber type.
CD	Conifer-dominated mixedwood (forested areas in which at least 50%, and up to 79%, of the overstorey consists of conifer species). Deciduous content is 21-50%.	
DC	Deciduous-dominated mixedwood (forested areas in which at least 21-49% of the overstorey consists of conifer species). Deciduous content is 51%-79%.	
D	Predominantly deciduous (deciduous species comprise 80-100% of the overstorey): 0-20 % is the coniferous content. Deciduous content is 80%-100%.	

The deciduous cover group (D and DC) will be tracked in the TSA; however, no commercial allocation of deciduous wood will be considered within the C5 FMU.

Effective Population Size

The average number of individuals in a population that contributes genes to succeeding generations.

*Ex Situ C*onservation

A method of conservation in which components of biodiversity are conserved outside their natural habitat.

Fine Filter

"Specific management for a single or a few species rather than broad management for a habitat or ecosystem" (Dunster 1996). Management direction is being provided for species having unique habitat needs, for which specific management concerns exist, or which are socially desirable.

Forest Edge

May be defined as one of the following:

a) a linear disruption in forest cover greater than 8 m in width, or
b) the line along which forest seral stage changes occur.

Gross Land Base

The entire area within the C5 Forest Management Unit that can be divided into forested and non-forested species.

Habitat Suitability Index (HSI)

HSI models are planning tools in which landscape habitat components are given a numerical value in relation to a given species habitat preferences. A rating of 1 is considered to be optimal habitat for a species, while a rating of 0 is considered to be the least suitable habitat for a given species.

In Situ Conservation

A method of conservation in which components of biodiversity are conserved within their natural habitat.

Interior Forest

Interior forest is a forested area greater than 100 ha in size with no part of the forest area less than the following distance from a forest edge:

- 60 m from a linear disturbance in forest cover greater than 8 m in width,
- 30 m from the line along which cover group changes, or 30 m from the line along which forest seral stage class changes (why this criterion).

Landscape Management Unit (LMUs)

LMUs are distinct management areas in which ecosystem patterns and land uses repeat themselves with consideration given to climatic, physiographic and ecological boundaries, and human use. The 19 LMUs (map to show LMUs and subregions — prepared as an 8 ½ x 11 pdf' and jpg map) that have been adopted in the C5 Forest Management Plan are based on those identified in the *Southern Rockies Landscape Planning Pilot Study* (which were extrapolated to cover the whole forest management unit).

The three LMUs marked with an asterisk (*****) are unclassified. Small portions of these three LMUs fall within the C5 FMU. Because they consist primarily of non-forested land, the C5 FMP will not provide management direction (i.e., objectives and targets) for these LMUs.

The LMUs are as follows:

Continental Divide North Subregion

Alpine Highrock
North Headwater Valleys

Livingstone Subregion

Chapel Rock*
Crowsnest Pass
Horseshoe Parkland
Livingstone Valley
Middle Ridges
North Livingstone
Saddle Mountain

South Fescue*
South Livingstone
Whaleback

Continental Divide South Subregion
Carbondale
Castle/West Castle
Flathead
South Headwater Valleys

Castle Subregion
Beaver
Ironstone
South Front Range
Spread Eagle

Porcupine Hills Subregion
Porcupine Hills
East Ranchlands*

Meadow/Meadow Complex

Meadows refers to the following AVI vegetation polygons: shrub closed (Sc), shrub open (So), herbaceous grassland (Hg) and herbaceous forbs (Hf). A meadow complex is a clustering of 3 or more meadows less than 50 m apart.

Net (Active) Land Base

The net (active) land base within the C5 FMU refers to those areas in which timber harvesting will occur. The net land base, also known as the net forested land base, contains forested areas that are actively managed for timber harvesting. It includes all forested stand types with the exception of larch.

Passive Land Base

The passive land base refers to those land areas that do not contribute to the active land base, and in which commercial timber harvesting is not foreseen during the life of the C5 FMP.

Patch

An aggregation of contiguous forest stands of the same seral stage which are not split by a linear feature greater than 8 m in width.

Patch Size Distribution

Proportional distribution of sizes of forested patches. Distribution intervals are noted below. Patch size categories that have been adopted in the C5 FMP for the five subregions are as follows:

- Continental Divide North, Continental Divide South, and Porcupine Hills subregions:
  - < 6 ha
  - 6-40 ha
  - 40-80 ha
  - 80-250 ha

- > 250 ha

- Castle and Livingstone subregions:
  - < 6 ha
  - 6-40 ha
  - 40-80 ha
  - 80-500 ha
  - > 500 ha

Provenance

The original geographic source of seed or other propagules. Also, a test population resulting from seeds collected at a particular geographic location.

Proximal Distance (this term is not included in the Glossary – it is used for modeling purposes only)

The minimum separation distance between patches. Distances of 100, 150 and 200 m will be tested.

Seral Stages

This term refers to distinct forest stands within a given cover group, as defined by age. The following five seral stages have been adopted in the C5 FMP:

- Regeneration — time required to establish a new forest stand.
- Young — stands are established and developing quickly but are generally not merchantable.
- Mature — stands are changing relatively slowly and are merchantable.

Early Old Forest

Early old forest seral stage is the age range at which processes and structural attributes that characterize old forests have just begun. These processes and structural attributes include (a) breaking up the dominant stratum to allow release of suppressed understorey trees (canopy gap formation), (b) the presence of tall, large-diameter trees, (c) the presence of large snags, and (d) increasing levels of large-diameter, downed woody material. For C5, ages defining early old forest for different cover types and groups have been empirically defined in Appendix 6.

Late Old Forest

Late old forest seral stage is the age range at which processes characterizing old forests are more advanced and fully expressed throughout the stand. Thus, late-old forest seral stages exhibit more horizontal and vertical structural diversity, which results in more environmental heterogeneity and species diversity than in early old forests. For C5, ages defining late old forest for different cover types and groups have been empirically defined in Appendix 6.

Seral stages have been operationally defined for each cover group (also contained in Appendix 6).

SHARP – Southern Headwaters At Risk Project

This is a cooperative project between Alberta Fish and Wildlife, Alberta Conservation Association, Environment Canada Habitat Stewardship Program and Waterton Lakes National Park that encompasses much of the C5 FMU. The project will identify and inventory species at risk, identify priority conservation areas for selected species based on habitat models, and establish beneficial management practices and stewardship actions.

Spatial Harvest Sequence (SHS)

SHS is the planned location and sequence of cutblocks to be harvested over a known period of time. The SHS for the C5 FMU will be developed by ASRD based on direction contained in this plan.

Subregions

The C5 Forest Management Unit has been subdivided into five subregions for planning and management purposes. The subregions are as follows:

- Continental Divide North
- Continental Divide South
- Castle
- Livingstone
- Porcupine Hills

Timber Supply Analysis (TSA)

The TSA is an analytical approach used to determine the long-term sustainable harvest level for a defined area. The process of performing a TSA involves identifying and quantifying the desired ecological, social/cultural and economic values, objectives and assumptions associated with a given forest management strategy, and inter-relating these to determine a sustainable harvest level. The main components of a TSA are the proposed resource management objectives, forest inventory, growth and yield data, and land base delineation.

TSA is useful in comparing alternative forest management strategies (those having differing management objectives). TSA is also useful in exploring the anticipated outcomes (i.e., impacts) when key factors or assumptions within a given management strategy are altered.

CRITERION 1 APPENDICES (28 January 2004)

Appendix 1

Range of area in *gross land base* to be maintained for each cover group in each subregion.

Cover Group	Castle	Continental Divide South	Livingstone	Continental Divide North	Porcupine
C	X-Y	X-Y	X-Y	X-Y	X-Y
CD	X-Y	X-Y	X-Y	X-Y	X-Y
DC	X-Y	X-Y	X-Y	X-Y	X-Y
D	X-Y	X-Y	X-Y	X-Y	X-Y
C-Fa	X-Y	X-Y	X-Y	X-Y	X-Y
C-Pl	X-Y	X-Y	X-Y	X-Y	X-Y
C-Sx	X-Y	X-Y	X-Y	X-Y	X-Y
C-Df	X-Y	X-Y	X-Y	X-Y	X-Y

Range of area in *net land base* to be maintained for each cover group in each subregion.

Cover Group	Castle	Continental Divide South	Livingstone	Continental Divide North	Porcupine
C	X-Y	X-Y	X-Y	X-Y	X-Y
CD	X-Y	X-Y	X-Y	X-Y	X-Y
DC	X-Y	X-Y	X-Y	X-Y	X-Y
D	X-Y	X-Y	X-Y	X-Y	X-Y
C-Fa	X-Y	X-Y	X-Y	X-Y	X-Y
C-Pl	X-Y	X-Y	X-Y	X-Y	X-Y
C-Sx	X-Y	X-Y	X-Y	X-Y	X-Y
C-Df	X-Y	X-Y	X-Y	X-Y	X-Y

Appendix 2

Minimum area of *gross land base* in cover groups for all LMUs.

	Continental Divide North		Livingstone Middle Ridge								
Cover Group	Alpine Highrock	North Headwater Valleys	Middle Ridges	East Ranchlands	North Livingstone	Saddle Mountain	Horse Shoe Parkland	South Livingstone	Whaleback	Livingstone Valley	Crowsnest Pass
C	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
CD	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
DC	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
D	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Fa	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Pl	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Sx	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Df	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X

	Continental Divide South				Castle Middle Ridge				Porcupine Hills
Cover Group	Carbondale	Castle West Castle	Flathead	South Headwater Valleys	Beaver	South Front Range	Iron-stone	Spread Eagle	Porcupine Hills
C	>X	>X	>X	>X	>X	>X	>X	>X	>X
CD	>X	>X	>X	>X	>X	>X	>X	>X	>X
DC	>X	>X	>X	>X	>X	>X	>X	>X	>X
D	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Fa	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Pl	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Sx	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Df	>X	>X	>X	>X	>X	>X	>X	>X	>X

Minimum area of *net land base* in cover groups for all LMUs.

	Continental Divide North		Livingstone Middle Ridge								
Cover Group	Alpine Highrock	North Headwater Valleys	Middle Ridges	East Ranchlands	North Livingstone	Saddle Mountain	Horse Shoe Parkland	South Livingstone	Whaleback	Livingstone Valley	Crowsnest Pass
C	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
CD	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
DC	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
D	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Fa	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Pl	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Sx	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Df	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X	>X

	Continental Divide South				Castle Middle Ridge				Porcupine Hills
Cover Group	Carbondale	Castle West Castle	Flathead	South Headwater Valleys	Beaver	South Front Range	Iron-stone	Spread Eagle	Porcupine Hills
C	>X	>X	>X	>X	>X	>X	>X	>X	>X
CD	>X	>X	>X	>X	>X	>X	>X	>X	>X
DC	>X	>X	>X	>X	>X	>X	>X	>X	>X
D	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Fa	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Pl	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Sx	>X	>X	>X	>X	>X	>X	>X	>X	>X
C-Df	>X	>X	>X	>X	>X	>X	>X	>X	>X

Appendix 3

Area of the gross lands base in 5 subregions in four seral stages.

	Subregion				
Seral Stage	Castle	Continental Divide South	Livingstone	Continental Divide North	Porcupine
Regeneration	<X	<X	<X	<X	<X
Mature + Old Forest	>X	>X	>X	>X	>X
Early + Late Old Forest	>X	>X	>X	>X	>X
Late Old Forest	>X	>X	>X	>X	>X

Area of the net land base in 5 subregions in four seral stages.

	Subregion				
Seral Stage	Castle	Continental Divide South	Livingstone	Continental Divide North	Porcupine
Regeneration	<X	<X	<X	<X	<X
Mature + Old Forest	>X	>X	>X	>X	>X
Early + Late Old Forest	>X	>X	>X	>X	>X
Late Old Forest	>X	>X	>X	>X	>X

Rationale for targets: Late old forest is the primary value-at-risk.
This approach ensures that if there is an oversupply in the VAR, it counts toward the lower level target

Appendix 4

Minimum area of the gross land base in early and late old forest "interior forest" for each cover group and subregion.

Cover Group	Castle	Continental Divide South	Livingstone	Continental Divide North	Porcupine
C	>X	>X	>X	>X	>X
CD	>X	>X	>X	>X	>X
DC	>X	>X	>X	>X	>X
D	>X	>X	>X	>X	>X
C-Fa	>X	>X	>X	>X	>X
C-Pl	>X	>X	>X	>X	>X
C-Sx	>X	>X	>X	>X	>X
C-Df	>X	>X	>X	>X	>X

Minimum area of the net land base in early and late old forest "interior forest" for each cover group and subregion.

Cover Group	Castle	Continental Divide South	Livingstone	Continental Divide North	Porcupine
C	>X	>X	>X	>X	>X
CD	>X	>X	>X	>X	>X
DC	>X	>X	>X	>X	>X
D	>X	>X	>X	>X	>X
C-Fa	>X	>X	>X	>X	>X
C-Pl	>X	>X	>X	>X	>X
C-Sx	>X	>X	>X	>X	>X
C-Df	>X	>X	>X	>X	>X

Appendix 5

Distribution of patch sizes by seral stage in each subregion at <u>Year = 0</u>.

Castle	Livingstone					
		Patch Size				
Seral Stage	Seral Stage	<6 ha	6-40 ha	40-80 ha	80-500 ha	>500
Regeneration	Regeneration	<X	<X	<X	<X	<X
Young	Young	<X	<X	<X	<X	<X
Mature	Mature	>X	>X	>X	>X	>X
Early Old Forest	Early Old forest	>X	>X	>X	>X	>X
Late Old Forest	Late Old forest	>X	>X	>X	>X	>X

Continental Divide South	Continental Divide North	Porcupine					
			Patch Size				
Seral Stage	Seral Stage	Seral Stage	<6 ha	6-40 ha	40-80 ha	80-250 ha	>250 ha
Regeneration	Regeneration	Regeneration	<X	<X	<X	<X	<X
Young	Young	Young	<X	<X	<X	<X	<X
Mature	Mature	Mature	>X	>X	>X	>X	>X
Early Old Forest	Early Old forest	Early Old forest	>X	>X	>X	>X	>X
Late Old Forest	Late Old forest	Late Old forest	>X	>X	>X	>X	>X

Distribution of patch sizes by seral stage in each subregion at <u>Year = 10</u>.

Castle	Livingstone					
		Patch Size				
Seral Stage	Seral Stage	<6 ha	6-40 ha	40-80 ha	80-500 ha	>500
Regeneration	Regeneration	<X	<X	<X	<X	<X
Young	Young	<X	<X	<X	<X	<X
Mature	Mature	>X	>X	>X	>X	>X
Early Old Forest	Early Old Forest	>X	>X	>X	>X	>X
Late Old Forest	Late Old Forest	>X	>X	>X	>X	>X

Continental Divide South	Continental Divide North	Porcupine					
			Patch Size				
Seral Stage	Seral Stage	Seral Stage	<6 ha	6-40 ha	40-80 ha	80-250 ha	>250 ha
Regeneration	Regeneration	Regeneration	<X	<X	<X	<X	<X
Young	Young	Young	<X	<X	<X	<X	<X
Mature	Mature	Mature	>X	>X	>X	>X	>X
Early Old Forest	Early Old Forest	Early Old Forest	>X	>X	>X	>X	>X
Late Old Forest	Late Old Forest	Late Old Forest	>X	>X	>X	>X	>X

Distribution of patch sizes by seral stage in each subregion at <u>Year = 50.</u>

Castle	Livingstone					
		Patch Size				
Seral Stage	Seral Stage	<6 ha	6-40 ha	40-80 ha	80-500 ha	>500
Regeneration	Regeneration	<X	<X	<X	<X	<X
Young	Young	<X	<X	<X	<X	<X
Mature	Mature	>X	>X	>X	>X	>X
Early Old Forest	Early Old Forest	>X	>X	>X	>X	>X
Late Old Forest	Late Old Forest	>X	>X	>X	>X	>X

Continental Divide South	Continental Divide North	Porcupine					
			Patch Size				
Seral Stage	Seral Stage	Seral Stage	<6 ha	6-40 ha	40-80 ha	80-250 ha	>250 ha
Regeneration	Regeneration	Regeneration	<X	<X	<X	<X	<X
Young	Young	Young	<X	<X	<X	<X	<X
Mature	Mature	Mature	>X	>X	>X	>X	>X
Early Old Forest	Early Old Forest	Early Old Forest	>X	>X	>X	>X	>X
Late Old Forest	Late Old Forest	Late Old Forest	>X	>X	>X	>X	>X

Appendix 6

C5 FMP cover groups/classes and seral stages.

			Seral Stage				
Cover Group	Cover Class (Type)	Description	Regeneration	Young	Mature	Early Old Forest	Late Old Forest
C		Forested areas with =>80% conifer species composition in the overstorey layer (includes the 4 conifer cover types – which follow – and all other confer species in the C5 FMU	?	?	?	?	?
	C-Fa/La	Forested areas with =>80% conifer species composition in the overstorey layer with Alpine Fir or Alpine Larch as the leading species	0-40	41-100	101-160	161-200	> 200
	C-Fd	Forested areas with =>80% conifer species composition in the overstorey layer with Douglas-fir as the leading species	0-30	31-90	91-200	201-250	> 250
	C-Px	Forested areas with =>80% conifer species composition in the overstorey layer with Lodgepole, Whitebark or Limber Pine as the leading species	0-25	26-80	81-150	151-200	> 200
	C-Sx	Forested areas with =>80% conifer species composition in the overstorey layer with either White Spruce or Engelmann Spruce as the leading species	0-30	31-90	91-180	181-230	> 230
CD		Forested areas with 50% up to 79% conifer species composition in the	0-25	26-80	81-150	151-200	> 200

		overstorey layer					
DC		Forested areas with 30% up to 40% conifer species composition in the overstorey layer	0-25	26-80	81-150	151-200	> 200
D		Forested areas with 20% or less conifer species composition in the overstorey layer	0-30	30-70	71-130	131-180	> 180

Appendix 7
COSEWIC and *General Status of Wildlife in Alberta* at risk species in C5 FMU

Appendix 8
Minimum area of (HSI value) ___ habitat for (species) _____

Appendix 9 (not available for 2 years)
Permanent *in situ* gene conservation areas and seed zones in the C5 FMU

Appendix 10
Type and location of rare plant communities in C5 FMU

Criterion 2: Maintenance and enhancement of forest ecosystem condition and productivity.

Conserve forest ecosystem condition and productivity by maintaining the health, vitality and rates of biological production.

RED text is used to identify Planning Team changes in response to CrowPAC and Quota Holder Feedback.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
ELEMENT 2.1 Forest Ecosystem Resilience: Conserve ecosystem resilience by maintaining both ecosystem processes and ecosystem conditions. (CSA SFM Element 2.1) *Management actions and operational practices will emulate natural disturbance regimes. (CrowPAC)* *Maintain and enhance ecosystem condition, productivity, and processes. (CrowPAC)* *Maintain and, where necessary, restore the integrity and quality of the environment. (CrowPAC)*				
1. Sustain the capacity of the ecosystem to recover from both natural and human-caused disturbances.	1. a) Approved reclamation plans in place. b) Area of each cover group by seral stage. (*Note*: Identical indicator and target are being used in Objective 1, Value 1.1.1.)	1. a) • 100% compliance with approved legislation, policies and operational plans. • Reduce not sufficiently restocked (NSR) lands to zero percent. b) Upper and lower bounds of the area for 8 cover groups in 5 subregions for both the gross and net land base over a 200 year time period, as defined in Appendix 1.	1. i) Forest practices must be encouraged that minimize ecosystem degradation and site disturbance (including but not limited to): • comply with seasonal operating conditions (i.e., operate on frozen or dry ground); • use harvest systems that reduce/ lessen the industrial footprint (e.g., eliminate or reduce the number of landings); • rutting resulting from harvesting or silvicultural activities; • excessive scarification; • site reclamation must achieve equivalent capability; • ground stabilization; • re-vegetation; • re-contouring; • retain on-site organic matter. ii) Timber disposition holders to undertake prompt and progressive reclamation to comply with reforestation timelines, while following prescribed	1. – ASRD/forest industry audits/checks shall be completed on a periodic basis of compliance with plans. – ASRD shall use the Alberta Reforestation Information System (ARIS) to track silviculture treatments and performance.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
	c) Species composition (retain diversity at stand and landscape levels).	c) Replace coniferous cover classes according to leading species (types/strata) in the same relative proportions as existed prior to harvesting, recognizing Reforestation Directive 2004-01 and the provincial regeneration manual.	silvicultural activities. iii) Develop agreements with timber disposition holders that require self-inspections and self-reporting. iv) ASRD or timber disposition holders to complete inspection forms (i.e., land use, skid clearance, final block clearance inspections). ASRD must follow up on any outstanding issues related to inspections. v) ASRD staff must complete visual appraisals of disturbed areas when engaged in field work, and document any sites that appear to be degraded. vi) ASRD shall develop a growth-and-yield monitoring program for the C5 FMU.	
2. To minimize losses to human life, communities, soil, watersheds, natural resources, and infrastructure from wildfire.	2. a) Number and size of wildfires in C5. b) Number of C, D and E class fires over a 5-year running average.	2. a) Limit people-caused fires to <25 fires per year over a 10-year period. b) Minimize the number and size of C, D and E class fires.	2. i) Comply with provincial forest protection policies, including pre-suppression and suppression requirements and guidelines. ii) Apply FireSmart landscape goals and objectives to the C5 forest: • reduce the likelihood of large, high-intensity, high-severity fires (i.e., reduce the likelihood of negative, catastrophic fire events); • protect human life, communities, watershed/soils, and natural resources; • reduce extreme fire behavior potential, fire occurrence risk, and exposure to values-at-risk; • identify barriers to fire spread; • enhance suppression capabilities; • incorporate wildland-urban interface initiatives.	2.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			iii) FPD (assuming lead role) shall work with PLFD and FWD to complete a wildfire threat assessment to: • identify "hot stands" (i.e., stands that: have a high potential for ignition; which present a high threat to desired values; and are not easily accessible to carry out suppression activities); • identify values at risk (timber, wildlife habitat, recreation sites and facilities, communities, human life, infrastructure, industrial facilities, property); • determine fire behavior potential; • assess suppression capability; • identify fire incidence. The wildfire threat assessment must be incorporated into the timber supply analysis and spatial harvest sequence. iv) ASRD will extinguish all wildfires. Prescribed fires may be used to achieve management objectives for an area. v) Accessible, merchantable timber that is fire damaged, and which is not needed to meet wildlife and ecological objectives, must be salvaged. vi) Burnt timber salvage operations must comply with ASRD's fire salvage policy. vii) All disposition holders/operators are responsible for extinguishing all fires associated with debris pile burning, and using "cold trailing" or infra-red scanning to detect "hold over" fires and take appropriate action to prevent a fire outbreak. Infrared scanning is required for large debris burning operations, while cold trailing – by hand – is	

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			acceptable when only a small number of piles are being burned. viii) Partial cut systems (e.g., selection and shelterwood silvicultural systems) are the preferred vegetative management strategy for the 10- km FireSmart community zone around communities. Partial cut systems may also be considered throughout the FMU to meet FireSmart objectives.	
3. To minimize the impacts of pests (i.e., insects and disease) which have the ability to kill healthy trees.	3. a) Aerial extent of trees killed each year by mountain pine beetle, spruce budworm, Douglas fir beetle and other pests.	3. a) Treat any infestation within 1 year of detection.	3. i) To minimize pest-related impacts, ASRD, as per *Alberta Forest Health Strategy and Shared Roles and Responsibilities Between SRD and Forest Industry (Dec. 10, 2003),* shall: • undertake annual aerial surveys; • undertake pheromone baiting; • undertake stakeholder and staff training; • ask disposition holders and operators to inform the department of any pest sightings (encourage timber disposition holders to work with ASRD to undertake ground surveys where aerial surveys confirm the existence of pest problems. In addition timber disposition holders can assist in the identification of affected trees or the extent and severity of infestations while completing pre-harvest assessments, silvicultural surveys, etc.). ii) ASRD must review pest survey findings from adjoining jurisdictions. iii) ASRD will make adjustments to operational plans to immediately address insect and pest outbreaks. Subsequently, the spatial harvest	3. – ASRD shall track forest pests and invasive plants using provincial data management systems. Stewardship reporting on forest health issues shall occur at 5-year intervals.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			sequence will be adjusted when a new Timber Supply Analysis is completed. iv) Work toward reducing the overall hazard from insect and disease outbreaks by creating a tree species mosaic of different age classes and species composition.	
4. To maintain the long-term sustainability of the land base by managing those forest health agents that can reduce growth, alter form, or kill trees after several years of infection/attack.	4. a) Change in forest health agent impact before and after harvest.	4. a) Decrease (or no increase) in forest health agent incidence after harvest and throughout second rotation.	4. i) Retain buffers around mistletoe-infested blocks to arrest the spread of mistletoe. ii) Complete stand tending for areas having mistletoe infestations. iii) Consider stump removal for root disease. iv) Prevent the importation of non-native insects and diseases that could negatively affect commercial timber values (see Directive No. 2001-06 [May 24, 2001] *Weed Management in Forestry Operations* or its replacement). v) Manage weed species infestations on cutblocks which could interfere with seedling establishment. vi) ASRD must work jointly with disposition holders to address epidemics and halt their spread. vi) ASRD shall participate with industry and Canadian Forest Service on the Provincial (and Regional) Integrated Pest Management Working Groups. viii) Maintain an annual forest health monitoring program (e.g., aerial overviews, ground assessments) for the C5 FMU, and develop action plans for potential pest epidemics. Appropriate control measures and/or salvage programs shall be	

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			used to respond to pest infestations. ix) Incorporate windthrow management in the design and orientation of cutblocks. x) Accessible merchantable timber resulting from windthrow events shall be scheduled for recovery in the upcoming AOP.	
5. Prevent the establishment of, and control the spread of, noxious and restricted weed species.	5. a) Area and severity of noxious and restricted weed species infestations within the FMU.	5. a) Prevent the introduction of noxious and restricted weed species into previously un-infested areas. b) Absence of restricted weeds. c) Reduce, where possible, or prevent an increase in the canopy cover, density and distribution of noxious weeds.	5. i) ASRD shall work with disposition holders and rural municipalities to identify, monitor, and address weed problems. ii) Operators need to comply with provincial and municipal weed legislation including the Alberta Weed Control Act, regulations, bylaws, and policies. iii) Weed eradication treatments shall be carried out within the FMU by ASRD and disposition holders (*Note*: Municipalities have responsibility for weeds along secondary road right-of-ways in the Forest Reserve). iv) PLFD to take a lead role in completing weed surveys and maintaining an inventory of weed infestation locations. v) PLFD shall prioritize control actions and coordinate spraying programs within the Forest Reserve on lands not under disposition. vi) Any pre-site assessments must address non-native weed issues (existing/resulting infestations). vii) Any re-vegetation activities must be preceded by seed mix approval from land managers for content and purity. viii) A certificate of seed analysis shall be required	5. – Field inspections for weed species (and their extent) shall be completed by ASRD staff. – Disposition holders to assist in reporting weed treatment efforts (extent and severity of infestation).

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			for seed mixes used in reclamation work.	
6. To consider research into forest management practices that are responsive to climatic and environmental factors and large disturbance events.	6. a) Adaptable silvicultural standards.	6. a) Field operations and forest management requirements/standards are tailored to new, re-occurring climatic and environmental conditions.	6. i) Develop silvicultural/harvest systems that are responsive to site, species, climatic and other conditions within the C5 FMU (e.g., reforestation of Douglas Fir in the Porcupine Hills). ii) ASRD shall examine the need for adopting site preparation and reforestation standards that are sufficiently flexible to accommodate climatic (e.g., drought) and environmental conditions (i.e., site regeneration period would be extended if low soil moisture conditions persist). iii) ASRD to assess the feasibility of establishing controlled research trials for introduced species (e.g., Ponderosa Pine, Siberian Larch) that are suited to geo-climatic conditions in the Porcupine Hills, and assess former Forest Resource Improvement Program (FRIP) sites.	6. ASRD to evaluate whether existing standards are responsive to new environmental and climatic conditions.
7. To use prescribed fire for achieving forest protection, forest productivity, forest health and biodiversity objectives.	7. a) Percentage of identified high and extreme hazard stands (occurring on the non-active forest land base) treated over a 10-year period (2006-2016). b) Number of hectares burned to maintain biodiversity values.	7. a) Percentage to be determined through a wildfire threat assessment. b) Targets shall be established when fire strategies are prepared (see Strategy "ii").	7. i) Refer to Strategy "ii" in Objective 2 above. ii) FPD, PLFD, FWD and ACA must together explore the need for using prescribed burns to improve or create a diversity of wildlife habitat conditions and achieve biodiversity objectives. iii) FPD (in conjunction with other stakeholders) shall coordinate the identification, evaluation and prioritization of areas in which fire could be used as a management tool. iv) Objectives and criteria tailored to the unique	7. Monitoring and measurement statements to be developed at a later date.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
	c) Number of hectares burned to achieve improved forest productivity or to address forest pest and blowdown problems.	c) Targets shall be established upon completion of the wildfire threat assessment.	circumstances of individual sites, must be prepared to guide prescribed burns for target areas. v) Prescribed fire, in conjunction with other management approaches, can be used to reduce the threat of catastrophic, large-scale disturbances. vi) Low-intensity prescribed burns shall be considered in the Porcupine Hills to restore the Montane ecosystem and Douglas Fir stands. vii) ASRD shall consult with adjacent stakeholders to achieve landscape FireSmart objectives.	

Criterion 3: Conservation of soil and water resources.

RED text is used to identify Planning Team changes in response to CrowPAC and Quota Holder Feedback

Objective(s)	Indicator(s) (source of indicator CONTACT)	Target(s)	Strategy(ies)	Monitoring and Measurement
ELEMENT 3.1 Soil quality and quantity: Conserve soil resources by maintaining soil quality and quantity. CSA SFM Element 3.1				
1. To conserve soil and organic matter, and maintain soil productivity.	1. a) Level of compliance with Alberta's Soil Conservation Guidelines. b) Amount of coarse woody debris on-site following timber harvesting (see also	1. a) 100% compliance with Alberta's Soil Conservation Guidelines. b) Amount, size and distribution of debris on-	1. i) Following timber harvesting, ocular (or other) assessments must be completed by timber disposition holders to determine whether coarse woody debris levels found on the cutblock are comparable* (in terms of amount and size) to levels found in adjacent forest stands. ii) Zonal Ground Rules (and AOPs) shall identify scarification restrictions to minimize the displacement of	1.

Objective(s)	Indicator(s) (source of indicator CONTACT)	Target(s)	Strategy(ies)	Monitoring and Measurement
	objective #1 – Value 1.1.2 in Criterion 1).	site following logging shall approximate pre-harvest levels.	forest floor materials. Zonal Ground Rules shall identify limits for mineral soil exposure on cutblocks and landings to prevent excessive scarification that leads to site degradation. iii) ASRD shall determine and convey to timber disposition holders what constitutes excessive scarification and site disturbance. iv) Site preparation treatments shall be determined in advance (in AOPs, silvicultural plans) based on ground conditions, environmental and ecological factors (e.g., climate, biodiversity and habitat goals), and subsequent land uses. v) Timber disposition holders shall be encouraged to distribute debris/slash throughout the cutblock.	
2. To minimize soil erosion and slope failure.	2. a) Conformity with Zonal Ground Rules. b) Erosion control and reclamation strategies in place.	2. a) • Zero erosion or slumping events attributed to road construction. • Zero erosion or slumping events attributed to timber harvesting. • No penalties incurred by operators for erosion or slope failure. b) Presence of erosion control and reclamation strategies in approved AOPs.	2. i) Operators must comply with Zonal Ground Rules and any applicable provincial guidelines. ii) When operating on continuous slopes having a sustained grade of greater than 45%, a detailed block plan (in which slope stability is addressed) must be submitted to ASRD. A slope/terrain stability assessment may be required for slopes less than 45% if signs of slope instability exist. iii) Zonal Ground Rules shall include direction to prevent soil, debris and deleterious materials from entering water courses at water crossing sites (i.e., ensure that bridge decks and bridge structures are constructed to prevent soil and debris from entering water courses).	2. ASRD shall undertake periodic site assessments to ensure conformity with Zonal Ground Rules.

Objective(s)	Indicator(s) (source of indicator CONTACT)	Target(s)	Strategy(ies)	Monitoring and Measurement
ELEMENT 3.2 Water quality and quantity: Conserve water resources by maintaining water quality and quantity. (CSA SFM Element 3.2) VALUE: Given its re-occurring scarcity, fluctuating and unpredictable supply, water is a resource of great importance in southern Alberta. Water has become a critical and limiting factor to future development in the region.				
1. To ensure that all forest industry practices are conducted in a manner that places a priority on the protection of water quality.	1. a) Degree of compliance with federal and provincial regulations, standards, and policies pertaining to road construction and maintenance, stream crossings, and retention of buffers.	1. a) 100% adherence to existing and/or new requirements.	1. i) Timber disposition holders, contractors and operators are responsible for ensuring that water quality is not degraded and must take immediate action in response to any water quality concern/issue resulting from their operations. ii) Timber disposition holders and License of Occupation (LOC) holders are to contact appropriate provincial/federal agencies when a water quality issue arises (e.g., siltation; pollution; deleterious substances affecting fish habitat). iii) Timber disposition holders must document and report on mitigation measures taken in response to any siltation event as part of their annual road maintenance inspections and abandonment reports. iv) Maintain and protect streamside buffers through implementation of Zonal Ground Rules. v) Timber disposition holders (and LOC holders) must inspect/monitor: • all watercourse crossings; • all constructed roads/trails;	1. – ASRD shall undertake periodic audits to ensure compliance with provincial requirements.

Objective(s)	Indicator(s) (source of indicator CONTACT)	Target(s)	Strategy(ies)	Monitoring and Measurement
			• all reclamation / restoration work. Road and stream crossing inspections must be conducted by LOC holders at the beginning of spring break-up. Maintenance issues must be addressed promptly. vi) AOPs shall identify all stream crossing points for permanent water courses with the intent of minimizing the number of stream crossings. (*Note*: It is also desirable to identify stream crossing points for intermittent and ephemeral streams since seasonal use of these areas may be extremely important to the life cycle and processes of many fish and wildlife species.) vii) ASRD shall promote adoption of the best practices associated with the Cows and Fish Program within the C5 FMU. ASRD shall work with other stakeholders, regulators and the public to promote responsible land stewardship and participate in any initiatives that achieve any or all objectives in this plan. viii) Timber disposition holders must comply with the provincial *Watercourse Crossing Code of Practice* where applicable, (*note*: The Code identifies Green Area exemptions that apply to timber operators), Alberta's *Environmental Protection and Enhancement Act*, Alberta's *Water Act*, and the federal *Fisheries Act*. ix) Timber disposition holders and LOC holders are encouraged to consult with	– Timber disposition holders to complete self-inspections (strategy v) where agreements with ASRD exist to do so.

Objective(s)	Indicator(s) (source of indicator CONTACT)	Target(s)	Strategy(ies)	Monitoring and Measurement
			Fisheries and Oceans Canada prior to road construction to ensure that all stream crossing structures (or other works and undertakings) that have the potential to affect fish and fish habitat, are of suitable design and capacity to allow unobstructed fish movement.	
2. To manage forest cover in a manner that places a priority on the conservation and protection of watersheds.	2. a) "Effective disturbance area" (as expressed in ECA Alberta). b) Compliance with stream crossing requirements. c) Integrity of water source areas, watercourses and water bodies. d) Adverse change to fish and fish habitat.	2. a) *Note*: Threshold value will be derived and inserted after completing several ECA test runs. *Note*: The ECA threshold value should not exceed 15% of the long-term average annual flow. b) 100% compliance with provincial stream crossing requirements. c) Protect hydrological features (e.g., wetlands, springs, streams, rivers, ponds, lakes, groundwater – water table) from negative impacts. d) Strive to ensure no harmful alteration, disruption, or destruction of fish habitat as a result of	2. i) ASRD, in cooperation with other stakeholders, shall identify data/information gaps and monitoring needs pertaining to watershed protection, including: • obtaining hydrological data for specific watersheds/sub-basins; • developing and/or applying watershed assessment (modeling) tools and procedures in the C5 FMU. ii) ASRD to use appropriate models and consult with experts to determine harvest levels and silvicultural practices that can occur in watershed sub-basins (as identified in the project Landscape Assessment), while maintaining generated run-off. iii) Adopt the "Equivalent Clearcut Area" approach (using the ECA Alberta model developed by Uldis Sillins – U of A) to determine maximum allowable harvest levels that can occur in a defined watershed to maintain runoff. iv) Output and objectives derived from ECA Alberta analysis shall be incorporated within the TSA model.	2. – ASRD shall report on whether objectives derived from ECA Alberta outputs have been incorporated in the TSA model. – Timber disposition holders to report on their conformity with the spatial harvest sequence (which shall be based on objectives derived from ECA Alberta outputs). – 5-year Stewardship Reports shall identify the degree to which the spatial harvest sequence was followed.

Objective(s)	Indicator(s) (source of indicator CONTACT)	Target(s)	Strategy(ies)	Monitoring and Measurement
		forestry operations.	v) Encourage progressive site reforestation following timber harvesting to achieve accelerated "hydrological recovery". vi) ASRD shall inform timber disposition holders of the need to retain downed woody debris and stand structure to maintain snowpack. vii) Zonal Operating Ground rules to address the following: • Operators should strive to maintain natural drainage patterns. • Maintain the integrity of all water source areas and water bodies. • No net loss of fish habitat. • It is advised that timber disposition holders undertake field consultations with DFO and ASRD staff prior to commencing with field operations. • Timber disposition holders are encouraged to follow DFO's *Habitat Conservation and Protection Guidelines* and Alberta Environment's *Code of Practice for Watercourse Crossings* regarding any vegetation clearing/site modifications adjacent to watercourses or any in-stream work associated with watercourse crossings.	

The following will be considered when developing more detailed direction for the FMP:

i) Selective logging may be considered along watercourses using low-impact harvesting systems and if site conditions are favourable.

The intent is to manage buffers according to current Ground Rules until new Zonal Ground Rules allowing greater flexibility in managing buffers for wildlife habitat, are cooperatively developed by ASRD. Watercourse buffers will be assessed in light of natural disturbance processes.

ii) ASRD will provide guidelines and standards for road construction and stream crossings. Both terrain/engineering and environmental/ecological factors must be considered when determining the location of roads and trails.

iii) ASRD will provide guidelines for completing bridge and culvert inspections and notify operators of the guidelines.

iv) LOC holders to maintain an inventory of all bridge and culvert locations.

Regional operating ground rules shall also address the following:

- avoiding siltation;
- mitigation when siltation is unavoidable;
- no excursions/migration of pesticides, diesel fuel, hydraulic fluid, oil and other pollutants into watercourses;
- width of vegetation buffers along watercourses;
- riparian management considerations;
- road construction cannot impede existing drainage systems;
- minimize open-water stream crossings by vehicles and equipment;
- bridges (i.e., instant bridges) are preferred over culverts for permanent watercourses.

NOTE: Any projects (stream crossings or other) that have the potential to affect fish or fish habitat should be referred to DFO for review.

Criterion 4: Forest ecosystem contributions to global ecological cycles. Maintain forest conditions and management activities that contribute to the health of global ecological cycles.

RED text is used to identify Planning Team changes in response to CrowPAC and Quota Holder feedback.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
ELEMENT 4.1 Carbon uptake and storage: Maintain the processes that take carbon from the atmosphere and store it in forest ecosystems. (CSA SFM Element 4.1)				
To adopt and implement provincial carbon protocols as they are developed.			The Government of Alberta will work with the Government of Canada to establish harmonized carbon policies/protocols.	

Criterion 5: Multiple benefits of forests to society. Sustain flows of forest benefits for current and future generations by providing multiple goods and services.

RED text is used to identify Planning Team changes in response to CrowPAC and Quota Holder feedback.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
ELEMENT 5.1 Timber and non-timber benefits: Manage the forest sustainably to produce an acceptable and feasible mix of both timber and non-timber benefits. (CSA SFM Element 5.1) Supporting values identified by CrowPAC: • *Multiple use: Ensure the needs of all legitimate users are recognized and accommodated. (CrowPAC)* • *Balance the need for access with the need to restrict access to protect resource values. (CrowPAC)* • *Social benefits derived from forest ecosystems include recreational opportunities, wilderness experiences, natural environments for spiritual contemplation and rejuvenation, destination for leisure time activities, a place to escape and find solitude, nature enjoyment and education. (CrowPAC)* • *Forests are an integral part of our "home place". Healthy forests contribute to our quality of life and well being. (CrowPAC)* • *Forest landscapes possess desirable aesthetic qualities. (CrowPAC)*				

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
1. To maintain sustainable timber harvest levels; i.e., timber harvesting shall not exceed the forest's productive (renewal) capacity.	1. a) Amount of wood harvested in relation to the approved annual allowable cut (AAC) on a quadrant basis. b) Operable growing stock .	1. a) The approved AAC is set at X m^3 for coniferous timber b) 10 years of operable growing stock at the end of the 200-year planning horizon. (A new target will be developed following the planning manual.) Possible alternative wording: "The amount of operable growing stock at the end of the planning horizon must be equal to or greater than the average growing stock levels on the net landbase throughout the entire 200-year planning horizon" (taken from new Planning Manual)	1. i) A sustainable AAC shall be determined using ASRD's TSA model and based on direction contained in this FMP. ii) The volume of timber harvested shall be balanced out within the approved 5-year allowable cut. Variances in the annual harvest of allocated timber volumes (as identified in provincial legislation, regulations and policies) must be balanced out over a 5-year quadrant period. iii) Timber harvesting that exceeds the AAC may be permitted to enable salvage operations in timber stands affected by fire, insects and disease. iv) The AAC shall be revised when more than 2.5% of the net land base is impacted due to a disturbance. The AAC shall be reduced by an amount equal to the percentage of the net land base deletion. v) To account for loss of productivity due to roads and decking areas, a 5% reduction in AAC is to be applied as a default if the following is not provided: • Quantify the area (ha) disturbed by roads and decking areas (within and between harvested areas) for the past 2 years. • Establish a strategy and program to monitor the performance of regeneration on roads and decking areas (PSPs, regeneration monitoring). • Report actual performance within 5 years (Stewardship Report). • Detail silviculture strategies for reclamation. Incorporate target "c" as an operable growing stock constraint in the TSA model.	1. i) ASRD to monitor 5-year quadrant records to compare delivered wood volumes against the approved AAC. ii) ASRD will complete an AAC re-calculation if a disturbance impacts more than 2.5% of the net land base. iii) ASRD to report on compliance success in C5 Annual Reports and 5-year Stewardship Reports iv) Collect data obtained from permanent and temporary sample plots and analyze results. v) 5-year Stewardship Reports shall report on any variances from the approved harvest sequence and the rationale for each variance. vi) 5-Year Stewardship Reports will identify the status and findings of all research projects.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
	c) Timber harvest age.	c) The minimum age of conifer species at the time of harvesting shall be equal to, or greater than, 90 years. (*Note*: actual age figures are LMU dependent.)	vii) ASRD will develop a growth and yield monitoring program as part of this FMP viii) ASRD to maintain records identifying the volume of timber delivered to mills. ix) ASRD shall: • conduct log scale checks; • conduct timber hauling, truck, and weigh scale inspections; • monitor haul records; • maintain log scale population data; • ASRD to conduct mill studies and inspections, and administer mill scale population checks. x) Operators to achieve full compliance with legislation, regulations, approved plans and policies (i.e., zero infractions) xi) A minimum harvest age protocol will be adopted in the TSA model. xii) Continue to improve our understanding of forest stand dynamics and growth modeling through permanent sample plots, temporary sample plots and may include research projects. ASRD shall complete necessary evaluations and then determine if adjustments are required to established yield curves. If necessary, the yield curves shall be adjusted to correspond with research findings, and if warranted, predicted yield curves shall be adjusted to correspond with actual scaled timber volumes. xiii) It is acceptable to carry out harvesting of small diameter trees – less than 90 years of age – when the intent is to improve full-rotation stand characteristics.	

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
2. To maintain or increase the net forest (commercial, timber harvesting) land base in the C5 FMU.	2. a) Land removed from forest production (i.e., loss of forested land to alternative uses).	2. a-1) Net deletions from the net forested land base should not exceed 1% (approximately 1316.3 ha) over a 10-year period a-2) Net loss of forest cover from the gross forested land base should not exceed 1% (approximately 3519.6 ha) over a 10-year period.	2. a) i) ASRD shall monitor previously withdrawn lands under forest cover (e.g., reclaimed LOC roads, reclaimed mines and wellsites) that have been returned to timber production. ii) Deletions from the net forest land base (i.e., land use conversions) should be offset through means such as prompt reforestation of formerly withdrawn lands. iii) The provincial Special Places program has been concluded. As a result, no new protected areas are contemplated for the C5 FMU. iv) Industrial disposition holders shall be encouraged to integrate and coordinate their activities to minimize the industrial footprint on the forest land base. v) ASRD shall maintain records identifying additions and deletions to the C5 gross forested land base. vi) The TSA model shall be used to update the AAC in response to changes in the net forested land base. (The AAC shall be revised when more than 2.5% of the net land base is impacted due to a disturbance. The AAC shall be reduced by an amount equal to the percentage of the net land base deletion). vii) "Never merchantable" stands will be included as a subjective land base deletion during the TSA process. viii) ASRD shall track burned areas to determine whether regeneration has been successful.	2. – Monitor (track) land base deletions and size of the industrial footprint on the landscape through LSAS and GIS analysis. – Report on land base deletions in Annual Reports and five-year Stewardship Reports. – ASRD shall track previously withdrawn lands that are being reclaimed and reforested.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
	b) Area of disturbed sites (e.g., roads/trails, landings, abandoned mineral/mine sites) that are reclaimed to become part of the productive forest land base.	b) All disturbed sites having potential as productive forest land shall be inventoried and prioritized for reclamation.	Where lands are found to be regenerating naturally, disposition holders shall have the option of completing regeneration surveys or a regenerated stand inventory to confirm stocking levels. b) i) Access development plans shall identify the life-span of new road networks (i.e., plans will identify which roads are to be reclaimed). ii) ASRD (in collaboration with disposition holders) shall identify sites that may be reclaimed and re-vegetated on an annual basis. iii) Reclamation activities should follow the *Native Plant Revegetation Guidelines.*	
3. To ensure all harvested areas are re-forested.	3. a) Reforestation timeframe and standards. b) Percentage of area successfully reforested.	3. a-1) All harvested areas shall be reforested. a-2) Reforestation success must meet or exceed provincial regeneration standards and timelines. b) 100% compliance with existing provincial reforestation standards.	3. i) Regeneration requirements and standards shall be outlined in operating ground rules and in provincial policies. ii) Provincial reforestation standards may be modified or waived by the Minister or his/her designate (through Delegation of Authority) as per s. 143 of the *Timber Management Regulations* . The Minister or his/her designate (e.g., Forest Management Director) can waive reforestation standards. iii) Regeneration requirements shall be tailored to site-specific conditions, and shall be dependent on values that are to be retained or enhanced at the site in question.	3. – Timber disposition holders are to submit regeneration reports on an annual basis. Reports shall be reviewed by ASRD. – ASRD shall maintain annual records of reforestation activities and compliance with provincial guidelines. Reforestation success shall be identified in 5-year Stewardship Reports. – ASRD shall monitor reforestation performance.

[1] Strata- By definition Strata for the C5 FMP is: Fa, Fd, Pl , Sx and CD. See Glossary of terms for a detailed definition.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			iv) When and where deemed necessary, a 5-year regeneration lag may be adopted. v) Timber disposition holders shall ensure that site preparation treatments being used are conducive to prompt regeneration, while minimizing environmental/ecological degradation (see 3.1.1). vi) Timber disposition holders shall meet or exceed provincial free-to-grow standards on cutblocks. vii) ASRD shall encourage research into alternative harvest strategies. viii) To maintain the species composition found in the forest, all harvested sites shall be reforested to reflect the species mix and species proportions by strata[1] that existed before harvesting occurred. The original species mix and proportion can be achieved (balanced out) over a larger area if not achievable at the cutblock level.	
4. To achieve optimal utilization of wood fiber during logging operations.	4. a) Compliance with Zonal Ground Rules. b) Volume of wood salvaged following industrial disturbances.	4. a) Requirements for timber recovery contained in Zonal Ground Rules shall be met or exceeded. b) Salvage 100% of the accessible, economically recoverable wood having merchantable value.	4. i) ASRD to develop Zonal Ground Rules in consultation with timber disposition holders, other stakeholders, and a member of the public. The Zonal Ground Rules shall be a "living" document (i.e., periodic reviews and updates of the Ground Rules shall be completed) ii) ASRD to communicate timber salvage requirements to industrial users when new dispositions are issued. iii) An industrial timber salvage deduction will be made against the gross AAC.	4. – ASRD to complete site examinations following industrial (e.g., energy) disturbances. – ASRD will use Timber Damage Assessment (TDA) to track timber salvage operations.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
	c) Volume of wood salvaged following natural disturbances.	c) Salvage all accessible, economically recoverable wood having merchantable value, except stems and stands needed to achieve structural retention objectives and targets (see 1.1.2 Objective #2).		
5. To consider visual impacts during the development of harvest plans.	5. a) Achievement of set Visual Quality Objectives based on percent alteration (through clear-cutting) of the green portion of the landscape or landscape scene.	5. a) Visual Quality Objectives for "high" visually sensitive zones are as follows (Note: *percent figures indicate anticipated alteration proportions within each sensitive zone)*: • Preservation 0 % • Retention 0-2 % • Partial Retention 2.1-8.0 % • Modification 8.1-20 % • Max. Modification 20.1-35 % (*Note*: Percentages apply to the visible, green area of the landscape; i.e., rock and barren ground is	5. i) Aesthetic design considerations and logging practices must be adopted for all sites that fall within high visually sensitive zones identified in the C5 FMU "Visual Sensitivity Map". ii) Aesthetic practices must be adopted for all other industrial disturbances within high visually sensitive zones. iii) Landscape aesthetics shall be addressed following direction contained in ASRD's *Forest Landscape Management Strategies for Alberta and A Field Guide to Visual Resource Assessment in Alberta.* iv) ASRD's 3-class visual sensitivity rating system (i.e., high, medium, low) shall be used when completing visual assessments. v) ASRD shall complete a Visual Resource Inventory, resulting in a Visual Sensitivity Map, for the C5 FMU and set the Visual Quality Objectives for each identified sensitive zone. iv) Timber disposition holders shall complete a	5. – Compare percent area altered with the percent alteration allowed for by each Visual Quality Objective. – Compare on-the-ground block design with the approved Total Resource Design.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
		excluded.	Visual Impact Analysis and Total Resource Design in consultation with ASRD. v) If harvest systems other than clearcutting, such as partial cutting, are employed, then the proportion of the area to be altered must be defined based on the harvest (silvicultural) system used.	
6. To allow the general public and various user groups to benefit from the C5 forest.	6. a) Number of user permits and land and resource dispositions issued.	6. a) Applications will be reviewed subject to government policies and approval processes that are in place.	6. i) Existing IRPs, water basin management plans, strategic land use plans, and inter-agency referrals shall be used to determine compatible uses and activities within the C5 forest. ii) ASRD and timber disposition holders shall ensure the full range of compatible uses (as identified in IRPs, in any agreements, and government policy) are considered in forest planning exercises and during timber harvesting operations. iii) ASRD shall continue to issue land and resource dispositions, licenses and permits using existing administrative processes.	6. – Monitoring of permitted land uses within the C5 FMU is shared by several provincial departments.
7. To provide reasonable access for recreational and industrial purposes, while maintaining the ecological integrity of the forest.	7. a) Number of entry points to the C5 FMU. b) Kilometers of forestry access roads.	7. a) All major public entry points into the FMU shall be retained unless public safety or environmental matters are of concern. b) Interim road density figures (for open	7. i) Disposition holders may, in consultation with ASRD, prevent or limit public access on specific industrial access roads. Public notification shall occur through signage and other means (e.g., pamphlets, meetings, media announcements, gates, etc.). ii) Conditions of Approval for LOC roads and AOP roads will identify access control (restrictions), signage, road closure, and any public notification	7. a) ASRD staff shall complete patrols, monitor public motorized access, document the status of forestry roads, and note compliance with road/trail closures. b) ASRD shall monitor road density changes using GIS

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
	c) Plans in place to manage forestry-related access.	motorized roads) will be established once the provincial grizzly bear recovery plan has been approved. c) Completion of an access development plan shall be initiated following FMP approval.	requirements. iii) ASRD will give consideration to the establishment of additional Forest Land Use Zones within the C5 FMU to manage recreational access. iv) ASRD will identify open/active and closed/inactive motorized routes (and the road density for each) by subregion and LMU within the FMU. v) ASRD will monitor road density changes, against baseline data obtained through the completion of strategy iv, for pre-determined areas. Road density targets will be established for each LMU as part of access development planning. The upper density for open roads in each LMU will be influenced by wildlife (e.g., grizzly), environmental, and economic/social needs. vi) ASRD shall encourage the reclamation of all abandoned roads and trails not required for industrial activity, while respecting traditional access. vii) ASRD shall initiate the development of an access development plan that will address: • forecast access needs; • identify and coordinate key industrial access needs in the FMU; • identify preferred road corridor locations to access future timber stands. The access development plan will provide a basis for the development of future access management plans.	analysis and confirm existing road densities within LMUs. c) Completion of access plans which are consistent with the underlying principles identified in strategy vii.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			viii) New forestry access roads must be integrated with Forest Land Use Zone road networks where FLUZs exist. viii) Underlying principles for access management planning include: • promote shared access by all users; • prevent proliferation of access (i.e., minimize the road/trail footprint); • establish and maintain a sustainable trail system; • access decisions must take into consideration species and habitat issues/needs and various social/economic factors; • minimize environmental impacts; • road location/standards to take into consideration the future (long-term) status and use of roads and trails; • progressively reclaim temporary forestry roads (i.e., class 4 and 5) when operations are completed; • use public notification (signage, gating, brochures) to inform the public of the status of roads/trails.	
8. Promote cooperation between forest harvesting operators and other forest users.	8. a) Number of Action Requests received by the Minister of ASRD. b) Number of complaints received.	8. a) ASRD shall respond to all Action Requests. b) Number of complaint forms on file.	8. i) ASRD to develop complaint form to receive feedback from forest users. ASRD shall maintain records of public concerns / complaints received. ii) Specific user conflicts shall be addressed in detailed sector plans or resolved through ASRD mediation processes. iii) Provincial agencies shall implement education and awareness programs to reduce user conflicts.	8. – Tracking mechanisms (i.e., departmental ARs and Southern Rockies correspondence/complaint file system) shall be used to register all complaints received and follow-up actions taken.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			(e.g., Shifting Gears; Castle Education Initiative, Random Camping Users Guide).	
9. To ensure broad participation of disposition holders in forest management decision-making processes.	9. a) Number of consultations with disposition holders.	9. a) Timber disposition holders to contact other disposition holders (e.g., trapping, outfitting, grazing, oil and gas) that are directly affected by logging operations when developing harvesting plans.	9. i) Timber disposition holder requirements for notifying and consulting with other disposition holders shall be identified in Zonal Operating Ground Rules. ii) Timber disposition holders shall seek input from other disposition holders, organized user groups, and interested parties on their activities prior to development of harvest and silvicultural plans. Zonal Ground Rules will provide direction on public consultation. iii) New non-timber disposition holders and permit holders shall be encouraged to become informed of existing dispositions and operators that use (frequent) an area of interest. iv) ASRD to inform timber disposition holders of stakeholders that must be contacted before a public consultation campaign.	9. Disposition holders and ASRD to assess whether a cross-spectrum of interests are informed and engaged in public events.
10. To integrate recreational activities with forest management practices.	10. a) Number of Action Requests received by the Minister of ASRD.	10. a) ASRD shall respond to all Action Requests.	10. i) ASRD shall encourage public use of designated recreation areas and protected areas to confine impacts. ii) ASRD shall develop a recreation sites theme map which must be considered when the C5 net land base is established. ii) No new protected/recreation areas are being contemplated in the C5 FMU with the completion of the provincial Special Places initiative.	10. – ASRD to periodically examine buffers retained around traditional random campsites.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			iii) High use random campsites administered by PLFD and FPD shall be inventoried and monitored by forest guardians. High use random campsites will not be included in the timber harvest land base (except in the case of salvage removals following fire, insect outbreaks, or other natural disturbances). The impacts of random camping on adjacent logging areas shall be minimized. iv) Traditional recreational uses/patterns shall be recognized and respected by timber disposition holders.	
11. To integrate rangeland management activities with forest management practices.	11. a) Number of Action Requests received by the Minister of ASRD. b) Range–silviculture working agreements. c) Rangeland/livestock management improvements. d) Livestock grazing levels/capacity (AUMs).	11. a) ASRD shall respond to all Action Requests. b) Develop range–silviculture working agreements for all areas being harvested or undergoing forest management treatments. c) Retention of existing rangeland/livestock improvements. d) No net loss of livestock grazing capacity due to timber	11. i) Coordinate range and timber operations to minimize negative interactions. ii) Foster improved communication, cooperation, and collaboration between these two resource sectors. iii) Improve notification and consultation at the compartment planning stage and at subsequent stages (i.e., pursue early notification and face-to-face consultations). iv) Timber and range disposition holders shall develop range–silviculture working agreements (that are in accord with ASRD's *Interim Guidelines to Integrate Grazing Applications in the Green Area*) in conjunction with ASRD during the harvest design stage. Range–silviculture agreements shall be recognized in Annual Operating Plans. v) Adopt any applicable provincial standards and guidelines which may exist or be developed to integrate timber harvesting with domestic grazing.	11. – Annual reporting to identify existence of working agreements, documentation of concerns, and any actions taken to mitigate concerns. – ASRD staff to complete AOP checklists to ensure that range management concerns have been dealt with.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
		harvesting operations.	vi) Grazing shall be managed under operational range allotment management plans. vii) ASRD shall ensure that rangeland management plans contain strategies to minimize livestock impacts to seedlings. viii) Timber disposition holders to recognize and maintain the existing rangeland resource infrastructure (improvements) such as fences, water development sites, corrals, trails, clearings, and natural barriers. If the rangeland/livestock infrastructure (improvements) are damaged through logging activities, restoration must be undertaken by the operator to achieve the state/condition that existed prior to harvesting. ix) Rangeland and livestock considerations shall be explicitly addressed in Zonal Ground Rules. x) The timber operator shall strive to ensure that timber operations do not reduce the range carrying capacity for domestic livestock grazing.	
12. To integrate trapping with forest management practices.	12. a) Number of Action Requests received by the Minister of ASRD.	12. a) ASRD shall respond to all Action Requests.	12. i) The Alberta Trapper Compensation program (administered by the Alberta Trappers' Association) shall apply if logging impacts existing registered traplines. ii) Timber disposition holders shall address trapper concerns and make efforts to minimize impacts to traplines, trapper's trails, cabins and equipment. iii) Trappers shall be contacted by timber	12. – Annual reporting to document concerns and any actions taken to mitigate concerns.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			disposition holders during the GDP/AOP stage. iv) ASRD staff shall develop AOP checklists, a component of which will be to ensure that trapper concerns have been dealt with.	
13. To integrate energy/ mineral (exploration and development) activities with forest management practices.	13. a) Integrated access development plan. b) Number of Action Requests received by the Minister of ASRD.	13. a) Completed access development plan. b) ASRD shall respond to all Action Requests.	13. i) Existing processes for reviewing energy/mineral exploration and development applications shall apply. ii) Industrial disposition holders shall be encouraged to integrate and coordinate their activities to minimize the size of the industrial footprint on the forest land base. iii) ASRD shall work with affected industrial users and/or CAPP (and consult the Alberta Chamber of Resources) when developing an "access development plan".	13. – Annual reporting to document concerns and any actions taken to mitigate concerns. – ASRD staff to complete AOP checklists to ensure that energy sector concerns have been dealt with.
14. To integrate the commercial recreation and tourism sectors with forest management practices.	14. a) Number of Action Requests received by the Minister of ASRD.	14. a) ASRD shall respond to all Action Requests.	14. i) ASRD's existing disposition application process (e.g., ATRL process) shall be used to approve development applications. ii) PLFD to establish a mechanism for receiving, tracking and responding to complaints. iii) Timber disposition holders shall be made aware of other disposition holders and permit	14. – Annual reporting to document concerns and any actions taken to mitigate concerns. – ASRD staff to complete AOP checklists to ensure that tourism sector concerns have

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			operators affected by timber harvesting. iv) Adopt alternative silvicultural systems for areas having high recreation and tourism potential.	been dealt with.
ELEMENT 5.2 Communities and sustainability: Contribute to the sustainability of communities by providing diverse opportunities to derive benefits from forests and to participate in their use and management. (CSA SFM Element 5.2) Supporting values identified by CrowPAC • *People whose subsistence and livelihood are dependent on the forest should have an ongoing opportunity to maintain essential interactions with the forest. (CrowPAC)* • *A well-managed forest and a strong forest-based economy contributes to the future sustainability of communities and the well being of area residents and businesses. (CrowPAC)* • *A prosperous and sustainable local/regional economy is dependent on the forest for: (a) timber and wood fiber for forest products and consumer goods; (b) forage and rangeland resources for livestock grazing and consumer goods; (c) fish/game species and fur-bearers that have economic importance; d) clean water and air; e) natural, aesthetic environments which attract visitors. (CrowPAC)* • *Renewable and non-renewable resource-based industries (e.g., logging, oil/gas, agriculture), and the jobs they provide, contribute to the maintenance of a strong and stable local/regional economy, which in turn contributes to a high standard of living. (CrowPAC)* • *The tourism and recreation industry (e.g., skiing, snowmobiling, off-road vehicle use, camping, fishing, hunting, hiking, equestrian use, guiding and outfitting) make a significant contribution to the local and regional economy. (CrowPAC)* • *Well-managed forests provide opportunities for future economic diversification and value-added industries. (CrowPAC)* • *Well-managed aesthetic forests attract visitors whose expenditures on goods and services support the local/regional economy. (CrowPAC)*				
1. To ensure that local/regional businesses have an opportunity to share in the economic benefits that can be derived from the C5 forest.	1. a) Volume of coniferous timber (percentage of FMU AAC) made available to timber disposition holders.	1. a) ASRD will ensure timber allocations (expressed as a percentage of the FMU's AAC) are provided to Quota Holders and the Community Timber Program.	1. i) ASRD will honour all commitments contained in quota certificates. ii) The Community Timber Program shall continue to be administered by ASRD. Wood allocated through the Community Timber Program to local commercial and non-commercial operators and users, will be made available through: • Commercial Timber Permits*;	1. – ASRD to maintain timber return records by quadrant and disposition holder. – ASRD to maintain inspection and audit records.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			• Local Timber Permits (LTPs)** for "own-use"; • TM 66 program (i.e., Christmas trees, fire wood, posts, rails).	
2. To maintain the ongoing (long-term) viability of the forest sector by encouraging companies to consider value-added manufacturing and/or improved wood utilization and processing.	2. a) Number of businesses that are manufacturing intermediate and final value-added (wood and non-wood) products in the region.	2. a-1) Increase the amount of feedstock available for intermediate and final forest products. a-2) Increase the number of value-added businesses in the region. a-3) Increase the amount of value-added equipment installed to diversify existing wood operations (e.g., wood pellets from planer shavings).	2. i) Work with Alberta Economic Development and local Economic Development offices in encouraging market-driven opportunities in the intermediate and final value-added products industry in the region. ii) Companies are encouraged to become familiar with ASRD's Strategic Forestry Initiatives – Preliminary Action Plan. iii) Provide information to timber disposition holders of potential wood products that can be derived from cut logs of different quality and type.	2. Forest Business and Policy Branch (ASRD) and other organizations (e.g., AFPA) maintain statistics on the forest sector.
3. To provide economic opportunities for forest dependant businesses while maintaining the integrity of the C5 forest ecosystem.	3. a) Number of viable (sustainable) business enterprises dependant on the C5 forest.	3. a-1) Maintain or increase current levels of businesses dependant on the C5 forest (e.g., fiber and non-fiber related industries). a-2) Increase the	3. i) Work with Alberta Economic Development and local economic development offices in promoting and attracting markets and customers. ii) Work with local and regional primary, intermediate and final product manufacturing to strengthen the raw material supply chain. iii) Work with Alberta Economic Development to promote the use of high-grade raw materials for	3. – Local Economic Development offices maintain records of businesses operating in the area/region.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
	b) Employment in the forest sector.	amount of premium logs/wood moving into the value chain. b) Maintain or increase current direct and indirect employment in the region.	medium-to-high value end uses using log sorting techniques. iv) ASRD's existing disposition application and administrative processes shall be used to approve business and development applications (e.g., ATRL process). v) Explore the feasibility of establishing tourism-based facility nodes in the C5 FMU (led by AED	

ASRD's *Community Timber Program* is designed to support small communities' economic viability by supplying small forestry enterprises and individuals with a sustainable supply of timber from provincial Crown land. Permits issued under this program include:

* Commercial Timber Permits (CTP) — a short-term, area-based timber disposition authorizing a person to cut Crown timber. Issued pursuant to Section 22 of the *Forests Act*.

** Local Timber Permits (LTP) — a short-term disposition authorizing the harvest of provincial Crown timber for "private use only".

Criterion 6: Accepting society's responsibility for sustainable development.

RED text is used to identify Planning Team changes in response to CrowPAC and Quota Holder feedback.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
ELEMENT 6.1 Aboriginal and Treaty Rights (CSA SFM Element 6.1) Recognize and respect Aboriginal and treaty rights. NOTE: Future provincial government interactions with First Nations will be in accord with *Alberta's Aboriginal Consultation Guidelines on Land and Resource Management and Development*. The Guidelines are currently being developed by the Government of Alberta with involvement from industry, Aboriginal people and other stakeholders. The interim direction which follows will likely be superseded by direction provided in the *Aboriginal Consultation Guidelines* and other pertinent provincial policies once these have been officially adopted.				
1. "The Government of	1. a) Opportunities	1. a) Aboriginal input shall	1. i) Government of Alberta ministries shall consult with	1. C5 FMU Annual Reports

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
Alberta is committed to meeting all of its treaty, constitutional and legal obligations respecting the use of public lands" (p. 14 *Aboriginal Policy Framework*).	provided for input by Aboriginal communities. b) Aboriginal attendance at public events, scheduled meetings, and Public Advisory Committee meetings.	be sought by ASRD. b) Aboriginal representatives will be notified of all scheduled meetings where their involvement is being sought.	Aboriginal peoples and communities when developing natural resources on provincial Crown land. ii) ASRD shall notify and invite Aboriginal communities to convey their interests at meetings and public events. iii) ASRD to meet with Aboriginal representatives. iv) ASRD to provide relevant information and documentation to Aboriginal communities (materials to be provided will be tailored to meet the needs of Aboriginal communities).	shall identify the involvement and outcome of Aboriginal participation, and note how Aboriginal input was considered in decision-making.
ELEMENT 6.2 Respect for Aboriginal Forest Values, Knowledge and Uses (CSA SFM Element 6.2) Respect traditional Aboriginal forest values and uses identified through the Aboriginal input process. Note: Future provincial government interactions with First Nations will be in accordance with *Alberta's Aboriginal Consultation Guidelines on Land and Resource Management and Development*. These Guidelines are currently being developed by the Government of Alberta with involvement from industry, Aboriginal people and other stakeholders. The interim direction which follows will likely be superseded by direction provided in the *Aboriginal Consultation Guidelines* and other pertinent provincial policies once these have been officially adopted.				
1. To undertake effective and meaningful consultation with Aboriginal communities.	1. a) Early consultation before decisions are made.	1. a) Notify and seek input from Aboriginal communities before commencing with implementation of decisions/actions of interest to Aboriginal communities.	1. i) Establish contacts in each Aboriginal community. ii) ASRD will keep a record of all communications with Aboriginal communities. iii) Where possible, ASRD will provide training opportunities for Aboriginal people (e.g., wildland forest fire fighting work). iv) Invite Aboriginal communities to provide data/information on the existence of cultural, historic and heritage resources. v) ASRD to undertake consultations with aboriginal communities to determine if data-sharing agreements should be put in place.	1. C5 Annual Reports will document Aboriginal involvement and any cooperative or collaborative relationships with Aboriginals and the outcome.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			vi) Aboriginal Traditional Use Studies will be consulted in planning and field operations.	
ELEMENT 6.3 Public participation (CSA SFM Element 6.3) Demonstrate the SFM public participation process is functioning to the satisfaction of the participants. *Decisions affecting public land and resources should be made through public consultation processes. (CrowPAC).*				
1. To proactively and meaningfully involve directly affected users and the interested public in forest planning and decision-making processes.	1. a) Frequency and type of public consultation. b) Frequency of Public Advisory Committee (PAC) meetings. c) Satisfaction of PAC members.	1. a) The type of consultation approach used, and the number of public events held, will depend on the nature of issues being addressed and the level of input needed. b) Public Advisory Committee will meet at least twice annually. c) High levels of PAC member satisfaction.	1. i) ASRD shall establish a Public Advisory Committee having balanced sectoral representation. PAC will conduct itself in accordance with a Terms of Reference developed by ASRD and Committee members. Among other things, PAC will: • provide advice on when and how public consultation should occur; • provide input on the implementation of the C5 FMP (activities being undertaken and results achieved); • review and comment on C5 FMP monitoring activities and monitoring findings. ii) ASRD and PAC will together ensure that PAC meetings are effective and productive. ASRD will keep PAC members informed to ensure the Committee's effectiveness. Information will be provided on: noteworthy FMU developments; relevant issues; government policies; government and industry initiatives and programs; harvesting operations in the FMU; scientific advances; best practices. iii) The manner of public notification, and the public involvement mechanisms which are adopted, will be tailored to the unique circumstances of each public consultation campaign. iv) Surveys, interviews or other techniques may be used	1. Public involvement campaigns/events and PAC meetings will be summarized in C5 FMP Annual Reports and 5-year Stewardship Reports.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			to assess PAC member satisfaction.	
2. To raise public awareness of forest management issues and activities.	2. a) Amount of literature provided, presentations given, on-site tours conducted, materials placed in libraries, educational sessions offered, expert presentations given.	2. a) Information will be made available on an ongoing basis and in a timely manner, using various methods and media.	2. i) ASRD, with input from disposition holders, will develop and implement education and awareness strategies and programs, and prepare public awareness materials. Dissemination strategies will be used which have a high likelihood of reaching target audiences. ii) ASRD will develop and maintain a list of stakeholder and public contacts that have an interest in forest management in the C5 FMU. iii) ASRD will maintain a record of awareness materials that have been distributed. iv) Copies of the C5 FMP, Annual Operating Plans, C5 Annual Reports, and 5-year Stewardship Reports will be provided in local and regional libraries. Approved AOPs and GDPs will be available for public viewing in PLFD and Quota Holders offices. Forest Management Plans, Annual Reports and Stewardship Reports will posted on the Internet. v) Educational opportunities will be pursued at NGO and industry meetings, conferences and workshops, and in classrooms as opportunities arise.	2. – Feedback will be sought from participants and the public on the usefulness and effectiveness of public awareness activities and materials. – C5 Annual Reports will identify all public awareness activities undertaken.
3. To be responsive to local and regional input concerning forestry planning and operations.	3. a) Issue acknowledgement.	3. a) ASRD will notify individuals and organizations (within a six-week period) that their comments were received.	3. i) Identified forest management issues will be addressed by ASRD and disposition holders. PAC will be periodically informed of issues pertaining to the C5 forest. ii) Public and stakeholder comments will be recorded in	3. C5 Annual Reports will identify public input received and progress made in issue resolution.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			a issue tracking system established by ASRD. Forest management issues will be analyzed, prioritized and addressed. Follow-up action(s) will be taken within the constraints of existing budgets and government legislation and policy. As appropriate, ASRD will share public comments/concerns with timber disposition holders. Issue resolution that is dependent on the involvement of disposition holders will be discussed with them.	
4. To be responsive to changing social values concerning sustainable forest management.	4. a) Adoption of pertinent revisions to the CSA SFM Standard.	4. a) Future revisions to the CSA SFM Standard that are applicable to the C5. FMP will be noted and may be incorporated in the next C5 FMP.	4. i) ASRD staff will remain abreast of changes to CCFM's *Criteria and Indicators Framework* and the CSA SFM *Z809–02 Standard*.	4. C5 Annual Reports will identify changes to the next FMP as a result of revisions to the CSA SFM Standard.

ELEMENT 6.4 Information for Decision-Making (CSA SFM Element 6.4)

Provide relevant information to interested parties to support their involvement in the public participation process, and increase knowledge of ecosystem processes and human interactions with forest ecosystems.

Well and poorly managed forests are needed to allow researchers/scientists to study the many different facets of naturally functioning ecosystems. Forest ecosystems may hold the secrets, and offer solutions, for tomorrow's society. (CrowPAC)

Planning and monitoring are important activities in managing the C5 forest management unit. (CrowPAC)

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
1. To pursue active adaptive management when managing forest resources in the C5 FMU.	1. a) Monitoring programs in place.	1. a-1) Fulfill monitoring and measurement activities outlined throughout this plan. a-2) Five-year Stewardship Reports will identify how FMP objectives and targets are being met.	1. i) Procedures will be developed for monitoring activities and for reporting findings (to ensure consistency over time) and to verify the results achieved in implementing FMP objectives, targets and strategies. ii) Southern Rockies Management Area will develop a Five-Year Forest Stewardship report with input from timber disposition holders and Public Advisory Committee. iii) Timber disposition holders are to identify changes that were made to their operations as a result of feedback obtained through monitoring programs. iv) Research findings and monitoring data may result in amendments to the C5 FMP.	1. 5-year Forest Stewardship Reports will indicate adaptive (corrective) management actions taken.
2. To remain informed of scientific advances, emerging technologies, and new knowledge in managing our forest ecosystems.	2. a) Adoption of best management practices.	2. a) ASRD will assess and set priorities for testing and applying new approaches and best management practices. If found to be favorable and feasible, new approaches and best management practices will be adopted.	2. i) ASRD professional agency staff will stay abreast of developments in their respective disciplines. ii) New approaches and practices will be evaluated and where appropriate applied on a trial (pilot) basis by ASRD.	2. C5 Annual Reports to identify changes in operations based on new science, technology, information, and knowledge.
3. To protect historical resources where	3. a) Identification of historical resources in	3. a) Notations will be placed on significant	3. i) Conduct Historical Resource Impact Assessments (HRIA) where determined by ACD or through the use of	3. ASRD/ACD will maintain records of newly discovered

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
appropriate.	need of protection. b) Number of historical sites identified and protected.	resource sites that have been identified to Alberta Community Development (ACD). b) Full protection of all known, significant historic resources.	a predictive model. ii) Historic sites will be flagged in the Land Status Automated System (LSAS). Confidential information concerning the location and type of site will be protected. iii) Location of known historic sites will be communicated to users to mitigate impacts from industrial, commercial and recreational activities. iv) ASRD will work with C5 Quota Holders and ACD to explore, develop, and implement a predictive model for C5 FMU assessing the probability of encountering historical resources during the process of harvest planning and silvicultural operations. v) ACD's "Significant Historic Sites" database and the predictive model will be consulted during forest/timber planning and field operations.	historical sites and sites under protection.
4. To obtain current information on forest resources.	4. a) Updating of inventories.	4. a-1) Inventories, resource maps, and aerial photography will be updated as needed. a-2) AVI for the C5 FMU will be updated by 2014.	4. i) ASRD will develop a system/procedure and set timelines for completing and regularly updating forest inventories (partial list includes: AVI, fire history, fire events, ecological classification, insect/disease outbreaks, random camping, fish and wildlife, rare and endangered species, and range resources). Where possible, inventory updates will be undertaken by ASRD in partnership with other organizations. ii) Inventoried data will be obtained and stored so that it can be used in a GIS environment and is available for producing updated maps. iii) Wherever possible, ASRD will partner with other organizations and agencies when obtaining new remotely sensed imagery, inventories and data. iv) ASRD will confirm the status of, and summarize	4. C5 Annual Reports will identify the status of inventory work undertaken and planned.

Objective(s)	Indicator(s) (identify source of indicator)	Target(s)	Strategy(ies)	Monitoring and Measurement
			the results/findings obtained from, all silvicultural and other research trials undertaken in the C5 FMU thus far. This will likely entail: • site visits to confirm plots, their condition and location; • review of all existing documentation pertaining to C5 research trials; • assess whether research trials should continue (be re-activated) and what contribution they make in filling information gaps; • assess whether research trials should be combined or inter-related with other PLFD research initiatives.	
5. To manage the C5 FMU as part of a larger regional landscape.	5. a) Contact/communication with other resource managers and jurisdictions.	5. a & b) Maintain regular and ongoing contact/ discussions with adjoining resource managers (have at least one meeting yearly to discuss regional landscape issues).	5. i) PLFD will work with other jurisdictions, agencies and organizations to pursue a level of policy direction (strategic and operational) within the C5 FMU and adjacent areas. ii) ASRD shall establish "list-serves" and mailing lists to facilitate communication with other agencies and organizations. iii) PLFD will participate/collaborate with regional bodies and municipalities that have an interest or mandate in addressing larger landscape/ecosystem issues (e.g., Crown of the Continent). iv) Agreements may be established to address trans-boundary issues (e.g., mountain pine beetle epidemic entering Alberta from B.C.).	5. C5 Annual Reports to indicate any contact/ discussions with resource managers and other jurisdictions.

CrowPAC Values — General

Preamble: A society is dependent on the land and its resources; therefore, its members must be respectful of these valuable public assets. Ensuring the sustainability of the forest ecosystem is everyone's responsibility.

1. *Users and visitors should act responsibly, assume a sense of ownership, and take pride in the C5 Forest Management Unit (i.e., demonstrate appropriate attitudes and behaviors, be informed of potential impacts to the natural environment, and be guided by a stewardship ethic). Education is crucial to inform both visitors and users. (CrowPAC)*

2. *Compliance checks and enforcement activities should be undertaken to ensure that human activities and land uses comply with any approved standards, guidelines or resource management policies that are in place. (CrowPAC)*
3. *The consequences of land use decisions and management actions should be constantly assessed to determine their effect on the C5 Forest Management Unit (i.e., adaptive management) and the rights and interests of other users (i.e., Aboriginal communities and disposition holders). (CrowPAC)*
4. *The C5 Forest Management Unit has value to people living outside the region (provincially, nationally and internationally). (CrowPAC)*
5. *If known, land use thresholds and ecosystem limits will be observed to reduce human impacts. (CrowPAC)*
6. *All members of society have the right to access and benefit from the C5 Forest Management Unit. This right is, however, contingent on human performance – it is a privilege that can be taken away. (CrowPAC)*
7. *If the C5 land base and its resources are degraded beyond an acceptable, allowable limit, appropriate actions and remedies will be undertaken to repair, reclaim or re-establish what was damaged or destroyed. (CrowPAC)*
8. *Societal benefits that are derived from the C5 Forest Management Unit are invariably obtained at a cost. Those who derive benefits from the C5 Forest Management Unit must accept the costs associated with managing the forest such that a continuous stream of benefits can be supplied in the future. Users must also assume responsibility for restoring/reclaiming any disturbed areas. (CrowPAC)*
9. *The resources of the C5 Forest Management Unit should be managed, and its renewable resources conserved, for the benefit of future generations. (CrowPAC)*