Weyerhaeuser Drayton Valley

Sustained Yield Unit R12

Appendix 4.1: Defining the Land Base

Forest Management Agreement Area
FMA # 8500023

November 2005

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1 Introduction

This document provides supporting information to the Detailed Forest Management Plan (DFMP). It explains the process of defining the net harvestable landbase for the Sustained Yield Unit (SYU) R12 Weyerhaeuser Drayton Valley Forest Management Agreement (FMA) area; it follows the structure and general context of the parallel document prepared by Weyerhaeuser Company Ltd. (Weyerhaeuser) for the Edson FMA. This is the first appendix of a three part technical series (second appendix: *Stand Yield Projections*, third appendix: *Timber Supply Modeling*) used to estimate the sustainable annual allowable cut (AAC) for the SYU R12.

A Weyerhaeuser core value is to manage forestlands for the sustainable production of raw materials while protecting water quality; fish and wildlife habitat; soil productivity; and cultural, historical and aesthetic values. The landbase allocation process considered these values when the harvestable landbase was delineated. The overall goal of this document is to provide a detailed overview of the data and processes used to prepare the data for use as input to the timber supply modeling process.

The Drayton Valley FMA covers nearly 490,570 ha. Four Forest Management Units (FMU's) make up the Drayton Valley FMA; these are identified by the codes R1, R2, R3, and R4. A portion of FMU R1 (approximately 11,000 ha) is located outside the FMA area but was included in the analysis in order to account for quota license rights extending into these areas. SYU R12 includes all four FMUs.

The landbase determination process was used to define the net landbase currently available for timber harvesting, based upon the current set of operating ground rules and the most up-to-date landbase exclusions. This process can be expected to change in future analyses as newer data and improved methods become available. For the Drayton Valley FMA area, Weyerhaeuser adopted the draft of Alberta Forest Management Planning Manual (ASRD 2004) as a guide for determining the net harvestable landbase available for timber harvesting. Figure 1-1 shows FMA area and the adjacent R1 FMU in a provincial context.

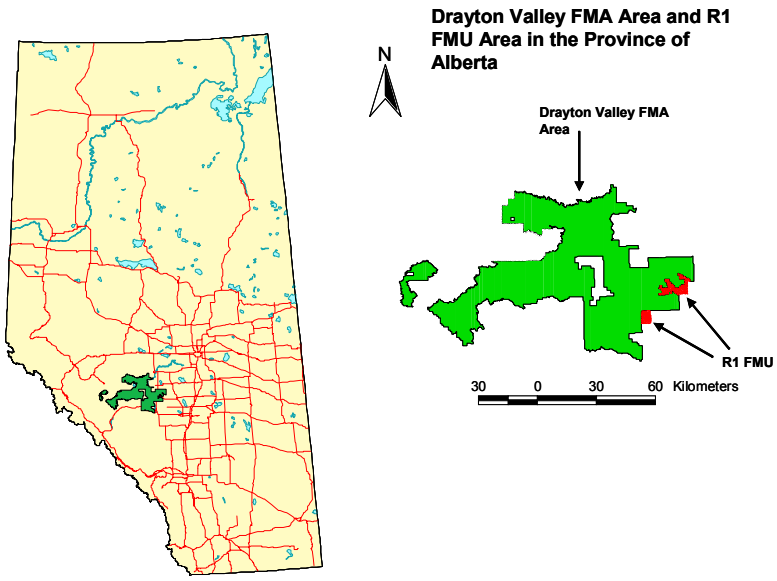


Figure 1-1 Drayton Valley FMA and R1 FMU Location Map

2 Data Layers and Methods

The following data sources were used to provide the final results for this report:

- Alberta Vegetation Inventory (AVI)
- SiteLogix® predictive ecosite assignments (based on 1994 natural subregions)
- Fourth order watershed boundaries
- ARIS silviculture records
- Boundaries of Weyerhaeuser's harvest design areas (HDAs)
- Grazing dispositions
- Historic resources (archeological potential)
- Provincial natural subregion boundaries (1994)
- ESIP zones
- Linear and other dispositions
- Cutlines
- Private land
- Parks
- Watercourse data

- Historical cutblocks
- Planned cutblocks
- Historical fire boundaries

The start date to be used for Timber Supply Analysis (TSA) modeling is November 18, 2000. To assist the auditing process, the landbase data fields are referenced in bold italics in the form ***[FILE:FIELD]*** (if no file is indicated then the start file ***AVI_00_MAIN*** is to be assumed).

2.1 AVI Inventory Background

Two forest inventories were used to describe the Weyerhaeuser Drayton Valley analysis area. The inventories were completed and/or acquired during the preparation of the Detailed Forest Management Plan. Using these inventories, landbase features were overlaid with coverages used previously to define the harvestable timber landbase. The two areas used in this analysis, with the addition of inventory type and data source, are shown in Table 2-1.

Table 2-1 Net Landbase Analysis Area

Area	Inventory	Source of Data
R1 outside DV FMA	AVI	Alberta Sustainable Resource Development
Drayton Valley FMA	AVI	Weyerhaeuser Company Ltd.

The Alberta Vegetation Inventory (AVI) provides continuous geo-spatial coverage for all the Forest Management Units included in this analysis. The inventory supplied by Sunpine Forest Industries Ltd. (now called Sundre Forest Products, a division of West Fraser Mills Ltd.) and the Alberta Department of Sustainable Resource Development is assumed to be correct.

The inventory for the Drayton Valley FMA area was initiated in 1991 and was completed in 1996. The inventory was completed over a seven-year period with different contractors, and the final product was standardised to AVI version 2.1 specifications. In 1999, the Forest Management Division audited the inventory and advised Weyerhaeuser

that the inventory met the standards for an AVI inventory as stated in the audit report of July 5, 1999.

2.2 Tools Used

Several software applications were used to create the timber harvest landbase input files, including Arc/Info™ 8.3, PC ArcView™ 3.2, and Visual FoxPro™ 8, a database programming software package. Arc/Info™ Version 8.3 was the geographic information system (GIS) software used to create and intersect the landbase coverage.

2.3 GIS Processing

All data sets were transformed to Arc/Info coverage format from the source information and reprojected to UTM, Zone 11, NAD 83 Datum if required. Only the required attributes were maintained for each input layer (as identified by Weyerhaeuser). All input data sets were overlaid to produce a composite landbase coverage to be used in the net landbase determination. More details on GIS processing are provided in Appendix 1B Silvacom GIS Processing Document.

2.4 Administrative Designations

Administrative designations are legal boundaries that include:

Forest Management Agreement (FMA) ***[FMA]*** and the **Forest Management Unit** (FMU) ***[FMU]*** boundaries – Care was taken to ensure that the Drayton Valley FMA and FMU boundaries were correctly portrayed. The FMA and FMU boundaries used as an input layer were based on information provided by Silvacom, cross-referenced with that provided by Alberta government officials and Weyerhaeuser employees for verification.

Weyerhaeuser Land Management Units (LMU**) *[LMU]*** and **Harvest Design Areas** (HDA) ***[WORKAREA]*** – LMUs and HDAs are areas internally defined by Weyerhaeuser to assist with operational activities. Specific HDAs will be used during the TSA modeling to control locations of harvesting activities. LMUs are used during the landbase netdown to provide information for assigning the expected regeneration forest type on cutblocks.

Ten LMUs that define contiguous landscape areas were incorporated into the net landbase determination process; Table 2-2 lists those units occurring within the Drayton Valley FMA area. FMU R1 outside the FMA area did not have similar LMU attributes defined. For this area, "R1" was used as the LMU code.

Table 2-2 Land Management Units

Code	LMU
ELK	Elk River
NOR	Nordegg River
BAP	Baptiste
BLK	Blackstone
MAR	Marshybank
SAN	Sand Creek
TAL	Tall Pine
WIL	Willesden Green
OCH	O'Chiese
MED	Medicine Lake

2.5 Non-Harvest Type Dispositions

Numerous land uses unrelated to forest harvesting occur within the Drayton Valley FMA. Land use dispositions within the FMA that are not compatible with forest harvesting activities were identified and removed from the harvestable landbase.

2.5.1 Land use Dispositions

An inventory completed for the SYU area digitally captured all land use dispositions including protected areas. In addition to the spatial representation, each disposition was linked to the Land Status Automated System (LSAS) tabular data.

The following data sources were used to capture land use dispositions:

1. LSAS Land Standing Report
2. Individual disposition survey plans
3. 1:40,000 land use plans
4. Provincial base data
5. Forest inventory information (AVI)
6. Orthophotos

The steps used to capture the land use dispositions on the FMA area were as follows:

- All available linear and polygonal disposition types were loaded in two layers in an Arc/Info™ GIS environment. The most accurate source data used was based on the following hierarchy:
    1. 1:15,000 Orthophotos *(Most Accurate)*
    2. 1:15,000 AVI / Base map data
    3. 1:40,000 Land use plans *(Least Accurate)*

- Each geographic feature was attributed with a unique disposition number.
- The provincial LSAS information was linked to each spatial feature using the disposition number.

Weyerhaeuser periodically updates the data with new disposition application documents (survey plans) and new Land Status Report (LSR) data in order to maintain relevancy. The update process used by Weyerhaeuser is as follows:

1. New dispositions:
    - Obtain survey plan from the energy or utility company;
    - Geographically reference the plan for registration in GIS;
    - Load the location of the disposition from the survey plan;
    - Verify the location of the disposition against the survey plan; and
    - Link LSR data to the disposition coverage.
2. Cancelled dispositions:
    - Archive disposition coverage and attribute tables;
    - Remove disposition coverage from the land use layer; and
    - Replace the GIS layer(s) with the new data.

Area allocations using buffer operations were performed on linear dispositions within the SYU R12 area. The features and the buffer widths are depicted in Table 2-3. The incorporation of these features in the landbase was performed after the buffers were completed.

Table 2-3 Summary of Buffer Width for Landuse Dispositions

Code	Description	Buffer Width* (m)
EZE	Easement	15
FRD	Forestry Road	20
GEO	Undefined	8
LOC	License of Occupation	20
MLL	Miscellaneous Lease	20
MLP	Miscellaneous Permit	10
MSL	Mineral Surface Lease	20
PIL	Pipeline Installation Lease	15
PLA	Pipeline Agreement	20
RDS	Roadway	20
REA	Rural Electrification Association Easement	10
ROE	Right-of-Entry Agreement	20
RRD	Registered Roadway	20
SML	Surface Material Lease	15
VCE	Vegetation Control Easements	15

* - Total Disturbance widths includes disturbance on both sides of the buffered line delineating the centre of the disturbance. Therefore, a pipeline agreement (PLA) has a 10.0m buffer applied and a total expected disturbance width of 20m.

Polygon type dispositions were applied by simply overlaying their boundaries onto the AVI layer. Unlike linear dispositions, polygonal landuse dispositions were individually identified in the netdown processed database ***[LANDUSE]*** (Table 2-4). All polygon dispositions (except for some Protective Notations (PNT) and GEOs) were removed from the SYU R12 net harvestable landbase. GEOs are typically only in effect for one year therefore these areas were included in the net harvestable landbase. All but four PNTs are included in the net landbase and will be dealt with on an operational basis. Section 2.6.3 summarizes four PNTs deleted from net harvestable land base.

Table 2-4 Polygon and Linear Type Dispositions

Code	Description
	POLYGON
DRS	Disposition reservation
MLL	Miscellaneous lease
MLP	Miscellaneous permit
MSL	Mineral surface lease
PIL	Pipeline installation lease
PRI	Miscellaneous
REC	Recreation lease
SMC	Surface material license
SML	Surface material lease
WDL	Water development lease
	LINEAR
EZE	Easement
FRD	Forestry road
GEO	Geophysical exploration
LOC	License of occupation
PLA	Pipeline agreement
RDS	Roadway
REA	Rural electrification association easement
ROE	Right-of-entry agreement
RRD	Registered roadway

2.5.2 Grazing Leases / Dispositions

A significant area within the SYU R12 is dedicated to grazing dispositions that affect classification of the productive forest landbase. An inventory of grazing dispositions for the SYU area was completed in 1999. To review the accuracy and completeness of the grazing disposition inventory, a new GIS polygon coverage representing the known extent of these dispositions was created and provided to ASRD in January 2000. Each individual grazing disposition was spatially identified on the landbase ***[GRAZING]***. The status of Grazing Dispositions was reviewed again in February 2005. Resulting changes were applied to spatial coverage and attribute data. Table 2-5 summarizes the current status and types of grazing dispositions included in the netdown summary.

Table 2-5 Grazing Dispositions

Disposition Code	Description	FMA Status	
		IN	OUT[1]
FGL	Forest Grazing License	FGL860001, FGL860017, FGL860021	FGL800011, FGL810024, FGL920008
GRL	Grazing Lease	GRL38175	All other
GRP	Grazing Permit	GRP787429	All other
GRR	Provincial Grazing Reserve		All

1 – FGL800011 and FGL810024 were issued prior to the FMA. Diamond Hill Allotment (FGL920008) was withdrawn from the FMA area in 1993 but contributes to the SYU AAC as a quota. In addition, since 2000, GRL38175 and GRP787429 have been cancelled without renewal of FGL and contribute to the FMA AAC.

Each of the grazing disposition types was addressed as follows:

- Forest Grazing Licenses (FGL) – considered within the FMA if the license was issued after November 14, 1985 (the date of commencement for the Forests Act – Forest Management Agreement O.C.796/85). Two licenses, FGL800011 and FGL810024, were issued prior to November 14, 1985 and were not considered part of the FMA. However, these areas were included in the total SYU area because both the coniferous and deciduous volumes will be allocated for harvest through quota certificates and are chargeable against the SYU AAC. Three licenses (FGL860001, FGL860017, and FGL860021) have been issued since November 14, 1985 and were considered part of the FMA. Forest grazing license FGL920008 (Diamond Hill Allotment) was withdrawn from the FMA area in 1993 and but contributes, under quoata, to the total SYU AAC.
- Grazing Leases (GRL) and Grazing Permits (GRP) – Not considered part of the FMA. However, lease/permit areas were included in the total SYU area because both the coniferous and deciduous volumes on grazing leases and/or permits will be allocated for harvest through quota certificates (or deciduous timber allocations) and are chargeable against the SYU AAC. GRL38175 and GRP787429 have been cancelled without renewal of FGL and contribute to the total FMA and SYU AAC. In the case of new GRP will be issued in the FMA area, Weyerheauser will be entitled to compensation from the applicant.

- Provincial Grazing Reserves (GRR) – Not considered part of the FMA and were not included in the total SYU area. No GRR dispositions were identified in the SYU area.

The grazing disposition deciduous and coniferous volumes outside of the FMA but in the SYU are to be fully allocated to Weyerhaeuser upon approval of the DFMP.

2.5.3 Provincial Permanent Sample Plots

All provincial permanent sample plots ***[PSP]*** were considered in the FMA but were marked as a deletion category therefore they do not contribute volume to the SYU AAC.

2.6 Prohibited Areas

Prohibited areas described areas that have been excluded from productive net landbase and Annual Allowable Cut (AAC) determination. Prohibited areas include private land, protected notations, provincial parks and natural areas, aboriginal reserves, and ecological reserves.

2.6.1 Private Land

The objective of the private land inventory was to identify any private land within the SYU R12 area and capture these areas as a digital GIS coverage. The final coverage consisted of one merged layer from the various data sources.

Three data sources were used to capture private land within the SYU area:

1) Land Status Automated System (LSAS) Land Standing Report (July 1999) A LSR was acquired for the Drayton Valley FMA area. The report identified the locations of “CROWN” (public land), “FREEHOLD” (patented) and “MIXED” (partially patented) quarter sections in the vicinity of the area. The locations of the “FREEHOLD” and “MIXED” land were loaded into the GIS, using the legal and base features for reference.
2) Municipal Maps

Municipal District and County maps were acquired for Brazeau No. 77, Clearwater No. 99 and Ponoka No. 3. The locations of privately held land were loaded into the GIS, using legal and base features for reference.

3) 1:40,000 Scale Land Use Plats (July 1998)
   Land use plats were acquired in July 1998. All patented land identified on the plats was loaded into GIS, using the legal and base features for reference.

Notable discrepancies existed between the three data sources. As a result, all three sources were loaded independently from each other. The following procedures were used in the final coverage assembly for the SYU area:

1) Check maps were generated to verify the location and extent of private land against the original sources; and
2) All three data sources were combined to provide a single coverage. All polygons were attributed to their original source.

The information collected from the land use plans, County and Municipal District maps, and the LSR were provided to an independent consultant to perform a Land Title search to confirm the accuracy of the data sources and to generate a database of landowners. A Land Title search was performed by quarter section for the areas identified by the above process. This process confirmed the status of the areas as private land. For quarter sections with multiple registrations (more than one landowner registered) the sub-plans were obtained. The spatial information of these sub-plans has not been added to Weyerhaeuser's GIS database. A final LSAS search of all quarter sections was conducted to confirm that the remaining quarter sections were Crown land.

2.6.2 Special Places and Parks

The Wapiabi Special Places 2000 ***[SP2000]*** area was incorporated into the netdown procedure by overlaying the current Wapiabi Provincial Park boundary with the AVI polygon coverage. The area was then flagged and excluded from the timber harvesting landbase.

2.6.3 Protected Notations

Four areas with protected notation designation have been derived from ASRD LSAS database. Three of these areas have been deleted from the productive landbase either as legally imposed or as voluntarily imposed deletions; PNT880286 can be harvested under quota. Table 2-6 summarizes protected notations deleted from net harvestable land base in the SYU area.

Table 2-6 Summary of Protected Notations

PNT Designation	Area (ha)
PNT020323	16.4
PNT920339	160.2
PNT950134†	3.3
Total	179.9

† voluntary

2.6.4 Natural Areas

The O'Chiese natural area was incorporated into the spatial landbase using GIS overlay and was excluded from the timber harvesting landbase.

2.6.5 Aboriginal Reserves

There were two aboriginal reserves encircled by the SYU area – I.R. 202 and 203. The total reserve area is 19,303 hectares. These areas were excluded from net harvestable landbase.

2.7 Ecological / Natural Feature Designations

The SYU R12 area includes several important ecological and cultural features.

2.7.1 Natural Sub-regions

The GIS SYU R12 boundary coverage was overlaid with the 1994 1:1,000,000 provincial Natural Sub-Region (NSR) ***[NSN]*** GIS coverage. Five natural sub-regions were

identified in the SYU R12 area and their aerial extent and proportion is summarized in Table 2-7.

Table 2-7 SYU Area distribution by NSR

NSN	NSR	Area (ha)	Percentage
Alpine	AL	1,326	0.3%
Dry Mixedwood†	LF	102	0.0%
Lower Foothills	LF	400,758	76.9%
Sub-Alpine	SA	9,103	1.7%
Upper Foothills	UF	109,589	21.0%
Total		520,877	100.0%

† Dry Mixedwood NSN occurred outside FMA and was classified as LF in FMU R1.

2.7.2 Watershed Basin

Fourth order watershed basins were delineated ***[WTRSHED]*** on the landbase. This coverage does not impact the netdown, however during TSA modeling it will be used to report on harvesting activities within each basin.

2.7.3 Predictive Ecosite Classification

Site quality is an important factor in determining the extent and nature of merchantable forests. Therefore, each AVI polygon was assigned an ecosite label ***[ECOSITE]*** appropriate to the natural subregion within which it occurred, using the data from a computer-generated ecosite classification (SiteLogix®) developed for the SYU R12 area in July 2000 (GDC 2000). For the most part the project used the same ecosite assignment protocol as the *Field Guide to Ecosites of West-central Alberta (Beckingham et al. 1996)*. Where a complex ecosite call naming two ecosites (i.e. ***[ECOSITE] =*** 'LF-e/f') was given, the stand was assigned to the first ecosite in the complex – 'e'.

2.7.4 ESIP Zones

Eastern Slopes Integrated Plan (ESIP) ***[ESIP]*** and Integrated Resource Plan (IRP) zones provided by ASRD were digitally overlaid on the FMA area. A total of 1,943.5 ha were identified under "Prime Protection" in the ESIP Regional Zone and were excluded from the productive landbase.

2.7.5 Historic Resources

The historic resources coverage predicts the archaeological potential of a site. Potential resource values were estimated from low to high with areas marked “high” being the most likely locations to contain archaeological historical findings. The historic resources coverage was not included in the netdown determination process. Instead, the historic resources status of sites will be reconciled following harvest scheduling stage. Extra care will be taken during operations in areas of “high” potential.

2.7.6 Other Wildlife Zones – Caribou / Ungulate Zones

A digital overlay of the SYU area with ESIP Regional Land Use zones indicated that 76,223 ha of “Critical Wildlife” zone (ASRD 2004) occur within the SYU R12. This area has not been deleted from the net productive forest landbase but special management considerations will be applied.

2.8 Landscape Disturbances

Natural and anthropogenic disturbances can impact the amount of timber available for AAC. These disturbances were included in the netdown process as separate coverages.

2.8.1 Forest Fire Activity – O’Chiese Fire

The forest fire coverage (fire_all.e00) estimates the historical boundary of fires that have occurred within the SYU landbase since the 1930s. In the composite netdown database provided by Silvacom each decade of fire activity (starting in the 1930s) was assigned its own field ***[FIRE1930, FIRE1940, FIRE1950, FIRE1960, FIRE1970, FIRE1980, FIRE1990, FIRE2000]*** so that each area burned can be identified as to decade of origin.

The 1999 O’Chiese fire coverage ***[O_CHIESE]*** was a photo based re-inventory of the 1988 fire. The O’Chiese fire inventory was approved for use in the TSA, but it was not developed to AVI 2.1 standards. The fire inventory was included in the landbase netdown as a thematic overlay of the coverage. The re-inventory was used to update

existing inventory fields for the area of the fire. The objectives of the O'Chiese fire area re-inventory were:

1) To provide an indication of stocking levels and species within the fire area on the FMA to allow for assignment of silviculture regimes;
2) To update all roads and landuse activities within the fire area on the FMA, and;
3) To allow for the future assessment of enhanced forest management opportunities.

The new forest inventory information was overlaid with the previous AVI data where the value of '1' for the field ***[O_CHIESE]*** signified data associated with the O'Chiese fire area. Data associated with the O'Chiese fire had field names preceded with the letter "O" (e.g., the field name ***[CC]*** was ***[OCC]***). Broad cover groups and land use codes were determined for both overstory and understory layers using the same rules as for the rest of the SYU area.

2.8.2 Linear Disturbances (not captured as linear disposition)

The forest inventories do not include seismic lines as individual polygons, as the seismic line width is often less than the minimum width that can be captured digitally as polygon. Seismic lines ***[CUTLINE]*** were buffered to a total of 8m width and applied as a deletion to the landbase. As of May 2000, Weyehaeuser policy has been to regenerate cutlines areas within cutblocks.

2.8.3 Cutblocks

To spatially capture assignment of old cutblock regeneration in the Drayton Valley FMA area, ten cutblock assignment rules were developed.

The cutblock rules were developed based on two data sources. The primary GIS data source used was the spatial cutblock layer (Figure 2-1) and included 2,984 polygons. This data source was assumed to be the most accurate source of cutblock information. Whenever possible, each cutblock from the spatial layer was linked to the Alberta Regeneration Information System (ARIS) silvicultural database using the unique opening number. However, in some instances spatial cutblock information did not link to ARIS

records. There were 406 blocks that fit in this group. The secondary data source of cutblock information was derived from the AVI data where cutblocks were identified using "CC" modifiers (Figure 2-2).

The cutblock rules were applied only to those cutblocks that met the following conditions:

1) Cutblocks had no landuse restrictions, and
2) Cutblocks were on Crown land.

The cutblock rules were used to determine three regenerating stand attributes:

1) Broad Cover Group (BCG);
2) Stand age; and
3) Associated Crown Closure class for each cutblock.

BCGs were assigned using one of the following data sources:

1) Silviculture records (ARIS data);
2) AVI Story of Primary Management (SoPM); or
3) Cutblock Regeneration Study (see Regeneration Study Section).

In order to use the Regeneration Study, a separation between regenerating deciduous and coniferous cutblocks was required. The difference was determined using regenerating species group classification according to one of the following data sources:

1) Silviculture records (ARIS database designation);
2) AVI forest cover type and SoPM; or
3) Historical harvesting information (see Historical Harvesting Ratio (HHR) section).

Regenerating stand age was assigned to a cutblock using one of the following equations, listed in preferred order according to the accuracy of available data:

1) *Stand Age = 2000 – (ARIS cut year)*,
2) *Stand Age = 2000 – (AVI "CC" modifier year)*,
3) *Stand Age = 2000 – (AVI year of understory or overstory origin)*, or
4) *Stand Age = 1* (cutblocks were assigned to be one year old)

A regenerating stand was only assumed to be one year old if neither ARIS cut year, nor AVI modifier year, nor AVI year of origin information was available.

A fully stocked cutblock was assumed to be comparable to a “C” crown closure AVI call. The Regeneration Study indicated that total stocking levels (Table 2 9) were between 88 and 100 percent, therefore most of the blocks were assumed to regenerate to fully stocked stands. However, each cutblock rule has a unique set of criteria for assigning crown closure, as shown in Figure 2-1 and Figure 2-2.

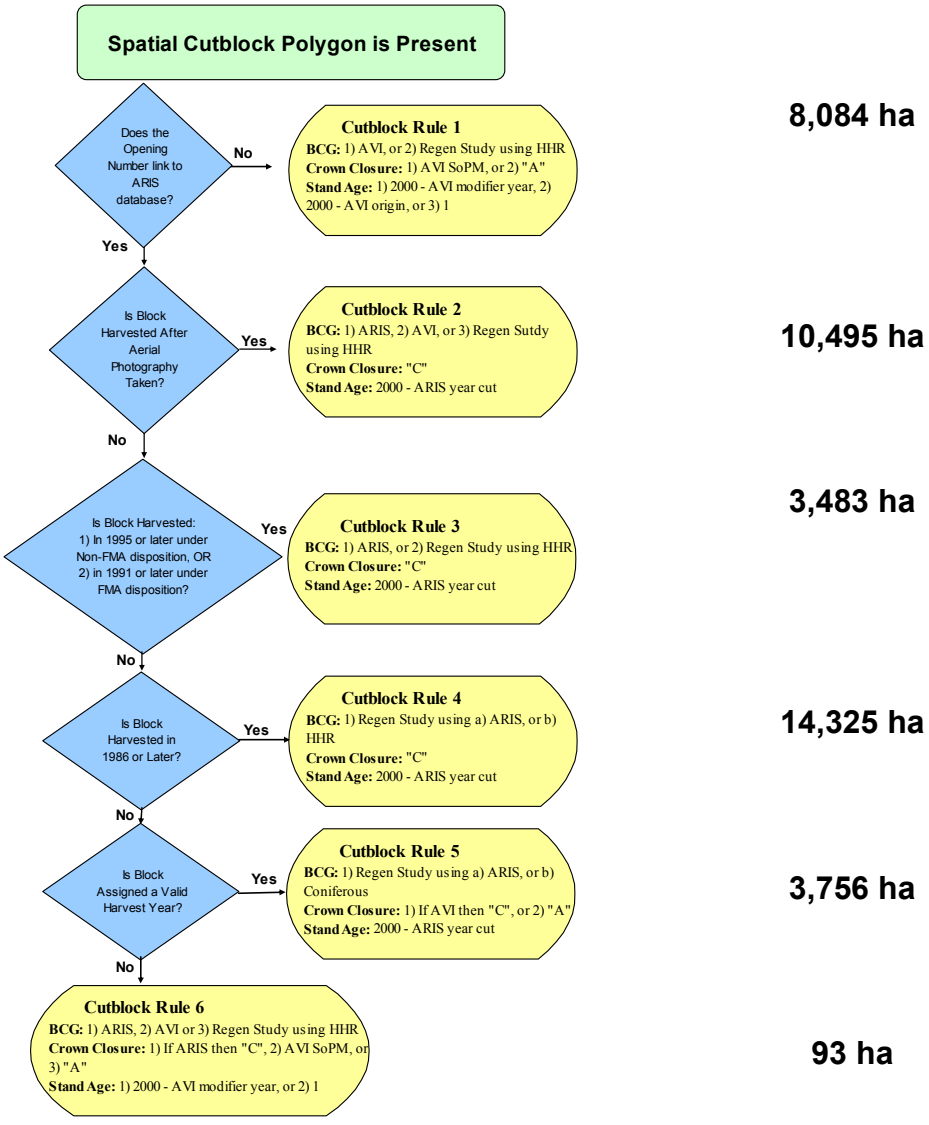


Figure 2-1 Cutblock Rules for primary data source (cutblocks with spatial polygon reference) for assigning BCG, crown closure class, and stand age.

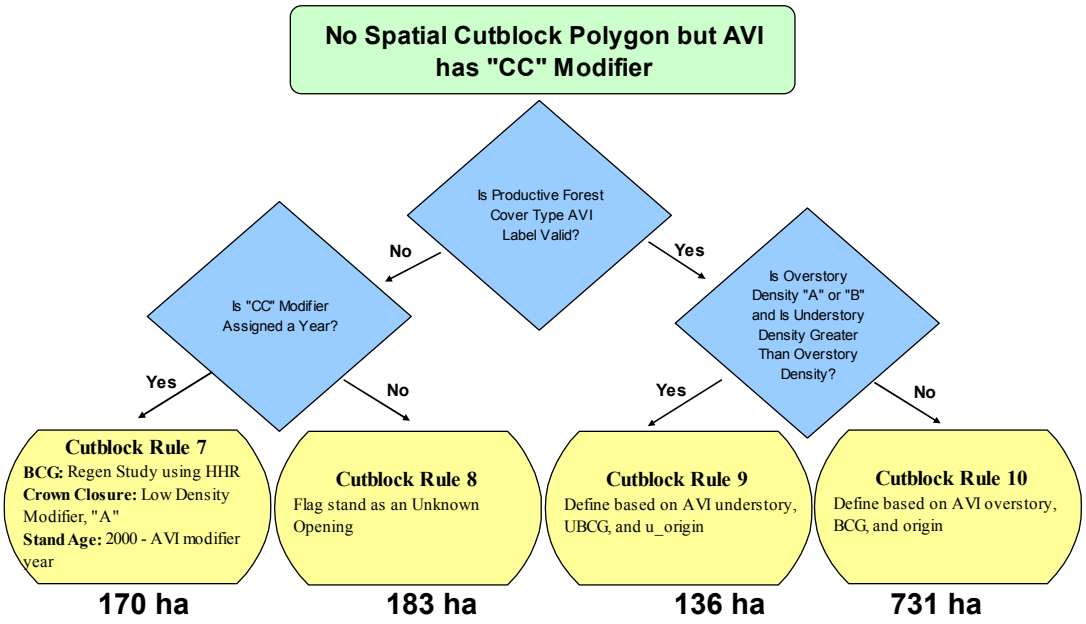


Figure 2-2 Cutblock Rules for secondary data sources (cutblocks with AVI "CC" modifier and without spatial polygon reference) for assigning BCG, crown closure class, and stand age.

The following describes each cutblock rule in more detail.

Cutblock Rule 1 – The cutblock had a polygon present in the spatial cutblock coverage but there was no associated ARIS opening number.

The BCG was assigned by the AVI forest cover type. If AVI records were not available, the Regeneration Study in conjunction with HHR species group split was used.

Crown Closure **–** Crown closure calls were assigned by the AVI SoPM. If there was no valid AVI forest cover type the cutblocks were assigned a *Low Density Modifier* and assumed to have a crown closure of "A".

Stand age was calculated using the following equations:

Stand Age = 2000 – (AVI modifier year), or if AVI modifier year was not available,

Stand Age = 2000 – (AVI origin), otherwise,

Stand Age = 1

Cutblock Rule 2 – The cutblock had a polygon present in the spatial cutblock coverage and was harvested after the aerial photography was taken (Table 2-8). Thus, the pre-harvest stands were captured by the photography.

Table 2-8 Year of AVI Photography in Drayton Valley FMA by FMU

FMU	Median Year of AVI Photography
R1	1993
R2	1994
R3	1994
R4	1994

The BCG was assigned by ARIS; however, if ARIS did not provide the required information, the AVI stand calls were used. If AVI stand calls were absent, the Regeneration Study based on historical harvest ratio (HHR) species group split was used.

Crown Closure **–** All cutblocks are assumed to be fully stocked and thus have a "C" crown closure.

Stand age was calculated using the following equation:

Stand Age = 2000 – (ARIS cut year)

Cutblock Rule 3 – The cutblock had a polygon present in the spatial cutblock coverage and was harvested:

1) In 1995 or later under authority of Non-FMA disposition, or
2) In 1991 or later under authority of FMA disposition.

The BCG was assigned using ARIS records. When ARIS records were not available, the Regeneration Study using HHR species group split was used.

Crown Closure **–** All cutblocks are assumed to be fully stocked and thus have a "C" crown closure.

Stand age was calculated using the following equation:

Stand Age = 2000 – (ARIS cut year)

Cutblock Rule 4 – The cutblock had a polygon present in the spatial cutblock coverage and was harvested in 1986 or later. The year 1986 was when deciduous harvesting operations commenced.

The BCG was based on the Regeneration Study, where species group split was first determined by ARIS. If there was no valid species group data available, the Regeneration Study based on HHR species group split was used.

Crown Closure **–** If there is a valid AVI forest cover type the cutblock is assumed to be fully stocked ("C" crown closure).

Stand age was calculated using the following equation:

Stand Age = 2000 – (ARIS cut year)

Cutblock Rule 5 – The cutblock had a polygon present in the spatial cutblock coverage and was harvested before 1986.

The BCG was based on the Regeneration Study. The species group splits were first assigned by ARIS. If there was no valid species group data assignment in ARIS, the blocks were assumed to be coniferous.

Crown Closure **–** If there is a valid AVI forest cover type the cutblock is assumed to be fully stocked ("C" crown closure). Otherwise the cutblock was assigned a *Low Density Modifier* and assumed to have a crown closure of "A".

Stand age was calculated using the following equation:

Stand Age = 2000 – (ARIS cut year)

Cutblock Rule 6 – The cutblock had a polygon present in the spatial cutblock coverage that was not assigned a valid harvest year.

The BCG was assigned by ARIS. However, if no valid ARIS silvicultural record was present, AVI information was used. If AVI information was incomplete, the Regeneration Study was used where split between species groups was obtained from HHR.

Crown Closure **–** If there was a valid ARIS BCG the cutblock is assumed to be fully stocked ("C" crown closure). Otherwise, crown closure calls were assigned by the AVI SoPM. If both these options are exhausted then the cutblock was assigned a *Low Density Modifier* and assumed to have a crown closure of "A".

Stand age was calculated using the following equations:

Stand Age = 2000 – (ARIS cut year), or if ARIS cut year was not available, or

Stand Age = 1

Cutblock Rule 7 – The cutblock had neither a polygon present in the spatial cutblock coverage nor was assigned a valid AVI productive forest cover type. However, the cutblock had an AVI "CC" modifier and modifier year assignment. It was assumed that stands with a "CC" modifier and modifier year assignment could be confidently defined as cutblocks.

The BCG assignments were based the Regeneration Study using the Historical Harvesting Ratio (see HHR section) for determining the species group composition.

Crown Closure **–** Because there was no ARIS data or AVI forest cover type the cutblock was assigned a *Low Density Modifier* and assumed to have a crown closure of "A".

Stand age was calculated using the following equation:

Stand Age = 2000 – (AVI "CC" modifier year)

Cutblock Rule 8 – The cutblock did not have a polygon present in the spatial cutblock coverage but did have an AVI "CC" modifier. The AVI stand call had neither a productive forest cover type nor a valid "CC" modifier year. Therefore, the blocks did not provide enough evidence to be stratified and were classified as "unknown openings" for tracking purposes only.

Crown Closure and Stand Age **–** Cutblocks were considered to be outside the net landbase therefore no BCG, crown closure, or stand age was assigned.

Cutblock Rule 9 – The cutblock did not have a polygon present in the spatial cutblock coverage but had an AVI "CC" modifier with a valid productive forest cover type. The overstory was remnant (defined as an "A" or "B" density overstory with an understory density greater than the overstory density). Therefore, BCG, crown closure, and stand age were defined by the AVI understory call.

Cutblock Rule 10 – The cutblock did not have a polygon present in the spatial cutblock coverage but had an AVI "CC" modifier with a valid productive forest cover type. The overstory was not remnant (remnant overstory is defined as an "A" or "B" density overstory with an understory density greater than the overstory density). Therefore, BCG, crown closure, and stand age were defined by the AVI overstory call.

Regeneration Study

A regenerating cutblock study was conducted by Timberline Forest Inventory Consultants in 2000 (TFIC, 2000). Table 2-9 summarizes cutblock BCG assignments using Drayton Valley FMA regenerating species groups (i.e., Deciduous – "HH", "MH", "SH" and Coniferous – "SS", "MS", "HS") stocking survey results by LMU converted to AVI stand stocking percentage.

Table 2-9 Regeneration Study median stocking and stocking percentage converted to AVI stand stocking percentage, BCG, and total stocking by LMU in Drayton Valley FMA.

			Median Stocking Percentage		Stocking Percentage Converted to AVI Stand Composition Percentage		Total Stocking		
Regenerating Species Group	LMU code	N (# of blocks)	Coniferous	Deciduous	Coniferous Composition	Deciduous Composition	BCG	CC Class	Percent
a	b	c	d	e	f	g	h	i	j
Deciduous (HH, MH, SH)									
	BAP	9	35	88	30	70	DC	C	94%
	ELK	4	32	97	20	80	D	C	100%
	OCH	20	10	93	10	90	D	C	93%
	SAN	17	13	93	10	90	D	C	93%
	TAL	7	68	94	40	60	DC	C	100%
	WIL	23	7	87	10	90	D	C	88%
Coniferous (SS, MS, HS)									
	BLK	1	87	0	100	0	C	C	87%
	BAP	24	93	40	70	30	CD	C	93%
	ELK	17	82	78	50	50	CD	C	94%
	MAR	8	93	0	100	0	C	C	93%
	NOR	31	94	61	60	40	CD	C	100%
	OCH	19	88	67	60	40	CD	C	100%
	SAN	6	90	68	60	40	CD	C	97%
	TAL	20	80	72	50	50	CD	C	93%
	WIL	12	80	73	50	50	CD	C	100%

NOTES:

a, b, c, d, e, j - Drayton Valley Regenerated Cutblock Study, "B" Deciduous (TFIC 2000)
f = d/(d+e) - Rounded to the nearest 10% class
g = e/(d+e) - Rounded to the nearest 10% class
i, j - All stands were considered fully stocked

Historical Harvest Ratio

It was not possible to directly assign BCG to some cutblocks from ARIS and/or AVI. In these cases, a regenerating cutblock model based on probability linked to historic proportion of occurrence was used in which an implied regenerating species composition was calculated based on the historical harvest area distribution between coniferous and deciduous cutblocks within FMA. The steps in this process were as follows:

1. Obtain all valid spatial cutblock polygons (separated by LMU) which had been assigned as either a coniferous or deciduous cutblock.
2. Since all cutblocks prior to 1986 are assumed to be coniferous, include only those cutblocks harvested between 1986 and 2000 for ratio calculations.

3. Calculate the percentage of area belonging to coniferous cutblocks versus deciduous cutblocks by LMU (Table 2-10).
4. Round the percentages to the nearest integer for both coniferous and deciduous cutblock frequency.
5. Each AVI stand was assigned a random number between 0 and 99 to function as the "flag" variable that was then compared to the integer value for coniferous composition.
6. If the flag variable was less than the coniferous integer value, the cutblock was designated as coniferous; otherwise, the cutblock was designated as deciduous.

Table 2-10 summarizes HHR results in Drayton Valley FMA by LMU.

Table 2-10 Historical Harvest Ratio: regenerated coniferous and deciduous areas (ha) in Drayton Valley FMA between 1986 and 2000.

LMU Code	CONIFEROUS	DECIDUOUS	CONIFEROUS	DECIDUOUS
BAP	2,651.1	1,491.0	64%	36%
ELK	1,078.1	1,204.5	47%	53%
NOR	4,835.0	669.6	88%	12%
OCH	4,848.3	2,863.4	63%	37%
SAN	637.7	3,555.3	15%	85%
TAL	1,750.3	480.4	78%	22%
WIL	591.3	3,200.7	16%	84%
Grand Total	16,391.7	13,465.0	55%	45%

Horizontal Stand Cutblocks

Some cutblocks were located in AVI horizontal stands for which polygon areas were adjusted. This was due to a slight misalignment of the cutblock and AVI coverages when overlayed, resulting in sliver polygons. For clean processing these cutblocks cannot simply be ignored. Therefore, the entirety of each horizontal stand was assumed to be part of the cutblock with any forested hectares assumed to be part of the stand harvest retention (retention volumes are removed after TSA modeling as a percentage

reduction). The assignment of stand composition to horizontal stands follows the same procedure as outlined Figure 2-1 and Figure 2-2.

ARIS AOP Area versus Net Landbase Area

When cutblocks were spatially captured in the GIS, the area indicated by the spatial coverage takes precedence over the ARIS Annual Operating Plan (AOP) area. The main reason for this is that the landbase netdown is based on a spatial coverage and ARIS is not spatial. Therefore, while the statistic may be of some interest, there is no reason to expect ARIS areas to match the overlaid spatial cutblock coverage.

2.8.4 Planned Cutblocks

The Drayton Valley FMA has approximately 20 years of future planned blocks. Weyerhaeuser provided planned blocks which were included as a spatial coverage within the net landbase ***[PLANBLK]***. Weyerhaeuser planned block coverage had an operator assigned ***[PROP_CUT]*** and in a few instances had an opening number that could be linked to ARIS. During the TSA modeling component (Appendix #3), planned blocks will be marked for harvest in the first 21 years of harvest sequence. There is potential for additional planned blocks to be included in the harvesting sequence if coverage is available prior to the commencement of timber supply modeling.

2.8.5 Cutblock and Landuse Updates

Cutblocks are typically updated once a year (blocks are flown with leaf on - anytime in summer between June and September). Brad Kilgour usually receives the digital "digitized" shapefiles in the following winter and adds all the "updated or flown" shapes into the cutblock layer stored in Silvacom online. Weyerhaeuser is currently two years behind in cutblock updates.

Weyerhaeuser used to have the digital GIS landuse layer updated quarterly but now with the online GIS application, Silvacom digitizes consented landuse dispositions and the digitized coverage is added to the online Landuse layer almost three weeks after the survey plan is consented to. The GIS Viewer on Silvacom Online contains both historical and current landuse data.

2.9 Operational Parameters and Deletions

This section details how steep/sensitive slopes, watercourse buffers, and non-merchantable stands were addressed during the netdown.

2.9.1 Operability Restrictions

Lands that are inoperable due to slope, slope position, or accessibility were excluded from the timber harvesting landbase. Slopes were classified across the SYU area using a digital elevation model. All areas with sustained slopes greater than 60 per cent were identified as inoperable. The remaining area of the SYU was investigated by aerial reconnaissance or photo interpretation to confirm the suitability for harvesting. Any area determined inoperable with slope less that 60% was included in the inoperable coverage. Riparian areas (e.g., flood plains, riverbanks, stream sides) along major watercourses were also identified as inoperable.

All merchantable stands within the SYU area are accessible therefore no stands were excluded due to isolation.

2.9.2 Watercourse Buffers

While current ground rules apply mostly to short-term planning, watercourse buffers were integrated into the Timber Supply Analysis (TSA) to become a part of the long term planning process. This was done to strengthen the link between short and long-term planning.

Buffers excluded areas from the timber harvesting landbase including riparian areas adjacent to lakes and rivers. Buffering was performed on the Drayton Valley FMA area and FMU R1. This included lakes and rivers present in the AVI. It also incorporated stream data acquired from the Alberta Base National Topographic Series (NTS) maps. Lake, stream, and river buffer coverages were generated in accordance with buffer definitions as described by the current Operating Ground Rules (Table 2-11).

Table 2-11 Riparian Buffer Widths

Classification	Data File Field Name	Buffer Width
North Saskatchewan River	***[STRM100]***	100m
Large Permanent Streams	***[STRM60]***	60m
Small Permanent Streams	***[STRM30]***	30m
Ephemeral Streams		---
Intermittent Streams		---
Lakes (>4ha)	***[LAKE]***	100m

The North Saskatchewan River was buffered to a width of 100 meters from both sides. Large permanent streams were buffered 60 meters and small permanent streams were buffered to 30 meters on both sides. Ephemeral streams and intermittent streams were not buffered. Lakes within the AVI inventory having an area greater than four hectares were given a 100-meter buffer. The resulting buffer coverages were merged with the AVI coverages to identify stands and or portions of stands that are within the specified buffer distance. Figure 2-3 shows an example of the buffering process.

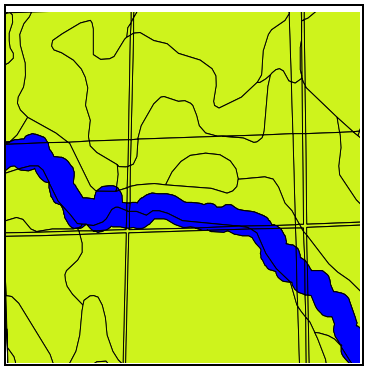


Figure 2-3 Example of riparian buffer

2.9.3 Highway Corridor Buffers

Harvest operations occurring along heavily travelled routes can influence human perceptions of forest harvesting activities and their impacts. Highways 11 and 22 in the Drayton Valley FMA were given 100-meter buffers to recognize visual sensitivity issues.

This coverage was incorporated in the landbase database as a thematic overlay. Figure 2-4 represents the location of the highway corridor buffers.

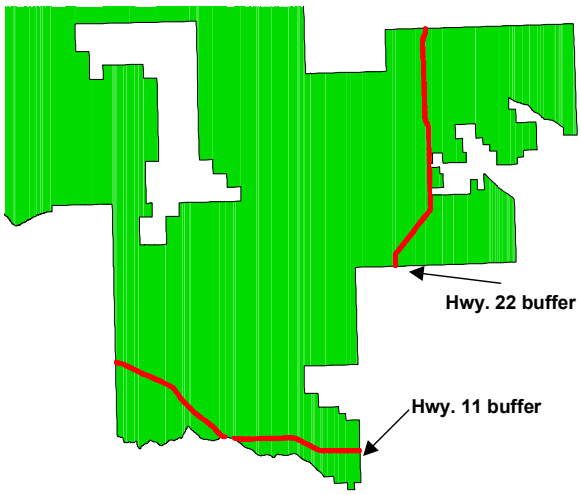


Figure 2-4 Highway Corridor Buffers – buffer widths exaggerated and not drawn to scale

2.9.4 Subjective and Ecosite-Based Deletions

Subjective and ecosite based deletions are used to identify non-merchantable stands (regardless of age the stand will never be harvested). Subjective deletions are typically based on forest cover type characteristics, and ecosite deletions focus on the site type the stand is associated with. In the SYU R12 area, black spruce and larch tree species are indicative of stands that are non-merchantable and/or sites where successfully regeneration may be difficult.

The following subjective deletion rules were applied to the landbase:

1) Subjective Deletion 1 - Greater than and equal to 10% larch composition (only the SoPM used in composition total (i.e., overstory for non-switch stands and understory for switch stands)).
2) Subjective Deletion 2 - Greater than and equal to 80% black spruce composition (only the SoPM used in composition total (i.e., overstory for non-switch stands and understory for switch stands)).
3) Ecosite Deletion - Deciduous stands on a “Poor” site.

Subjective and ecosite-based deletions were not applied when a cutblock or planned block was present in the same place because if a stand was previously harvested or has been selected for harvest, the stand was or is considered merchantable.

2.10 Defining the Operable Landbase

This section outlines the rules used to define the operable landbase within Weyerhaeuser's Drayton Valley FMA and FMU R1, after deletions have been applied as discussed in Sections 2.5 – 2.9.

2.10.1 Landbase, Broad Cover Group, and Stand Age Assignment

SYU R12 operates on a single landbase. However, cover group attributes were developed as a function of the tree species and their associated crown closure percentage. Deciduous and coniferous percentage crown closure for both overstory and understory layers were tallied for every polygon in the AVI. The resulting characteristics were used to assign Broad Cover Groups (BCG). The assignment rules are presented in Table 2-12. All 50-50 stands are assigned to the coniferous/deciduous (CD) or deciduous/coniferous cover group based on leading species group. For example, if the leading species group in 50-50 stands was coniferous, stands were assigned a CD broad cover group; if the leading species group was deciduous, stands were assigned a DC broad cover group.

Table 2-12 Summary of rules used to assign Broad Cover Groups to AVI overstory and understory.

Broad Cover Group	Crown Closure (10% Classes)	
	Deciduous	Conifer
CX (including PL,SW,PS)	0 - 20	80 - 100
CD	30 - 50	50 - 70
DC	50 - 70	30 - 50
DX	80 - 100	0 - 20

Stand Age and Age Class

Stand ages were derived from the AVI stand origin and adjusted for the difference between the time of AVI interpretation and Drayton Valley FMA netdown reference year. A field was added to the netdown database to track current stand age. Timber supply modeling begins in 2000 (the base age), therefore current age is 2000 minus origin year. This relationship was required to ensure that stand origin corresponded to the proper layer (overstory or understory) used in the timber supply model.

To determine the age class, age classes were broken down into five-year intervals (age class 1 equaled zero to five years, age class 2 equaled six to ten years, age class 3 equal 11 to 15 years, etc.). Stand age was calculated using the following equation:

StandAge = 2000 – (AVI year of understory or overstory origin)

Five-year stand age classes ***[AGECL]*** were calculated as integer values using the following equation:

AgeClass = INT(StandAge + 4)/5

Polygons without tree species (i.e., non-forested) and with stand age zero defaulted to an age class of 1 (0 – 5 years).

Horizontal Stands

The total SYU area has been reduced by 416 ha due to AVI horizontal stands. Horizontal stands are defined in the *Alberta Vegetation Inventory Standards Manual* (version – 2.1) as “Stands…composed of numerous homogeneous stands within other distinctly different homogeneous stands, but both or each individual stand is too small to delineate...” Therefore, horizontal stands are processed somewhat differently than non-horizontal cover types. Although the different parts of a horizontal stand are located in the overstory and understory fields they are not to be understood as overstory and understory but rather separate “mini-stands” within the polygon. Horizontal stands were expected to be managed only for the area assigned to the SoPM (except for cutblocks). The following two rules for delineating horizontal stands were used:

1. Horizontal stands that had a valid forest cover type for both the overstory and understory fields:

a) If the overstory proportion of the stand was 50% or greater, the overstory was defined as the SoPM ***[H_LAYER]*** = "UPPER"; no area reduction was applied.

b) If the understory proportion of the stand was greater than 50%, the understory was defined as the SoPM ***[H_LAYER]*** = "UNDER"; no area reduction was applied.

2. Horizontal stands that had only one valid forest cover type:

a) If the overstory was the only valid forest cover type then the SoPM was defined as the overstory; area was reduced by understory horizontal percentage ***[U_HORPER]***. For example, if 10 ha horizontal stand managed using overstory call had assigned a horizontal percentage of 7 (which means 70% overstory and 30% understory), the stand would contribute seven ha to the landbase area.

b) If the understory was the only valid forest cover type then the SoPM was defined as the understory; area was reduced by overstory horizontal percentage ***[HORPER]***.

Switch Stands

In the net landbase determination process, some stand understory calls were used in place of overstory calls ***[LAYER_USED]***. These stands were referred to as 'switch stands'. For these stands, stratification of non-cutblock and non-horizontal polygons was based on the overstory except when a polygon had a pure deciduous (***[BCGP]*** = 'DX') overstory with a valid understory (***[U_BCGP]*** ='CX', 'CD','DC','DX') forest cover type and a 'B', 'C', or 'D' understory crown closure (***[U_CC]*** > 'A'). Under these conditions the stand ***[BCG]*** and ***[BLOCKAGE]*** were based on the understory.

2.10.2 Ecosite Productivity Stratification

Site quality was a stratifying variable used for yield projections. Each polygon was assigned to a site quality category (good, medium, or poor) based on the SiteLogix® ecosite. Ecosites were assigned to a site quality category of good, medium or poor for coniferous and deciduous stands using ***[ST_SITE]*** field. Table 2-13 summarizes the stand productivity class assigned to a polygon, based on the predicted ecosite for that polygon. DFMP Appendix #2 provides a detailed description of this process.

Table 2-13 Summary of assumed site quality for coniferous and deciduous stands by ecosite call

Stand Type	NSR	Site quality	SiteLogix ® ecosite call*
Coniferous	LF	Good	E, F
		Medium	C, D, I
		Poor	A, B, G, H, J, K, L, M, N
	UF	Good	D, E, F
		Medium	C, H, J
		Poor	A, B, G, I, K, L, M, N
	SA	Good	C, E, G
		Poor	D
Deciduous	LF	Good	E, F, I
		Poor	A, B, C, D, G, H, J, K, L, M, N
	UF	Good	E, F
		Poor	A, B, C, D, G, H, J, I, K, L, M, N

*All “poor” site deciduous stands were deemed non-merchantable and removed from the net landbase. If harvests occurred on non-forested ecosites, sliver polygons were reclassified as “poor” sites within NSR.
- “X”, “Y”, “Z” ecosites are not forest ecosites. Therefore all polygons located on these ecosites will be deleted.

Traditionally TPR has been used for classifying stands as to relative productivity; because a predictive ecological classification was available for the Drayton Valley FMA, TPR was viewed as a less refined method of determining site productivity than ecosite.

2.10.3 Yield Curve Assignment

A set of new yield curves was developed for the Drayton Valley FMA and FMU R1 (see DFMP Appendix #2). Yield curves were assigned based on the stratification used to develop the yield relationships. In total 191 yield curves were applied to the landbase (138 for coniferous dominated stands, 50 for deciduous dominated stands, and 3 for coniferous dominated switch stands).

Yield Curve Assignment ***[YIELDNUM]*** was based on BCG ***[BCG]***, site quality ***[ST_SITE]***, crown closure ***[CC_CLASS]***, percentage coniferous composition ***[CONIF_PCT]***, horizontal layer ***[H_LAYER]***, and overstory or understory used ***[LAYER_USED]*** (see Section 7 Appendix 3 of this report for an exhaustive yield curve list).

2.10.4 Seral Stages and Over-Mature Forests within the SYU

Tracking the distribution and prevalence of over-mature forest types across the landbase is one of the strategies that will be employed (during the TSA modeling) in an attempt to ensure that ecological values are met (others include removing riparian zones from the harvestable landbase and delaying harvesting activities in some locations). A total of six seral stages were identified ***[SERAL]*** for both coniferous and deciduous broad cover groups (see Table 2-14).

Table 2-14 Summary of Coniferous and Deciduous Seral Stages

Seral Stage	Seral Stage Code *[SERAL]*	Description
Coniferous broad cover groups (***BCG ='CX'*** or ***'CD'***)		
Early	1	0 to 10 years
Immature	2	11 to 40 years
Mature	3	41 to 90 years
Late	4	91 to 120 years
Very Late	5	121 to 170 years
Overmature	6	171+ years
Deciduous broad cover groups (***BCG='DX'*** or ***'DC'***)		
Early	1	0 to 10 years
Immature	2	11 to 40 years
Mature	3	41 to 70 years
Late	4	71 to 110 years
Very Late	5	111 to 170 years
Overmature	6	171+ years

For coniferous BCG age 90 was selected as the dividing line between mature and over-mature stages because the coniferous rotation age will be 90 years for the future TSA model (based on coniferous max MAI). Likewise, the deciduous rotation age of 70 years (based on deciduous max MAI) was the basis for the over-mature stages.

The area of over-mature forests across the landscape will be tracked in the TSA model usig BCG. All over-mature forests will be classified to one of following six over-mature forest cover groups ***[OLDGROW]***:

1. Pure deciduous ***[OLDGROW='OLD_DX']***
2. Deciduous dominated mixedwood ***[OLDGROW='OLD_DC']***
3. Coniferous dominated mixedwood ***[OLDGROW='OLD_CD']***
4. Pure coniferous pine dominated – pine species composition greater than and equal to 80% ***[OLDGROW='OLD_PL']***
5. Pure coniferous white spruce dominated – white spruce composition greater than and equal to 80% ***[OLDGROW='OLD_SW']***

6. Pure coniferous white spruce/pine mix – the first two cover type species are white spruce and pine (or pine and white spruce) with neither species composition is individually greater than and equal to 80% ***[OLDGROW='OLD_PS']***
7. All other pure coniferous stands were assigned ***[OLDGROW='OLD_CX']***.

All stands will be evaluated to an "OLDGROW" category type regardless of stand age; this is not a static category, but changes over the planning horizon. Therefore, the ***[OLDGROW]*** and ***[SERAL]*** fields will have to be queried together to total the "over-mature" area in any one ***[OLDGROW]*** categories.

2.10.5 The Deletion Hierarchy

Many polygons could potentially be assigned to several deletion types. Therefore, a deletion hierarchy was ranked from "harder" to "softer" deletions. The "harder" deletions identified areas which can confidently be removed from the net landbase because of productivity or land use criteria. This method facilitated understanding of how much forested land is ultimately deleted under various criteria.

The following is a listing and description of the deletion hierarchy ranging from harder to softer deletions divided into four main groups:

1. Non-Forested Area Reductions
   - 1.1. Anthropogenic Non-Vegetated ***[OVCODE]* = 4**
     - applied to entire landscape including cutblocks
   - 1.2. Naturally Non-Vegetated ***[OVCODE]* = 5**
     - applied to entire landscape including cutblocks
   - 1.3. Anthropogenic Vegetated ***[OVCODE]* = 1**
     - applied to entire landscape excluding cutblocks ***[CUTBLK]* = 'N'**. It was assumed AVI was mistyped as a non-cutblock.
   - 1.4. Non-Forested Vegetated ***[OVCODE]* = 2**
     - applied to entire landscape excluding cutblocks ***[CUTBLK]* = 'N'**. It was assumed AVI was mistyped as a non-cutblock.

2. Dispositions and Other Area Removals

2.1. Special Places 2000 – Wapiabi ***[LAND_STAT]*** **= 'WAP'**

- applied to entire landscape including cutblocks

2.2. Proposed Special Place - Thunder Lake ***[LAND_STAT]*** **= 'THU'**

- applied to entire landscape including cutblocks

2.3. O'Chiese Natural Area (NAA920002) ***[DISO]*** **= 'OCH'**

- applied to entire landscape including cutblocks

2.4. Permanent Sample Plots ***[LAND_STAT]*** **= 'PSP'**

- applied to entire landscape including cutblocks

2.5. I.R. 202 and 203 ***[FMU]*** **= 'IR'**

- applied to entire landscape including cutblocks

2.6. Private Area ***[PRIVATE]*** **= 1**

- applied to entire landscape including cutblocks

2.7. Protected Notation (excluded) ***[DISO]*** **= 'PNT'**

- applied to entire landscape including cutblocks

2.8. Prime Protection Area (defined by ESIP) ***[LAND_STAT]*** **= 'IRP'**

- applied to entire landscape including cutblocks

2.9. Grazing Disposition (outside FMA area) ***[LAND_STAT]*** **= 'FGL'**

- applied to entire landscape including cutblocks

2.10. Disposition Reservation (excluded) ***[DISO]*** **= 'DRS'**

- applied to entire landscape including cutblocks

2.11. Crown Recreation Areas ***[DISO]*** **= 'REC'**

- applied to entire landscape including cutblocks

2.12. Land Use Dispositions ***[DISO]*** **= 'LU_P'**

- applied to entire landscape including cutblocks

2.13. Voluntary Protective Notation (excluded) ***[DISV]*** **= 'PNT'**

- applied to entire landscape including cutblocks

2.14. Voluntary Disposition Reservation (excluded) ***[DISV]*** **= 'DRS'**

- applied to entire landscape including cutblocks

2.15. Landuse Lines ***[LU_LINE]*** **= 1**

- applied to entire landscape including cutblocks

2.16. Seismic Lines ***[RES_STAT]*** **= 'SEIS'**

- applied to entire landscape excluding cutblocks ***[CUTBLK]*** = **'N'** which ARIS records indicate harvests in 2000 and after ***[ARIS_CYR]***. As of May 2000 it has

been Weyerhaeuser Company policy to regenerate cutline areas within cutblocks.

3. Steep Slopes, Water and Road Buffers

3.1. Steep Slopes ***[RES_STAT]*** **= 'INOP'**

- applied to entire landscape excluding cutblocks ***[CUTBLK]*** = **'N'**. It was assumed that since harvesting and regeneration occurred in a given location in the past, the area would be available for harvest.

3.2. Stream Buffer (30m or 60m) ***[RES_STAT]*** **= 'STRM'**

- applied to entire landscape excluding cutblocks ***[CUTBLK]*** = **'N'**. It was assumed that since harvesting and regeneration occurred in a given location in the past, the area would be available for harvest.

3.3. North Saskatchewan River Buffer (100m) ***[RES_STAT]*** **= 'NSKR'**

- applied to entire landscape excluding cutblocks ***[CUTBLK]*** = **'N'**. It was assumed that since harvesting and regeneration occurred in a given location in the past, the area would be available for harvest.

3.4. Lake Buffer (100m) ***[RES_STAT]*** **= 'LAKE'**

- applied to entire landscape except identified cutblocks ***[CUTBLK]*** = **'N'**. It was assumed that since harvesting and regeneration occurred in a given location in the past, the area would be available for harvest.

3.5. Highway Corridor Buffer (100m) ***[RES_STAT]*** **= 'CORR'**

- applied to Highways 11 and 22 in the Drayton Valley FMA and FMU R1 excluding cutblocks ***[CUTBLK]*** = **'N'**. It was assumed that since harvesting and regeneration occurred in a given location in the past, the area would be available for harvest.

4. Subjective and Ecosite Deletions

4.1. Unidentified Opening ***[DEL]*** **= 'PPRD'**

- applied to entire landscape excluding cutblocks ***[CUTBLK]*** = **'N'**. It was assumed AVI was mistyped as a non-cutblock.

4.2. Invalid Ecosites (x, y, z) and Alpine natural subregion ***[DEL]*** **= 'UPROD_ECO'** or ***[NSR]*** **= 'AL'**

- applied to entire landscape excluding cutblocks ***[CUTBLK]*** = **'N'**. It was assumed AVI was mistyped as a non-cutblock.

4.3. Larch Deletion ***[DEL]*** **= 'LARCH'**

- not applied to cutblocks or planned blocks ***[CUTBLK]*** = **'N'.**

4.4. Black Spruce Deletion ***[DEL]*** **= 'BSPRUCE'**

- not applied to cutblocks ***[CUTBLK]*** = **'N'**.

4.5. Undefined ***[OVCODE]*** **= 0**

- not applied to cutblocks ***[CUTBLK]*** = **'N'**.

3 Final Results

Table 3-1 Final Proposed Netdown - deletion areas are based on the hierarchy - each polygon is assigned to only one deletion type

Category	Forest Management Units Area (ha)						SYU	SYU %
	N/A	IR	R1*	R2	R3	R4		
1. Non-Forested Area Reductions								
01. Anthropogenic Non-Vegetated	2	0	1,245	1,128	249	1,568	4,191	0.80%
02. Naturally Non-Vegetated	0	0	2,821	1,829	4,935	1,609	11,193	2.15%
03. Anthropogenic Vegetated	0	0	6,368	1,112	335	2,751	10,566	2.03%
04. Non-Forested Vegetated	1	0	9,484	7,156	2,282	4,187	23,110	4.44%
Sub-Total	**3**	**0**	**19,918**	**11,225**	**7,800**	**10,114**	**49,060**	**9.42%**
2. Dispositions and Other Area Removals								
05. Wapiabi Provincial Park					3,128		3,128	0.60%
06. O'Chiese Natural Area (NAA920002)				367			367	0.07%
07. Permanent Sample Plots			74	92	86	92	344	0.07%
08. I.R. 202 and 203		19,303					19,303	3.71%
09. Private Area	1		2,482	244	64	920	3,710	0.71%
10. Protected Notation (excluded)					138	15	153	0.03%
11. Prime Protection Area (defined by ESIP)	0				443		443	0.09%
12. Grazing Disposition (outside FMA area)							0	0.00%
13. Disposition Reservation (excluded)			168	1		0	170	0.03%
14. Crown Recreation Areas	0		20				20	0.00%
15. Land Use Dispositions	0		1,434	1,176	397	1,638	4,645	0.89%
16. Voluntary Protective Notation (excluded)			2	0			2	0.00%
17. Voluntary Dispostion Reservation (excluded)							0	0.00%
18. Landuse Lines	0		2,355	1,719	2,035	3,076	9,185	1.76%
19. Seismic Lines	1		1,876	1,839	1,044	2,220	6,979	1.34%
	1	**19,303**	**8,412**	**5,438**	**7,334**	**7,960**	**48,449**	**9.30%**
3. Steep Slopes, Water and Road Buffers								
20. Steep Slopes	0		1,613	546	7,201	723	10,083	1.94%
21. Stream Buffer (30m or 60m)	0		1,206	3,140	4,656	1,822	10,824	2.08%
22. North Saskatchewan River Buffer (100m)	0		853	1	1	168	1,022	0.20%
23. Lake Buffer (100m)	0		318	370	383	581	1,653	0.32%
24. Highway Corridor Buffer (100m)	0		504	189			693	0.13%
Sub-Total	**0**		**4,493**	**4,246**	**12,241**	**3,294**	**24,274**	**4.66%**
4. Subjective and Ecosite Deletions								
25. Unidentified Openning	0		948	229	218	237	1,632	0.31%
26. Invalid Ecosites (x,y,z) and Alpine NSR	1		154	122	350	96	722	0.14%
27. Larch Deletion	1		15,775	17,027	10,927	15,630	59,360	11.40%
28. Black Spruce Deletion	2		7,389	10,094	4,711	6,446	28,643	5.50%
29. Undefined	7		8	0	0		15	0.00%
30. Horizontal Stand Adjustment		0	241	30	74	70	416	0.08%
Sub-Total	**11**	**0**	**24,514**	**27,503**	**16,279**	**22,480**	**90,787**	**17.43%**
Total Deletion Area	**16**	**19,303**	**57,337**	**48,411**	**43,655**	**43,848**	**212,571**	**40.81%**
5. Net Harvestable								
Coniferous			21,374	62,701	56,385	26,003	166,464	31.96%
Coniferous/Deciduous			8,732	12,922	5,035	8,853	35,542	6.82%
Deciduous			36,483	16,319	3,440	23,255	79,497	15.26%
Deciduous/Coniferous			9,488	7,644	2,657	7,014	26,803	5.15%
Sub-Total			**76,077**	**99,586**	**67,517**	**65,126**	**308,306**	**59.19%**
Grand Total	**16**	**19,303**	**133,415**	**147,997**	**111,172**	**108,974**	**520,877**	**100.00%**

* R1 is composed of the FMU R1 area inside and outside the FMA.

Only polygons inside the FMA area were considered except portion of FMU R1 which included areas both within and outside the FMA area.

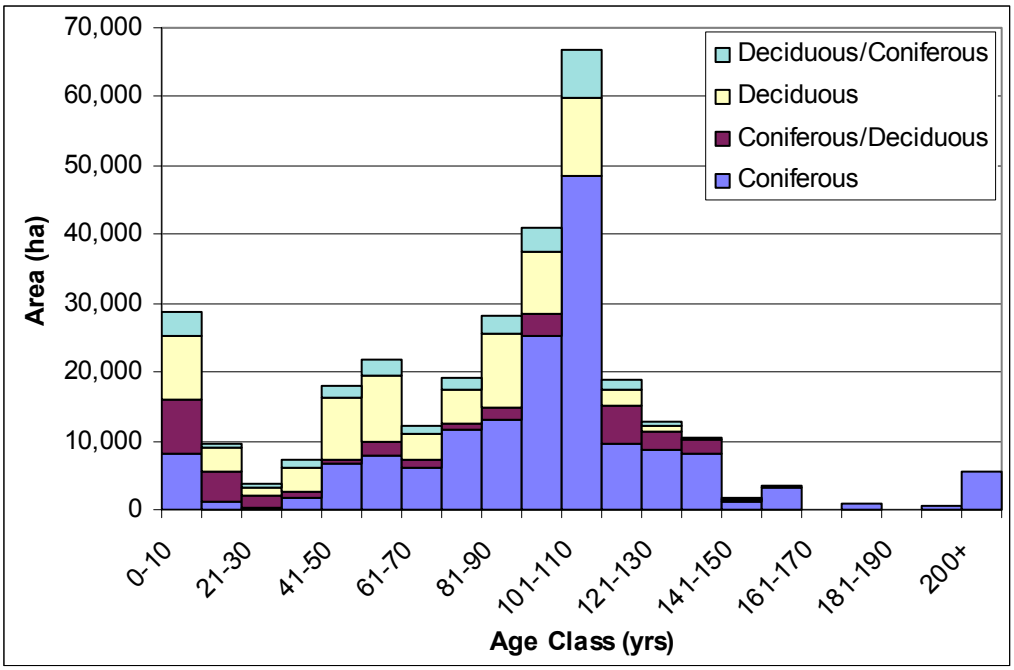


Figure 3-1 Drayton Valley FMA and FMU R1 age class distribution by broad cover groups of productive forest landbase

4 References

Alberta Sustainable Resource Development. 2004. Alberta Forest Management Planning Manual. Draft. Alberta Sustainable Resource Development, Public Lands and Forests Division, Forest Management Branch. Edmonton, Alberta, Canada. May 2004.

Geographic Dynamics Corp. 2000. Ecosite Classification of the Weyerhaeuser Edson FMA Area. Weyerhaeuser Company Limited, Edmonton, Alberta. July 2000.

Mulder, J. and I. Corns. 1994. Knowledge Based Ecosystem Prediction: Field Testing and Validation. GIS Symposium, Vancouver B.C.

Timberline Forest Inventory Consultants. 2000. Analysis of regenerated cutblock data Weyerhaeuser Canada (Drayton Valley). Prepared and submitted by Timberline Forest Inventory Consultants. Edmonton, AB. July 10, 2000.

5 Appendix 1A Data Library

Data library (adopted from Silvacom Ltd.)

Software: ESRI Workstation ArcInfo version 8.3 on UNIX
File Name: nlb110405_subset.dbf
Number of data records: 956,528
ND Field: fields used for netdown calculation process

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
1	AREA	Numeric	20	5	Area in Square Metres	✓
2	PERIMETER	Numeric	20	5	Perimeter of Polygon in Metres	
3	GIS_LINK	Numeric	20	0	Unique Spatial Identifier	✓
4	FMA	Character	1		FMA Identifier: Y.	✓
5	TOWNSHIP	Character	8		Township Range Meridian Label	
6	FMU	Character	3		Forest Management Unit Code: R1; R2; R3; R4.	✓
7	LMU	Character	15		Landscape Management Unit Name: Baptiste; Blackstone; Elk River; Marshy Bank; Medicine Lake; Nordegg River; O'Chiese; Sand Creek; Tall Pine; Willesden Green.	✓
8	WORKAREA	Character	20		Harvest Design Areas: Alder Flats; Beaver Flats; Big Bend; Black Mountain; Boundary; Brazeau Tower; Brewster Creek; Broken Arm; Buster Creek; Canyon Creek; Cathedral Grove; Chambers Creek; Chungo Lookout; Crimson; Diamond Hill; Doc's Lake; Dominion Lake; East Rundell; Elke Summers; Gosling Lake; Grace Creek; Grey Owl Creek; Jack Knife; Little One; Lodgepole; Lookout Creek; Louis Lake; Medicine Creek;	✓

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
					No Name Creek; Norm's Throw; North Brazeau; North Canal; North Dismal Creek; North False Gap; Omni; Open Creek; Pembina; Poacher's Creek; Power House; Prentice Creek; R2; R4; R5; R5U; Race Creek; Rapid Creek; Saskatchewan; South Brazeau; South Canal; South Deer Corner; South Dismal Creek; South False Gap; South Reservoir; Stevens Creek; Strawberry Mountain; Sunchild; The GAP; Trunk Road; Wapiabi; Wawa Creek; West Rundell; Wolf Creek; Wolf Lake East; Wolf Lake West.	
9	LANDUSE	Numeric	2	0	Landuse Disposition Identifier	✓
10	DISPTYPE	Character	3		Landuse Dispositions Type: DRS; EZE; FRD; ISP; LOC; MLL; MLP; MSL; NAA; PIL; PLA; PNT; PRI; REC; ROE; SMC; SME; SML; UNK; VCE; WDL.	✓
11	LU_LINE	Numeric	2	0	Identifier for Area of Buffered Linear Dispositions	✓
12	PNT	Character	10		Protective Notation Dispositions: PNT020323; PNT880286; PNT920339;	✓

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	NDField
					PNT950134.	
13	GRAZING	Character	10		Grazing Leases, Licenses and Permits: FGL800007; FGL800011; FGL810024; FGL860001; FGL860017; FGL860021; FGL920008; GRL15897; GRL34501; GRL37238; GRL37902; GRL37912; GRL38084; GRL38175; GRL38204; GRL38338; GRL38690; GRL39926; GRL40215; GRL40272; GRL40286; GRL40351; GRL40411; GRL40502; GRL40522; GRL40583; GRL40656; GRL40708; GRL780044; GRL800225; GRL800250; GRL800251; GRL800698; GRL890071; GRP787429; GRP787965; GRP787968; GRP787969; GRP787970; GRP787973; GRP788193; GRP830062; GRP830085.	✓
14	PRV_LSR	Numeric	2	0	Private Land Identifier (Source: LSR)	✓
15	PRV_MD	Numeric	2	0	Private Land Identifier (Source: Municipal District)	✓
16	PRV_PLAT	Numeric	2	0	Private Land Identifier (Source: Land Use Plat)	✓
17	SP2000	Character	7		Special Places 2000 Areas; Wabiabi.	✓
18	OCH_NAT	Character	10		O'Chiese Natural Area: NAA920002.	✓
19	CTP	Numeric	2	0	Coniferous Timber Permit Identifier	✓
20	CORRIDOR	Numeric	2	0	Major Highway Corridor Buffer (100m) Identifier	✓
21	OPEN_NUM	Character	11		Opening Number for Cutblocks	✓
22	CUTBLOCK	Numeric	2	0	Identifier for Cutblocks	✓
23	BLOCK_NUM	Character	13		Block Number	
24	OPERATOR	Character	2		Operating Company for Cutblock: E; DV; ED.	

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
25	PROP_CUT	Character	11		Opening Number for Proposed Blocks	✓
26	PLANBLK	Numeric	2	0	Identifier for Proposed Blocks	✓
27	TALLPINE	Character	10		Tallpine Quota Area of Operator Interest: CTLR010015; CTLR010016; CTLR040062.	✓
28	STRM30	Numeric	2	0	Identifier for Stream Buffers - 30 metres	✓
29	STRM60	Numeric	2	0	Identifier for Stream Buffers - 60 metres	✓
30	STRM100	Numeric	2	0	Identifier for Stream Buffers - 100 metres	✓
31	LAKE	Numeric	2	0	Identifier for Lake Buffers - 100 metres	✓
32	WTRSHED	Character	25		Watershed codes: Baptiste_Ord4; Baptiste_Ord5; Big Beaver_Ord4; Bighorn_Ord5; Blackstone_Ord4; Blackstone_Ord5; Blackstone_Ord6; Blanchard_Ord4; Brazeau_Ord5; Brazeau_Ord6; Brazeau_Ord7; BrazeauO_Ord7; Brewster_Ord4; Brown_Ord4; Brown_Ord5; Canyon_Ord4; Cardinal_Ord6; Chambers_Ord4; Chimney_Ord4; Chungo_Ord4; Chungo_Ord5; Clearwater_Ord6; Colt_Ord4; Colt_Ord5; Cow_Ord4; Cripple_Ord5; CrookedN_Ord4; Dismal_Ord4; East Lobstick_Ord4; Easy_Ord4; ElkC_Ord4; ElkR_Ord4; ElkR_Ord5; Fall_Ord5; Gap_Ord4; George_Ord4; George_Ord5; Gonika_Ord4; Grey Owl_Ord4; Hansen_Ord4; Hanson_Ord4; Haven_Ord4; Horseshoe_Ord4; Job_Ord4; Job_Ord5; Jock_Ord4; Joyce_Ord4; Lawrence_Ord4; Lookout_Ord4; Lundine_Ord4; Makwa_Ord4; Marshybank_Ord4; McCormick_Ord4; Meadows_Ord4;	

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
					Medicine_Ord4; Mink_Ord4; Neilson_Ord4; Nice_Ord4; Nice_Ord5; Nordegg_Ord4; Nordegg_Ord5; North Ram_Ord6; North Saskatchewan_Ord6; North Saskatchewan_Ord7; North Saskatchewan_Ord8; Opabin_Ord4; Paddy_Ord4; Pembina_Ord5; Pembina_Ord6; Philip_Ord4; Pinto_Ord4; Ram_Ord6; Ram_Ord7; Rapid_Ord4; RatE_Ord5; Rough_Ord4; Rough_Ord5; Shankland_Ord4; Shunda_Ord4; Side_Ord4; Smith_Ord4; Southesk_Ord4; Southesk_Ord5; Stevens_Ord4; Sturrock_Ord4; Sun_Ord4; Sunkay_Ord4; Swale_Ord4; Thistle_Ord5; Trout_Ord4; Trout_Ord5; Unnamed_Ord4#38; Unnamed_Ord4#42; Unnamed_Ord4#43; Unnamed_Ord4#44; Unnamed_Ord4#46; Unnamed_Ord4#47; Unnamed_Ord4#48; Unnamed_Ord4#49; Unnamed_Ord4#50; Unnamed_Ord4#51; Unnamed_Ord4#53; Unnamed_Ord4#54; Unnamed_Ord4#55; Unnamed_Ord4#57; Unnamed_Ord4#58; Unnamed_Ord4#59; Unnamed_Ord4#60; Unnamed_Ord4#61; Unnamed_Ord4#62; Unnamed_Ord4#63; Unnamed_Ord4#64; Unnamed_Ord4#65; Unnamed_Ord4#66; Unnamed_Ord4#68; Unnamed_Ord4#71; Unnamed_Ord4#72; Unnamed_Ord5#04; Unnamed_Ord5#06;	

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
					Wapiabi_Ord4; Wapiabi_Ord5; Washout_Ord4; Wawa_Ord4; Welch_Ord4; Whisker_Ord4; Wilson_Ord4; WolfN_Ord4; WolfS_Ord4; WolfS_Ord5.	
33	CLIENT_NAM	Character	20		Updated Watershed: Baptiste; Big Beaver; Blackstone; Blanchard; Brazeau; Brewster; Broken Arm; Brown; Chambers; Chief; Colt; Dismal; East Lobstic; East Pembina; Elk; Goff; Gonika; Grey Owl; Half Moon; Hansen; Haven; Horseshoe; Lookout; Lower Brown; Lower Chungo; Marshybank; McCormick; Middle Colt; Mink; Negraiff; Nordegg; North Saskatchewan; Opabin; Open; Paddy; Pembina; Penti; Rapid; Rat South; Rehn; Rundell; Ryhannan; Sand; Shankland; Shunda; Sinkhole; Slater; Smith; South Cungo; Stevens; Sturrock; Sutherland; Tallpine; Upper Blackstone;	✓

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
					Upper Chungo; Upper Colt; Upper Saskatchewan; Wapiabi; Wawa; Welch; Wilson; Wolf North; Wolf South; Zeta.	
34	CUTLINE	Numeric	2	0	Identifier for Cutline Buffers	✓
35	INOPER	Numeric	2	0	Identifier for Inoperable Areas (Steep Slopes)	✓
36	IRP_NAME	Character	26		Integrated Resource Plan Name: BRAZEAU- PEMBINA; COAL BRANCH; COLD CREEK; NORDEGG- RED DEER RIVER; ROCKY- NORTH SASKATCHEWAN.	
37	IRP_STAT	Character	8		Integrated Resource Plan Status: Approved; Proposed.	
38	IRP_TYPE	Character	12		Integrated Resource Plan Type: Regional; Sub-Regional.	
39	IRP_CODE	Character	3		Integrated Resource Plan Code: BRP; CBR; CCK; NRD; RNS.	
40	WCL_JASP	Numeric	2	0	Area of Interest Adjacent to Jasper National Park	✓
41	O-CHIESE	Numeric	2	0	O'Chiese Fire Inventory Area Identifier	✓
42	FIREKEY	Character	10		O'Chiese Fire Inventory Area - Polygon ID Composed of PID, MER, TWP, RGE	
43	OCC	Character	1		O'Chiese Fire Inventory Area – Crown Closure Class Code: A; B; C; D.	✓
44	OHGT	Numeric	2	0	O'Chiese Fire Inventory Area – Height (m)	✓
45	OSP1	Character	2		O'Chiese Fire Inventory Area – First Species: AW; BW; LT; PB; PL; SB; SW.	✓
46	OSP1PER	Numeric	2	0	O'Chiese Fire Inventory Area – First Species Percent	✓
47	OSP2	Character	2		O'Chiese Fire Inventory Area – Second Species: AW; BW; LT; PB; PL; SB; SW.	
48	OSP2PER	Numeric	2	0	O'Chiese Fire Inventory Area – Second Species Percent	✓

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
49	OSP3	Character	2		O'Chiese Fire Inventory Area – Third Species: AW; BW; LT; PB; PL; SB; SW.	✓
50	OSP3PER	Numeric	2	0	O'Chiese Fire Inventory Area – Third Species Percent	✓
51	OSP4	Character	2		O'Chiese Fire Inventory Area – Fourth Species: BW; PL; SB; SW.	✓
52	OSP4PER	Numeric	2	0	O'Chiese Fire Inventory Area – Fourth Species Percent	✓
53	OSP5	Character	2		O'Chiese Fire Inventory Area – Fifth Species	✓
54	OSP5PER	Numeric	2	0	O'Chiese Fire Inventory Area – Fifth Species Percent	✓
55	UOCC	Character	1		O'Chiese Fire Inventory Area – Understorey Crown Closure Class Code: A; B; C; D.	✓
56	UOHGT	Numeric	2	0	O'Chiese Fire Inventory Area – Understorey Height (m)	
57	UOSP1	Character	2		O'Chiese Fire Inventory Area – Understorey First Species: AW; BW; LT; PB; PL; SB; SW.	✓
58	UOSP1PER	Numeric	2	0	O'Chiese Fire Inventory Area – Understorey First Species Percent	✓
59	UOSP2	Character	2		O'Chiese Fire Inventory Area – Understorey Second Species: AW; BW; LT; PB; PL; SB; SW.	✓
60	UOSP2PER	Numeric	2	0	O'Chiese Fire Inventory Area – Understorey Second Species Percent	✓
61	UOSP3	Character	2		O'Chiese Fire Inventory Area – Understorey Third Species: AW; BW; LT; PB; PL; SB; SW.	✓
62	UOSP3PER	Numeric	2	0	O'Chiese Fire Inventory Area – Understorey Third Species Percent	✓
63	UOSP4	Character	2		O'Chiese Fire Inventory Area – Understorey	✓

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
					Fourth Species: AW; BW.	
64	UOSP4PER	Numeric	2	0	O'Chiese Fire Inventory Area – Understorey Fourth Species Percent	✓
65	UOSP5	Character	2		O'Chiese Fire Inventory Area – Understorey Fifth Species: SW.	✓
66	UOSP5PER	Numeric	2	0	O'Chiese Fire Inventory Area – Understorey Fifth Species Percent	✓
67	FIRE1930	Character	12		Fires for 1930's: REF-0022-34; REF-0031-36; REF-0138-40; REF-0141-40.	
68	FIRE1940	Character	12		Fires for 1940's: 762; REF-0192-41; REF-0193-41; REF-0194-41; REF-0195-41; REF-0196-41; REF-0197-41; REF-0198-41; REF-0199-41; REF-0201-41; REF-0202-41; REF-0203-41; REF-0205-41; REF-0209-41; REF-0210-41; REF-0212-41; REF-0213-41; REF-0214-41; REF-0215-41; REF-0244-41; REF-0245-41; REF-0247-41; REF-0248-41; REF-0255-41; REF-0256-41; REF-0258-41; REF-0262-41; REF-0263-41; REF-0381-43; REF-0463-44; REF-0556-45; REF-0622-46; REF-0623-46; REF-0641-46; REF-0642-46; REF-0643-46; REF-0646-47; REF-0647-47; REF-0648-47; REF-0656-47; REF-0657-47; REF-0724-49; REF-0725-49; REF-0743-49; REF-0744-49; REF-0745-49; REF-0747-49; REF-0748-49; REF-0750-49;	

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
					REF-0751-49; REF-0752-49; REF-0753-49; REF-0754-49; REF-0755-49; REF-0756-49; REF-0757-49; REF-0758-49; REF-0760-49; REF-0761-49; REF-0763-49; REF-0870-50.	
69	FIRE1950	Character	12		Fires for 1950's: 2-2-56; 2-4-58; 3-1-55; 3-12-56; 3-13-56; 3-5-55; 4-4-56; 4-6-56; 5-1-55; 5-12-58; 5-3-56; 5-5-59; REF-0888-51; REF-0889-51; REF-0989-54.	
70	FIRE1960	Character	12		Fires for 1960's: DE1-015-70; DR6-013-69; DR6-016-68; DR6-018-68; DR7-003-68; DR7-020-68; DW1-009-68; DW1-010-68.	
71	FIRE1970	Character	12		Fires for 1970's: DR6-018-79; DR6-019-79; DR6-020-79.	
72	FIRE1980	Character	12		Fires for 1980's: DR6-019-88.	
73	FIRE1990	Character	12		Fires for 1990's: DR3-019-94; N02-022-1998; P03-008-2000; P04-006-2000; S04-012-1998.	
74	FIRE2000	Character	12		Fires for 2000's: RWF-008-2003; RWF-012-2002; RWF-038-2001; RWF-047-2001; RWF-049-2003; RWF-055-2003; RWF-058-2001.	
75	ESIP	Character	18		Eastern Slopes Integrated Plan: Agriculture; Critical Wildlife; Facility; General Recreation; Industrial; Multiple Use; No ESIP;	✓

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
					Prime Protection; Special Use; Water.	
76	NSN	Character	20		Natural Sub-Regions: Alpine; Dry Mixedwood; Lower Foothills; Sub-Alpine; Upper Foothills.	✓
77	NRN	Character	16		Natural Regions: Boreal Forest; Foothills; Rocky Mountain.	
78	TL_SPN	Character	12		Thunder Lake Special Places Nomination: Thunder Lake.	✓
79	PSP	Numeric	2	0	Identifier for Permanent Sample Plots	✓
80	DRS	Character	10		Disposition Reservation: DRS000017; DRS020005; DRS020013; DRS020018; DRS020023; DRS030022; DRS030023; DRS040019; DRS1070; DRS1293; DRS1295; DRS1296; DRS1303; DRS1304; DRS1305; DRS1306; DRS1307; DRS1321; DRS1322; DRS1323; DRS1325; DRS1326; DRS1328; DRS1329; DRS1330; DRS1362; DRS1363; DRS1365; DRS1366; DRS1367; DRS1368; DRS1369; DRS1541; DRS1545; DRS1688; DRS28; DRS681; DRS780027; DRS790057; DRS790068; DRS790097; DRS810165; DRS820132; DRS830026; DRS830062; DRS830185; DRS840016; DRS840259;	✓

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
					DRS850236; DRS850239; DRS850248; DRS860011; DRS860021; DRS860053; DRS860115; DRS860217; DRS860218; DRS870168; DRS880031; DRS880054; DRS880055; DRS880057; DRS880079; DRS880124; DRS890010; DRS890111; DRS890165; DRS910031; DRS910033; DRS910034; DRS910039; DRS910042; DRS920025; DRS920036; DRS930026; DRS950019.	
81	FORSTKEY	Character	10		AVI Polygon ID Composed of PID, MER, TWP, RGE	
82	PID	Numeric	4	0	AVI Polygon ID Number by Township	✓
83	MER	Numeric	2	0	Meridian: 5.	✓
84	TWP	Numeric	3	0	Township: 39; 40; 41; 42; 43; 44; 45; 46; 47; 48.	✓
85	RGE	Numeric	2	0	Range: 5; 6; 7; 8; 9; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20.	✓
Overstory Attributes						
86	MOISTURE	Character	1		Moisture Regime Identified as Follows: A – Aquatic; D – Dry;	

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
					M – Mesic; W – Wet; U – Unclassified.	
87	HEIGHT	Numeric	2	0	Height (m)	✓
88	SP1	Character	2		Species 1 Identified as Follows: AW – Trembling Aspen; BW – White Birch; FA – Alpine Fir; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; JP – Jack Pine; PL – Lodgepole Pine; SB – Black Spruce; SE– Engelmann Spruce; SW – White Spruce.	✓
89	SP1PER	Numeric	2	0	Species 1 Percent	✓
90	SP2	Character	2		Species 2 Identified as Follows: AW – Trembling Aspen; BW – White Birch; FA – Alpine Fir; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; JP – Jack Pine; PL – Lodgepole Pine; SB – Black Spruce; SE– Engelmann Spruce; SW – White Spruce.	✓
91	SP2PER	Numeric	2	0	Species 2 Percent	✓
92	SP3	Character	2		Species 3 Identified as Follows: AW – Trembling Aspen; BW – White Birch; FA – Alpine Fir; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PL – Lodgepole Pine; SB – Black Spruce; SE– Engelmann Spruce; SW – White Spruce.	✓
93	SP3PER	Numeric	2	0	Species 3 Percent	✓
94	SP4	Character	2		Species 4 Identified as Follows: A – Unspecified Deciduous; AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PL – Lodgepole Pine; SB – Black Spruce; SE– Engelmann Spruce; SW – White Spruce.	✓
95	SP4PER	Numeric	2	0	Species 4 Percent	✓
96	SP5	Character	2		Species 5 Identified as Follows: AW – Trembling Aspen; BW – White Birch; LT – Larch; PB – Balsam Poplar; PL – Lodgepole Pine; SB – Black Spruce.	✓

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
97	SP5PER	Numeric	2	0	Species 5 Percent	✓
98	STRUCTURE	Character	1		Stand Structure Identified as Follows: C – Complex; H – Horizontal; M – Multi-storey.	✓
99	HORPER	Numeric	2	0	Stand Structure Value	✓
100	ORIGIN	Numeric	4	0	Origin	✓
101	TPR	Character	1		Timber Productivity Rating Identified as Follows: G – Good; M – Medium; F – Fair; U – Unproductive.	
102	CC	Character	1		Crown Closure Identified as Follows: A – 6 – 30% crown Closure; B – 31 – 50% crown Closure; C – 51 – 70% crown Closure; D – 71 – 100% crown Closure.	✓
103	HTCLASS	Numeric	2	0	Height Class Identified as Follows: 0 – 0 – 6 m in height; 1 – 6.1 – 12 m in height; 2 – 12.1 – 18 m in height; 3 – 18.1 – 24 m in height; 4 – 24.1 – 30 m in height; 5 – 30.1 – 36 m in height.	
104	MODIFIER1	Character	2		Stand Modifier 1 Identified as Follows: BT – Broken tops; BU – Burn; CC – Clearcut; CL – Clearing; CW – Abandoned wellsite; DI – Disease; FL – Flooded; GR – Grazing; IK – Insect kill; PI – Pipeline; PL – Planted; SC – Scarified; SN – Snags; ST – Scattered timber; TH – Thinned; TL – Transmission line; WF – Windfall.	✓
105	EXTENT1	Numeric	2	0	Extent of Modification 1	✓
106	YEAR1	Numeric	4	0	Year of Modification 1	✓
107	MODIFIER2	Character	2		Stand Modifier 2 Identified as Follows: BU – Burn; CC – Clearcut; CL – Clearing; CW – Abandoned wellsite; GR – Grazing; PI – Pipeline; PL – Planted; SC – Scarified; SI – Site improvement; SN – Snags; ST – Scattered timber; TL – Transmission line; WF – Windfall.	✓
108	EXTENT2	Numeric	2	0	Extent of Modification 2	✓
109	YEAR2	Numeric	4	0	Year of Modification 2	✓
110	NONFORTYPE	Character	2		Naturally Non-Forested Vegetated Land Identified as Follows: HF – Herbaceous forbs; HG – Herbaceous grassland;	✓

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
					SC – Closed shrubs; SO – Open shrubs.	
111	NONFORCL	Numeric	2	0	Non-Forested Natural Vegetated Land Shrub Closure	✓
112	NATNONVEG	Character	3		Naturally Non-Vegetated Land Identified as Follows: NMC – Cutbank; NMR – Rock barren; NMS – Sand; NWF – Flooded; NWL – Lake or pond; NWR – River.	✓
113	ANTHVEG	Character	3		Anthropogenic Vegetated Land Identified as Follows: CA – Annual crops; CIP – Pipeline; CIW – Geophysical activity (wellsite); CP – Cropland (perennial); CPR – Perennial crops (with SO or SC N.F.TYPE).	✓
114	ANTHNONVEG	Character	3		Anthropogenic Non-Vegetated Land Identified as Follows: AIF – Farm; AIG – Gravel or borrow pit; AIH – Permanent right-of-way; AII – Industrial sites; ASC – City, town, village; ASR – Ribbon development.	✓
115	INTERPRETE	Character	2		Interpreter's Initials	
116	REFSOURCE	Character	1		Reference Source Identified as Follows: A – Air call; F – Field plot; I – Interpreted TPR; P – PSP.	
117	REFYEAR	Numeric	4	0	Reference Year	
Understory Attributes						
118	U_MOISTURE	Character	1		Moisture regime Identified as Follows: A – Aquatic; D – Dry; M – Mesic; W – Wet; U – Unclassified.	
119	U_HEIGHT	Numeric	2	0	Height (m)	
120	U_SP1	Character	2		Species 1 Identified as Follows: A – Unspecified Deciduous; AW – Trembling Aspen; BW – White Birch; FA – Alpine Fir; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PL – Lodgepole Pine; SB – Black Spruce; SE– Engelmann Spruce;	✓

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
					SW – White Spruce.	
121	U_SP1PER	Numeric	2	0	Species 1 Percent	✓
122	U_SP2	Character	2		Species 2 Identified as Follows: A – Unspecified Deciduous; AW – Trembling Aspen; BW – White Birch; FA – Alpine Fir; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PJ – Jack Pine; PL – Lodgepole Pine; SB – Black Spruce; SE– Engelmann Spruce; SW – White Spruce.	✓
123	U_SP2PER	Numeric	2	0	Species 2 Percent	✓
124	U_SP3	Character	2		Species 3 Identified as Follows: A – Unspecified Deciduous; AW – Trembling Aspen; BW – White Birch; FA – Alpine Fir; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PL – Lodgepole Pine; SB – Black Spruce; SE – Engelmann Spruce; SW – White Spruce.	✓
125	U_SP3PER	Numeric	2	0	Species 3 Percent	✓
126	U_SP4	Character	2		Species 4 Identified as Follows: AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PL – Lodgepole Pine; SB – Black Spruce; SW – White Spruce.	✓
127	U_SP4PER	Numeric	2	0	Species 4 Percent	✓
128	U_SP5	Character	2		Species 5 Identified as Follows: BW – White Birch: PL – Lodgepole Pine; SB – Black Spruce.	✓
129	U_SP5PER	Numeric	2	0	Species 5 Percent	✓
130	U_STRUCTUR	Character	1		Stand Structure Identified as Follows: H – Horizontal; M – Multi-storey.	
131	U_HORPER	Numeric	2	0	Stand Structure Value	
132	U_ORIGIN	Numeric	4	0	Origin	
133	U_TPR	Character	1		Timber Productivity Rating Identified as Follows: G – Good; M – Medium; F – Fair; U – Unproductive.	
134	U_CC	Character	1		Crown Closure Identified as Follows: A – 6 – 30% crown Closure; B – 31 – 50% crown Closure; C – 51 – 70% crown Closure; D – 71 – 100% crown Closure.	✓
135	U_HTCLASS	Numeric	2	0	Height Class Identified as Follows: 0 – 0 – 6 m in height;	

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
					1 – 6.1 – 12 m in height; 2 – 12.1 – 18 m in height; 3 – 18.1 – 24 m in height; 4 – 24.1 – 30 m in height.	
136	U_MODIFIER	Character	2		Stand Modifier 1 Identified as Follows: BT – Broken tops; BU – Burn; CC – Clearcut; CL – Clearing; CW – Abandoned wellsite; GR – Grazing; PI – Pipeline; PL – Planted; SC – Scarified; SN – Snags; ST – Scattered timber; TH – Thinned; TL – Transmission line; WF – Windfall.	
137	U_EXTENT1	Numeric	2	0	Extent of Modification 1	✓
138	U_YEAR1	Numeric	4	0	Year of Modification 1	✓
139	U_MODIF2	Character	2		Stand Modifier 2 Identified as Follows: BU – Burn; CC – Clearcut; CL – Clearing; CW – Abandoned wellsite; SC – Scarified; SI – Site improvement; SN – Snags; ST – Scattered timber.	✓
140	U_EXTENT2	Numeric	2	0	Extent of Modification 2	✓
141	U_YEAR2	Numeric	4	0	Year of Modification 2	✓
142	U_NONFORTY	Character	2		Non-Forested Natural Vegetated Land Type Identified as Follows: BR – Bryophytes / mosses ; HF – Herbaceous forbs; HG – Herbaceous grass; SC – Closed shrubs; SO – Open shrubs.	✓
143	U_NONFORCL	Numeric	2	0	Non-Forested Natural Vegetated Land Shrub Closure	✓
144	U_NATNONVE	Character	3		Naturally Non-Vegetated Land Identified as Follows: NMC – Cutbank; NMR – Rock barren; NMS – Sand; NWF – Flooded; NWL – Lake or pond; NWR – River.	✓
145	U_ANTHVEG	Character	3		Anthropogenic Vegetated Land Identified as Follows: CIP – Pipeline; CIW – Geophysical activity (wellsite); CP – Cropland (perennial); CPR – Perennial crops (with SO or SC N.F.TYPE).	✓
146	U_ANTHNONV	Character	3		Anthropogenic Non-Vegetated Land Identified as Follows: AIF – Farm; AIG – Gravel or borrow pit; AIH – Permanent right-of-way; AII – Industrial sites; ASC – City, town, village; ASR – Ribbon development.	✓
147	U_INTERPRE	Character	2		Interpreter's Initials	

Field No.	Field Name	Field Type	Field Width	No. of Decimals	Field Description	ND Field
148	U_REFSOURC	Character	1		Reference Source Identified as Follows: A – Air call; F – Field plot; I – Interpreted TPR; P – PSP.	
149	U_REFYEAR	Numeric	4	0	Reference Year	
150	ECOSITE	Character	6		Ecosite Code	✓
151	MISS_AVI	Character	2	0	Area inside FMA without AVI	

Data library - netdown process defined fields in alphabetical order

Software: Microsoft Visual FoxPro 8.0 in Windowns
File Name: for_fin.dbf (includes fields marked in ***[NB Field]*** in nlb110405_subset.dbf)
Number of data records: 956,528

Field Name	Field Type	Field Width	No. of Decimals	Field Description
AGECL	Integer			Five year age classes, also TSA period length
AOP_YR	Integer			Annual Operating Plan – calendar year
ARIS_CYR	Date	8		Harvest time according to ARIS records - Date
ARIS_REFOR	Character	2		ARIS reforestation status Pure coniferous: 'CS','DS','HS','MS','SS' Coniferous leading mixedwoods: 'CC','DC','HC','SC' Deciduous leading mixedwoods: 'CD','DD','HD','SD' Pure deciduous: 'CH','DH','HH','MH','SH'
ARIS_RESP	Character	2		ARIS harvest responsibility: AN, AQ, IF – Industry FMA, IQ – Industry quota
BCG	Character	2		Modeled Broad Cover Group for Yield Curves DX – Pure Deciduous DC – Deciduous Dominated Mixedwood CD – Coniferous Dominated Mixedwood CX – Pure Coniferous PL – Pure Coniferous – Pure Pine SW – Pure Coniferous – White Spruce PS – Pure Coniferous – Pine/Spruce
BCGP	Character	2		Overstory Broad Cover Group DX – Pure Deciduous DC – Deciduous Dominated Mixedwood CD – Coniferous Dominated Mixedwood CX – Pure Coniferous PL – Pure Coniferous - Pure Pine SW - Pure Coniferous – White Spruce PS - Pure Coniferous – Pine/Spruce
BLOCKAGE	Integer			Cutblock age assignment Age in years
CC_CLASS	Character	1		Cutblock crown closure assignment based on overstory, understory (SoPM), or harvesting rules A, B, C, D – as per AVI
CONIF_PCT	Numeric	6	3	Composition of conifer portion in overstory as defined by AVI (0 to 10) and used in Yield Curve assignment
CUT_PERIOD	Integer			Cutblock harvest period
CUT_YEAR	Integer			Cutblock harvest year

Field Name	Field Type	Field Width	No. of Decimals	Field Description
				Calendar year
CUTBLK	Character	1		Cutblock Identifier (amalgamation of all cutblock identifier fields) “” – Not a Cutblock “Y” – Cutblock
DEL	Character	10		Temporary polygon deletion assignment ANTHNON – Anthropogenic non-vegetated ANTHVEG – Anthropogenic vegetated BSPRUCE – Black spruce LARCH – Larch NATNON – Naturally non-vegetated NONFORT – Naturally non-forested PPRD – Potentially productive unidentified opening UNPROD_ECO – Unproductive ecosite
DISO	Character	4		Legal dispositions DRS, LU_P, OCH, PNT, and REC
DISV	Character	4		Voluntary dispositions PNT
DV_QUOTA	Integer			Drayton Valley quoata cut identifier: 0 – not a quota 1 – quota
ECO	Character	1		Ecosite (the first letter from Sitelogix® call)
FMU_CODE	Character	4		FMU code “” – default, IR – Indian Reserve, JNP – Jasper National Park, MTU – Rose Creek Community Timber Program, R1, R2, R3, R4
H_LAYER	Character	5		Horizontal stand layer information used UPPER – Overstory UNDER - Understory
HARV_RULE	Character	3		Cutblock Harvest Rule Assignment (see Section 2.8.3) R01, R02, R03, R04, R05, R06, R07, R08, R09, R10
HORZA	Numeric	11	6	Horizontal stand area reduction - area (ha)
HRV_RND	Integer			Random variable assigned to each stand 0 to 100
LAND_STAT	Character	4		Land Status: DISO – dispositions outside FMA DISV – dispositions inside FMA FGL – Diamond Hill Allotment does not contribute to the total SYU AAC GRI – grazing dispositions legally inside FMA GRO – grazing disposition legally outside FMA yet contribute to the total SYU AAC NONE – default PSP – PSP THU – Thunder Lake proposed special place WAP - Wapiabi
LAYER_USED	Character	5		Story of primary management (SoPM) UNDER – understory UPPER – overstory
LMU_CODE	Character	4		LMU description in code: BAP, BLK, ELK, MAR, MED, NONE (default), NOR, OCH, SAN, TAL, WIL
NETLABEL	Character	45		Net landbase final stratification description (see netdown document)
NHA	Numeric	11	6	Adjusted polygon area (ha)
NSR	Charcter	2		Provincial Natural Subregion AL – Alpine SA – Subalpine UF – Upper Foothills LF – Lower Foothills
OLDGROW	Character	6		Over-mature Category OLD_DX –over-mature pure deciduous

Field Name	Field Type	Field Width	No. of Decimals	Field Description
				OLD_DC –over-mature deciduous dominated mixedwood OLD_CD –over-mature coniferous dominated mixedwood OLD_PL –over-mature pine dominated pure coniferous OLD_SW –over-mature spruce dominated pure coniferous OLD_PS - over-mature pine/spruce mixed pure coniferous
OVCODE	Integer			Oversotry vegetation cocde 0 – UNDEFINED 1 – ANTHROPOGENIC VEGETATED 2 – NON FOREST VEGETATION (NATURAL) 3 – FORESTED (NATURAL) 4 – ANTHROPOGENIC NON-VEGETATED 5 – NATURAL NON-VEGETATED
PAOP_YR	Integer			Planned AOP year
PARIS_CYR	Date	8		Planned ARIS cut year
PCTCON	Integer			Composition of overstory species that are coniferous as defined by AVI 0 to 10
PCTDEC	Integer			Composition of overstory species that are deciduous as defined by AVI 0 to 10
PCTLT	Integer			Composition of overstory larch as defined by AVI 0 to 10
PCTPL	Integer			Composition of overstory pine as defined by AVI 0 to 10
PCTSB	Integer			Composition of overstory black spruce as defined by AVI 0 to 10
PCTSW	Integer			Composition of overstory white spruce as defined by AVI 0 to 10
PCUT_PERIO	Numeric	9	0	Cut period for new planned block; source AOP
PLAN_BLK	Character	1		Planned harvest block identifier: Y or N
PPAOP_YR	Character	11		New planned block update from AOP data. Contains unique cutblock numbers
PRIVATE	Integer			Private land identifier: 1 – Private land 0 – Non-private land
REMAN	Character	1		Cutblock Remnant Stand identifier Y – Overstory remnant stand N – Overstory not a remnant stand
RES_STAT	Character	4		Reserve Status CORR - corridor INOP – steep slopes, inoperable LAKE – lake buffer NONE – default NSKR – North Saskatchewan River buffer SEIS – seismic lines STRM – stream buffer
SEQ_YEAR	Integer			Block sequencing year for TSA
SERAL	Integer			Seral Stage **If STD_COV='CX','PL','SW','PS', or 'CD'** 1 – Early (stand 0 to 10 years old) 2 – Immature (stand 11 to 40 years old) 3 – Mature (stand 40 to 90 years old) 4 – Late (stand 90 to 120 years old)

Field Name	Field Type	Field Width	No. of Decimals	Field Description
				5 – Very Late (stand 120 to 170 years old) 6 – Overmature (stand 170+ years old) **If STD_COV='DX' or 'DC'** 1 – Early (stand 0 to 10 years old) 2 – Immature (stand 11 to 40 years old) 3 – Mature (stand 40 to 70 years old) 4 – Late (stand 70 to 110 years old) 5 – Very Late (stand 110 to 170 years old) 6 – Overmature (stand 170+ years old)
ST_SITE	Character	5		Final stand site quality classification LFG – Lower foothills Good LFM – Lower foothills Medium LFP – Lower foothills Poor UFG – Lower foothills Good UFM – Lower foothills Medium UFP – Lower foothills Poor SAG – Subalpine Good SAP – Subalpine Poor UNPRD – Non-valid Ecosite assignment (Sitelogix W, Y, Z)
TYPE	Character	18		Net landbase final stratification type(see netdown document)
U_BCGP	Character	2		Understory Broad Cover Group DX – Pure Deciduous DC – Deciduous Dominated Mixedwood CD – Coniferous Dominated Mixedwood CX – Pure Coniferous PL – Pure Coniferous – Pure Pine SW – Pure Coniferous – White Spruce PS – Pure Coniferous – Pine/Spruce
UPCTCON	Integer			Composition of understory species that are coniferous as defined by AVI 0 to 10
UPCTDEC	Integer			Composition of understory species that are deciduous as defined by AVI 0 to 10
UPCTLT	Integer			Composition of understory larch as defined by AVI 0 to 10
UPCTPL	Integer			Composition of understory pine as defined by AVI 0 to 10
UPCTSB	Integer			Composition of understory black spruce as defined by AVI 0 to 10
UPCTSW	Integer			Composition of understory white spruce as defined by AVI 0 to 10
UVCODE	Integer			Understory vegetation cocde 0 – UNDEFINED 1 – ANTHROPOGENIC VEGETATED 2 – NON FOREST VEGETATION (NATURAL) 3 – FORESTED (NATURAL) 4 – ANTHROPOGENIC NON-VEGETATED 5 – NATURAL NON-VEGETATED
WORIGIN	Integer			Stand origin based on overstory or understory (SoPM) Calendar year
WRK_AREA	Character	8		Harvest Design Area Code: "" – default; Chungo_L – Chungo Lookout; Jack_Knf – Jack Knife Wapiabi - Wapiabi
YIELDNUM	Character	4		Yield curve number assigned to stand (see

Field Name	Field Type	Field Width	No. of Decimals	Field Description
				yield curve document) Character #1: C – Coniferous yield curve D – Deciduous yield curve Character #2 to #4: yield curve number

Data library - Fields added to the netdown database for Woodstock/Stanely modeling

Software: Microsoft Visual FoxPro 8.0 in Windowns
File Name: wst_file.dbf (most fields are from for_fin.dbf)
Number of data records: 779,889

Field Name	Field Type	Field Width	No. of Decimals	Field Description
SB_OPP	Character	1		Black Spruce harvest opportunity identifier: Y or N
GRL_GRP	Character	1		Grazing lease or permit: Y or N
REGEN	Character	3		Regeneration type: NAT
PREBLOCK	Character	1		Preblock identifier: empty or 'Y'
CUTPERIODS	Character	2		5-year cutperiod identifier for spatial modeling: -3, -2, -1, 0, 1, 2, 3, 4, 5
ACTION	Integer			Action identifier for spatial modeling: 0, 1, or 2
BLOCK	Character	10		Unique cutblock identifier for spatial modeling: 'B' + block number
PLAN_PD	Character	2		Plan period identifier for spatial modeling: NB, P1, P2, P3, P4, P5

6 Appendix 1B Silvacom GIS Processing Document

Development of spatial composite landbase coverage for net landbase determination

All data sets were assembled into ArcInfo Coverage format from the source information and projected to UTM, Zone 11, NAD83 Datum if required. Only the required attributes (see table below) were maintained for each input layer (as identified by Weyerhaeuser). All input data sets listed below were overlaid together to produce a composite landbase coverage to be used in the net landbase determination. The software and operating system used to produce this overlay product was ESRI Workstation ArcInfo version 8.3 on UNIX. The input data sets were overlaid in the order listed in the table below. All spatial processing was done using a fuzzy tolerance of 0.001 and a dangle tolerance of 0. All of the separate input data sets and the final composite landbase coverage are currently stored at Silvacom and will be distributed as part of the deliverable for this project.

The following table summarizes the input coverages used in creating the initial gross landbase spatial GIS coverage.

Input Spatial Coverages

GIS Coverage	Source	Description	Database Fields	Dropped Fields	Unique Issues
FMA	Data provided by Weyerhaeuser	Forest Management Agreement Boundary	FMA	LOCATION_D	
Township	Data provided by Weyerhaeuser	Township Identifier	TOWNSHIP		
FMU	Data provided by Weyerhaeuser	Forest Management Unit Boundaries	FMU	NAME	
Landscape Management Units	Data provided by Weyerhaeuser	Landscape Management Unit Boundaries	LMU	COMPARTMENT, FMA	
Working Areas	Data provided by Weyerhaeuser	Harvest Design Areas	WORKAREA	FMA	
Land Use Dispositions	LU_LINE, LU_POLY, TDA data sets stored at Silvacom	Land Use Dispositions Linear Dispositions Buffered using the Following Criteria (distances are total widths): EZE - 15m FRD - 20m GEO - 8m LOC - 20m MLL - 20m MLP - 10m MSL - 20m PIL - 15m PLA - 20m RDS - 20m	LANDUSE, DISPTYPE, LU_LINE		Polygonal dispositions cannot overlap and therefore only one disposition type can be kept. Linear disposition type/number will not be included in the overlay, but a linear reference coverage will be provided.

GIS Coverage	Source	Description	Database Fields	Dropped Fields	Unique Issues
		REA - 10m ROE - 20m RRD - 20m SML - 15m VCE - 15m			
PNT	Derived from LSAS Database	PNT Boundaries	PNT		Identified on list by ASRD
Grazing Leases, Licenses and Permits	Data provided by Weyerhaeuser	Grazing Dispositions	GRAZING	GRAZ_DISP	
Private Land Inventory	Data provided by Weyerhaeuser	Private Land Identifier	PRV_LSR, PRV_MD, PRV_PLAT	MER, RGE, TWP, SEC, QS, OWNER1_FN, OWNER1_LN, CITY1, PROVINCE1, PCODE1, OWNER2_FN, OWNER2_LN, ADDRESS2, CITY2, PROVINCE2, PCODE2, OWNER3_FN, OWNER3_LN, ADDRESS3, CITY3, PROVINCE3, PCODE3, OWNER4_FN, OWNER4_LN, ADDRESS4, CITY4, PROVINCE4, PCODE4, OWNER5_FN, OWNER5_LN, ADDRESS5, CITY5, PROVINCE5, PCODE5, STATUS, ID_NUMBER, STATUSDATE, OWNER6_FN, OWNER6_LN, ADDRESS6, CITY6, PROVINCE6, PCODE6, ADDRESS1	
Special Places 2000 Areas	Data Assembled from previous Net Landbase Project	SP2000 Areas	SP2000		
O'Chiese Natural Area	Data Assembled from previous Net Landbase Project	O'Chiese Natural Area Boundary -- Assembled from Previous Net Landbase Project	OCH_NAT		
Coniferous Timber Permits	Data Assembled from previous Net Landbase Project	CTP Identifier	CTP		
Major Highway Corridor Buffer	Data Assembled from previous Net Landbase Project	Highway 22 and Highway 11 Buffered 100 Metres	CORRIDOR		
Cutblocks	Data provided	Inventory and Post-	OPEN_NUM,	WORKAREA,	

GIS Coverage	Source	Description	Database Fields	Dropped Fields	Unique Issues
	by Weyerhaeuser	Inventory Updates Reflecting Harvest Activities	OPERATOR, CUTBLOCK	BLOCK_NUM, SOURCE, FMA	
Planned Cutblocks	Data provided by Weyerhaeuser	Cutblocks Planned for Harvest	PROP_CUT, PROPBLCK	FIELD_NUM, OPEN_TYPE, DESIGN_YR, AOP_YR, OPERATOR, SEASON, PLAN_STAT, ARCHIVE, APPR_DATE, CONTINGEN SP,1 BCGP, REFOR_SYS, REFOR_USR, REFOR_APR, PRIM_DISP, FMU, COMPART, WORKAREA, SUBREGION, AREA_CODE, TRAPLINE, GRAZ_DISP, ARCH_POTEN, CAL_CONVOL, FLD_CONVOL, CAL_DECVOL, FLD_DECVOL, CAL_TOTVOL, CAL_SW_VOL, CAL_PL_VOL, CAL_SB_VOL, CAL_FB_VOL, FLD_FB_PER, SPF_PCE_SZ, CAL_LT_VOL, CAL_AW_VOL, CAL_PB_VOL, FLD_PB_PER, CAL_BW_VOL,	
Tallpine Quota Area	Data Assembled from previous Net Landbase Project	Tallpine Quota Area Identifier	TALLPINE		
Water Buffers	Data provided by GISmo Solutions	Water Features Buffered using the Following Criteria (distances are total widths): Lake buffers -- 100m Buffer Applied to All Lakes Greater than 4 ha in Area Trumpeter Swan Lake Buffers -- 200m Buffer River Buffers -- 100m Buffer Large Permanent Buffers -- 60m Buffer Small Permanent Buffers -- 30m Buffer	STRM30, STRM60, STRM100, LAKE		
Watersheds	Data provided by GISmo	4th Order Watershed Boundaries	WTRSHED	NEW_W_OR, NEW_W_NAM,	

GIS Coverage	Source	Description	Database Fields	Dropped Fields	Unique Issues
	Solutions			NEW_STR, CLIENT_NAME, FMA_OVERLAP	
Cutline Buffers	Data provided by Weyerhaeuser	All Cutline Features Buffered 8 Metres (total width)	CUTLINE		
Inoperable Areas	Combination of Existing Inoperable Data Set from Weyerhaeuser and New Analysis Completed by Silvacom	Steep Slope Areas	INOPER		
Integrated Resource Plan	Data provided by ASRD	IRP Identifiers	IRP_NAME, IRP_STAT, IRP_TYPE, IRP_CODE	IRP_, IRP_ID, LABEL	
Area of Interest Adjacent to Jasper National Park	Data Assembled from Previous Net Landbase Project	Area of Interest Adjacent to Jasper National Park	WCL_JASP		
O'Chiese Fire Inventory	Data Assembled from Previous Net Landbase Project	Alberta Vegetation Inventory Version 2.1 Within the O'Chiese Fire	Fire Inventory Overstorey and Understorey Attributes		
Historical Fires	Data provided by ASRD	Historical Class E Fires	FIRE1930, FIRE1940, FIRE1950, FIRE1960, FIRE1970, FIRE1980, FIRE1990, FIRE2000	BURNCODE, YEAR, SOURCE	
Eastern Slopes Integrated Plan	Data provided by ASRD	ESIP boundaries	ESIP	ESIP_ZONES, ESIPZONE, DESCRIPTION	
Natural Regions and Sub-Regions	1:1,000,000 scale provincial data	Natural Region and Sub-Region Identifiers	NSN, NRN	EDC, EDN, EDTC, CR_, CD_, ADC, REL, G1, PM1, SE1, SL1, SLU1, S1, T1, DU1, DL1, V1, G2, PM2, SE2, SL2, SLU2, S2, T2, DU2, DL2, V2, G3, PM3, SE3, SL3, SLU3, S3, T3, DU3, DL3, V3, P, AG, MT_ BT_ FT_, WMF, WM, WS, WD, WB, WF, WO, MF1, MF2, MF3, MF4, MF5, MF6, MF7, MF8, MF9, BF1, BF2, BF3, BF4, BF5, BF6, BF7, BF8, BF9, LF1, LF2, LF3, LF4, LF5, LF6, LF7, LF8, LF9, LF10, LF11, LF12, LF13, LF14, LF15, LNO, LHA, DB1, DB2, DB3, HA, INFIL, COLOR, COLOR2	

GIS Coverage	Source	Description	Database Fields	Dropped Fields	Unique Issues
Thunder Lake Special Places Nomination	Data Assembled from Previous Net Landbase Project	Thunder Lake Special Places Nomination	TL_SPN		
Permanent Sample Plots	Data provided by Weyerhaeuser and ASRD	PSP points and polygons	PSP	STATUS, PLOT_NUM, TYPE, RESERVE, SIZE, PLOTS, CENTRE_GPS, FILENAME, LONGITUDE, LATITUDE, EASTING, NORTHING, ELEVATION, MERIDIAN, SIZE_M2, COMMENTS, PLOT_NUM, META2	PSPs represented by points were buffered to become a 300m by 300m square
Disposition Reservations	Derived from LSAS Database	DRS Boundaries	DRS		Identified on list by ASRD
Forest Inventory	Data assembled from existing Weyerhaeuser AVI and AVI re-inventory completed by Silvacom	Alberta Vegetation Inventory Version 2.1	AVI Overstorey and Understorey Attributes		
Ecosite Classification	Data provided by Weyerhaeuser	Ecosite Class	ECOSITE		Each AVI Polygon was Assigned an Ecosite Type Based on the Ecosite Type Which Comprises the Largest Area of the AVI Polygon
FMA	Data provided by Weyerhaeuser	Forest Management Agreement Boundary	FMA	LOCATION_D	

6.1 SLIVER STATISTICS

All slivers were retained in the final data set and throughout the processing. The distribution of slivers in the composite landbase coverage is summarized in the following table.

Sliver Size	Number of Records
<.01 ha	483,324
.01-.05 ha	169,617
.05 - .1 ha	91,899
.1 - .25 ha	108,809
.25 - .5 ha	65,305

6.2 QUALITY CONTROL

Quality control checks were performed on both the spatial data and the output databases. Area summaries were completed to ensure that the areas in the output data set matched the areas of the input data sets. Frequency summaries were performed to ensure that each field contained a valid code. Internal QC maps were produced to highlight any missing data and to verify the spatial location of the data.

7 Appendix 1C Exhaustive list of Yield Curves

Yield Number *[YIELDNUM]*	Broad Cover Group *[BCG]*[1]	Site *[ST_SITE]*	Crown Closure *[CC_CLAS]*	Switch Stand Identifier [H_LAYER / LAYER_USED]	Coniferous Composition *[CONIF_PCT]*
Coniferous Dominated Yields					
C1	CD	LFG	A	Not UPPER/UNDER	5
C2	CD	LFG	A		6
C3	CD	LFG	A		7
C4	CX	LFG	A		8
C5	CX	LFG	A		9
C6	CX	LFG	A		10
C7	CD	LFG	B		5
C8	CD	LFG	B		6
C9	CD	LFG	B		7
C10	CX	LFG	B		8
C11	CX	LFG	B		9
C12	CX	LFG	B		10
C13	CD	LFG	C		5
C14	CD	LFG	C		6
C15	CD	LFG	C		7
C16	CX	LFG	C		8
C17	CX	LFG	C		9
C18	CX	LFG	C		10
C19	CD	LFG	D		5
C20	CD	LFG	D		6
C21	CD	LFG	D		7
C22	CX	LFG	D		8
C23	CX	LFG	D		9
C24	CX	LFG	D		10
C25	CD	LFM	A		5
C26	CD	LFM	A		6
C27	CD	LFM	A		7
C28	CX	LFM	A		8
C29	CX	LFM	A		9
C30	CX	LFM	A		10
C31	CD	LFM	B		5
C32	CD	LFM	B		6
C33	CD	LFM	B		7
C34	CX	LFM	B		8
C35	CX	LFM	B		9
C36	CX	LFM	B		10
C37	CD	LFM	C		5
C38	CD	LFM	C		6
C39	CD	LFM	C		7
C40	CX	LFM	C		8
C41	CX	LFM	C		9
C42	CX	LFM	C		10
C43	CD	LFM	D		5
C44	CD	LFM	D		6

[1] CX also includes pure conifers ‘PL’, ‘SW’, ‘PS’

C45	CD	LFM	D		7
C46	CX	LFM	D		8
C47	CX	LFM	D		9
C48	CX	LFM	D		10
C49	CD	LFP	A, B, C, D		5
C50	CD	LFP	A, B, C, D		6
C51	CD	LFP	A, B, C, D		7
C52	CX	LFP	A, B, C, D		8
C53	CX	LFP	A, B, C, D		9
C54	CX	LFP	A, B, C, D		10
C55	CD	UFG	A		5
C56	CD	UFG	A		6
C57	CD	UFG	A		7
C58	CX	UFG	A		8
C59	CX	UFG	A		9
C60	CX	UFG	A		10
C61	CD	UFG	B		5
C62	CD	UFG	B		6
C63	CD	UFG	B		7
C64	CX	UFG	B		8
C65	CX	UFG	B		9
C66	CX	UFG	B		10
C67	CD	UFG	C		5
C68	CD	UFG	C		6
C69	CD	UFG	C		7
C70	CX	UFG	C		8
C71	CX	UFG	C		9
C72	CX	UFG	C		10
C73	CD	UFG	D		5
C74	CD	UFG	D		6
C75	CD	UFG	D		7
C76	CX	UFG	D		8
C77	CX	UFG	D		9
C78	CX	UFG	D		10
C79	CD	UFM	A		5
C80	CD	UFM	A		6
C81	CD	UFM	A		7
C82	CX	UFM	A		8
C83	CX	UFM	A		9
C84	CX	UFM	A		10
C85	CD	UFM	B		5
C86	CD	UFM	B		6
C87	CD	UFM	B		7
C88	CX	UFM	B		8
C89	CX	UFM	B		9
C90	CX	UFM	B		10
C91	CD	UFM	C		5
C92	CD	UFM	C		6
C93	CD	UFM	C		7
C94	CX	UFM	C		8
C95	CX	UFM	C		9
C96	CX	UFM	C		10
C97	CD	UFM	D		5
C98	CD	UFM	D		6
C99	CD	UFM	D		7

C100	CX	UFM	D		8
C101	CX	UFM	D		9
C102	CX	UFM	D		10
C103	CD	UFP	A, B, C, D		5
C104	CD	UFP	A, B, C, D		6
C105	CD	UFP	A, B, C, D		7
C106	CX	UFP	A, B, C, D		8
C107	CX	UFP	A, B, C, D		9
C108	CX	UFP	A, B, C, D		10
C109	CD	SAG	A		5
C110	CD	SAG	A		6
C111	CD	SAG	A		7
C112	CX	SAG	A		8
C113	CX	SAG	A		9
C114	CX	SAG	A		10
C115	CD	SAG	B		5
C116	CD	SAG	B		6
C117	CD	SAG	B		7
C118	CX	SAG	B		8
C119	CX	SAG	B		9
C120	CX	SAG	B		10
C121	CD	SAG	C		5
C122	CD	SAG	C		6
C123	CD	SAG	C		7
C124	CX	SAG	C		8
C125	CX	SAG	C		9
C126	CX	SAG	C		10
C127	CD	SAG	D		5
C128	CD	SAG	D		6
C129	CD	SAG	D		7
C130	CX	SAG	D		8
C131	CX	SAG	D		9
C132	CX	SAG	D		10
C133	CD	SAP	A, B, C, D		5
C134	CD	SAP	A, B, C, D		6
C135	CD	SAP	A, B, C, D		7
C136	CX	SAP	A, B, C, D		8
C137	CX	SAP	A, B, C, D		9
C138	CX	SAP	A, B, C, D		10
Coniferous Dominated Switch Yields					
C139	CX or CD	LFG/UFG	A, B, C, D	UPPER/UNDER	5 to 10
C140	CX or CD	LFM/UFM	A, B, C, D	UPPER/UNDER	5 to 10
C141	CX or CD	LFP/UFP	A, B, C, D	UPPER/UNDER	5 to 10
Deciduous Dominated Yields					
D1	DX	LFG	A		0
D2	DX	LFG	A		1
D3	DX	LFG	A		2
D4	DC	LFG	A		3
D5	DC	LFG	A		4
D6	DC	LFG	A		5
D7	DX	LFG	B		0
D8	DX	LFG	B		1
D9	DX	LFG	B		2
D10	DC	LFG	B		3
D11	DC	LFG	B		4

D12	DC	LFG	B		5
D13	DX	LFG	C		0
D14	DX	LFG	C		1
D15	DX	LFG	C		2
D16	DC	LFG	C		3
D17	DC	LFG	C		4
D18	DC	LFG	C		5
D19	DX	LFG	D		0
D20	DX	LFG	D		1
D21	DX	LFG	D		2
D22	DC	LFG	D		3
D23	DC	LFG	D		4
D24	DC	LFG	D		5
D25	DX	UFG	A		0
D26	DX	UFG	A		1
D27	DX	UFG	A		2
D28	DC	UFG	A		3
D29	DC	UFG	A		4
D30	DC	UFG	A		5
D31	DX	UFG	B		0
D32	DX	UFG	B		1
D33	DX	UFG	B		2
D34	DC	UFG	B		3
D35	DC	UFG	B		4
D36	DC	UFG	B		5
D37	DX	UFG	C		0
D38	DX	UFG	C		1
D39	DX	UFG	C		2
D40	DC	UFG	C		3
D41	DC	UFG	C		4
D42	DC	UFG	C		5
D43	DX	UFG	D		0
D44	DX	UFG	D		1
D45	DX	UFG	D		2
D46	DC	UFG	D		3
D47	DC	UFG	D		4
D48	DC	UFG	D		5
D49	DX	LFP/UFP	A, B, C, D		0 to 2
D50	DC	LFP/UFP	A, B, C, D		3 to 5

8 Appendix 1D TFIC Regeneration Study

Analysis of regenerated cutblock data
Weyerhaeuser Canada (Drayton Valley)

Submitted by Timberline Forest Inventory Consultants
Suite 315, 10357 109 Street
Edmonton, Alberta T5J 1N3
July 10 2000

8.1 Introduction

Timberline Forest Inventory Consultants (TFIC) conducted an analysis of regenerated cutblock information on behalf of Weyerhaeuser Canada (Edmonton and Drayton Valley). Data pertaining to stocking, height and density measurements were provided to Timberline by Weyerhaeuser, along with a detailed survey design and analysis framework[2]. The statistical analysis undertaken and presented in this document closely followed the analysis criteria and framework provided by Weyerhaeuser, with subsequent revisions requested by Bruce MacMillan. Landbase classes were combined because of low sample sizes in types other than HH and SS (HH includes SH and MH; SS includes HS and MS).

Data were checked for coding errors. There was one instance of a missing species that should probably have been recorded as a "NO" code. There were 28 instances of crop trees that should probably have been assigned to advanced growth (i.e. having root collar diameter ages greater than 4 years older than the block "clock" age). These instances were not corrected, as they would have had a minimal influence on statistical calculations based on 7000 observations, and the correction would have taken more time than was justifiable.

For stocking and density calculations, a series of box and whisker plots were produced along with a summary table showing median and sample size for groups defined in the survey design. In the boxplot graphics:

- The box is defined by the 25th and 75th percentile values (the interquartile range); 50 percent of observations lie within the box, and the line through the box is the median.
- Outliers (values more than 1.5 and less than 3 box-lengths from the 25th or 75th percentile) are designated by a circle (O). The lines extending above and below each box contain the range of smallest to largest values that are not considered outliers.

[2] Regenerated Cutblock Assessment – Survey Design (Weyerhaeuser Canada Ltd., Edmonton, internal document).

- Extreme values (values more than 3 box-lengths from the 25th or 75th percentile) are designated by a star (*).
- The "N" label and associated numbers along the X-axis of the boxplots and in the tables refers to the number of blocks within each LMU.

For height-age relationships, a linear regression curve was fit to each of the groups and the line was forced through the origin; growth responses are probably more or less linear during the early stages of stand establishment. In support of management activities that are influenced by the results of this analysis, block age measurements are used for modelling rather than true tree age measurements. The reason for this is to permit modelling of overall tree responses at the block and land management unit level; crop tree age-height relationships are useful for modelling individual tree growth responses, but this is not a focal issue at this time. Approximately 425 height-age pairs do occur in the dataset, however, and could be used to develop basic statistical relationships for crop tree growth if desired.

Results are presented in the following order:

- Density (by species group and then by species and LMU): boxplots, tables including median, 25th and 75th percentile (limits of boxes in boxplots)
- Stocking (boxplots, tables including median, 25th and 75th percentiles)
- Height (graphs)

8.2 Density

Figure A-1 Density: LB HH, MH, SH; by LMU and species group

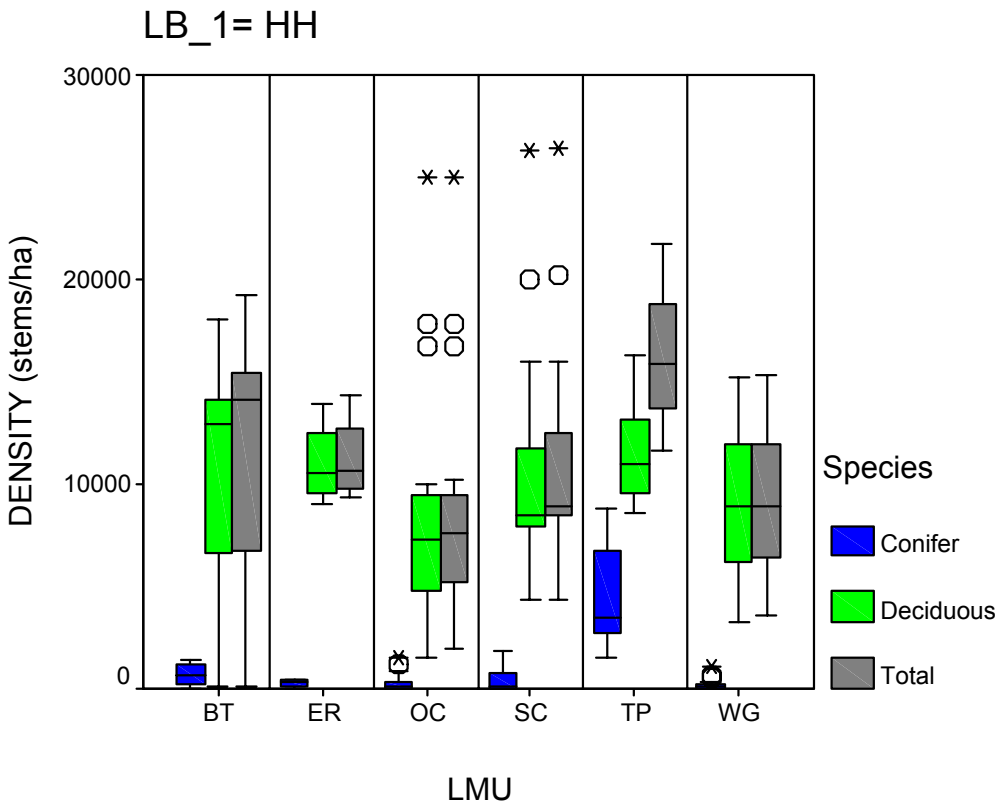


Table A-8-1 Density: LB HH, MH, SH; by LMU and species group (deciduous, coniferous, and total)

LB				Valid N	Median	Percentile 25	Percentile 75
HH	BT	Species	Conifer	N=9	642.0000	174.8750	1253.6250
			Deciduous	N=9	13233.50	6433.1250	16287.5000
			Total	N=9	14175.50	6591.2500	17013.0000
	ER	Species	Conifer	N=4	333.7500	87.7500	442.0000
			Deciduous	N=4	10775.50	9396.2500	12450.0000
			Total	N=4	10834.00	9713.3750	12684.0000
	OC	Species	Conifer	N=20	133.0000	.0000	441.6250
			Deciduous	N=20	7350.0000	4812.3750	9796.0000
			Total	N=20	7616.0000	5157.8750	9829.3750
	SC	Species	Conifer	N=17	141.5000	33.0000	824.6250
			Deciduous	N=17	8692.2500	7291.3750	12405.0000
			Total	N=17	8990.7500	7953.7500	13437.0000
	TP	Species	Conifer	N=7	3991.5000	2733.1250	8321.0000
			Deciduous	N=7	11233.75	9091.3750	15078.8750
			Total	N=7	16282.75	13124.7500	20691.7500
	WG	Species	Conifer	N=23	72.5000	2.7500	212.3750
			Deciduous	N=23	9082.8333	6087.8750	12059.1250
			Total	N=23	9216.2500	6387.7500	12108.9167

Figure A-2 Density: LB SS, MS, HS by LMU and species group (deciduous, coniferous, and total)

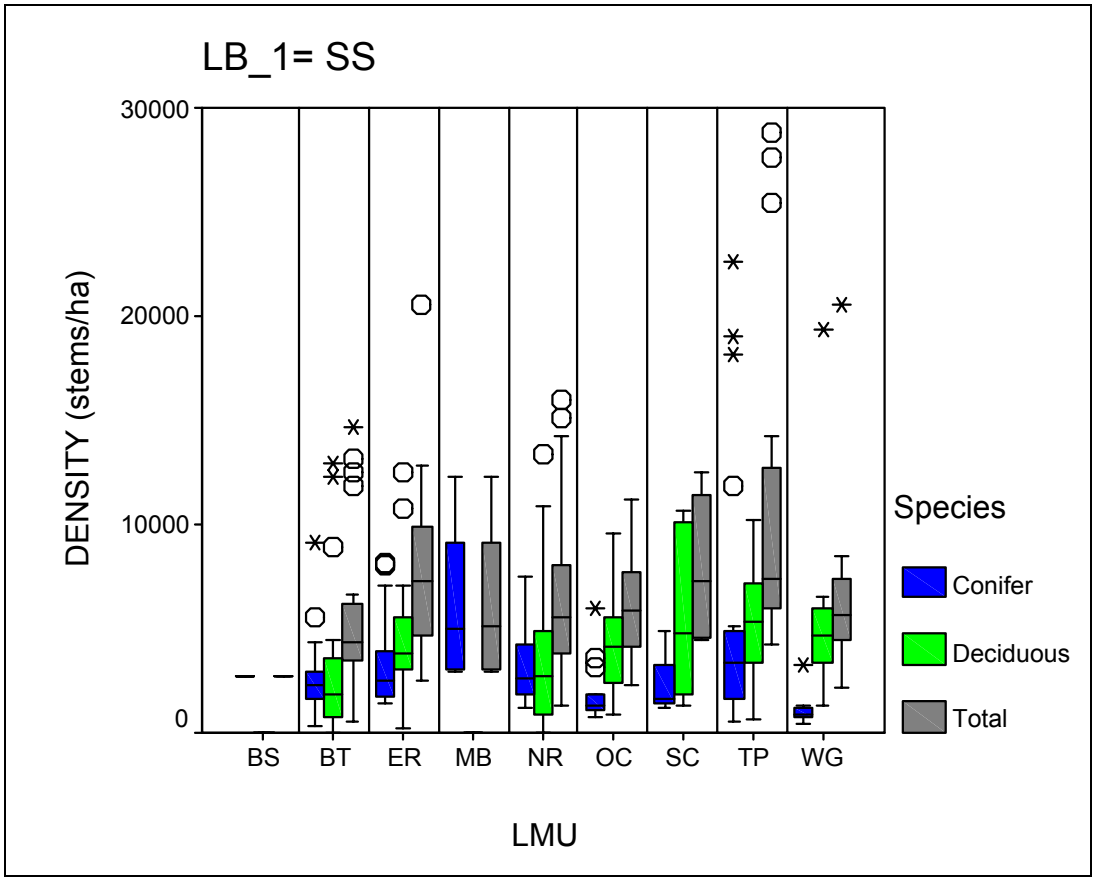


Table A-8-2 Density: LB SS, MS, HS by LMU and species group (deciduous, coniferous, and total)

LB				Valid N	Median	Percentile 25	Percentile 75
SS	BS	Species	Conifer	N=1	2767.0000	2767.0000	2767.0000
			Deciduous	N=1	.0000	.0000	.0000
			Total	N=1	2767.0000	2767.0000	2767.0000
	BT	Species	Conifer	N=24	2300.2500	1661.7500	3045.5000
			Deciduous	N=24	2050.0000	716.2500	3770.7500
			Total	N=24	4366.7500	3449.8750	6516.7500
	ER	Species	Conifer	N=17	2617.0000	1716.5000	4278.8750
			Deciduous	N=17	3849.7500	2925.0000	6753.8750
			Total	N=17	7483.0000	4651.6250	10425.0000
	MB	Species	Conifer	N=8	5642.0000	3013.0000	10687.0000
			Deciduous	N=8	.0000	.0000	24.7500
			Total	N=8	5650.2500	3013.0000	10715.8750
	NR	Species	Conifer	N=31	2641.5000	1778.6250	4712.3750
			Deciduous	N=31	2733.2500	741.7500	5078.7500
			Total	N=31	5883.0000	3837.1250	8708.0000
	OC	Species	Conifer	N=19	1299.2500	1037.1250	2375.1250
			Deciduous	N=19	4182.8333	2274.6250	5983.1250
			Total	N=19	5949.2500	3791.0000	8545.0000
	SC	Species	Conifer	N=6	1766.2500	1350.2500	4267.0000
			Deciduous	N=6	5591.2500	1767.2500	10466.5000
			Total	N=6	7600.2500	4550.2500	12095.1250
	TP	Species	Conifer	N=20	3508.7500	1587.3750	5941.7500
			Deciduous	N=20	5416.7500	3300.5000	7824.6250
			Total	N=20	7500.7500	5854.6250	13274.8750
	WG	Species	Conifer	N=12	858.5000	716.8750	1208.3750
			Deciduous	N=12	4908.0000	3375.0000	6253.0000
			Total	N=12	5799.2500	4350.1250	7529.2500

Figure A-3 Density: LB SS, MS, HS by LMU and species group (pine, spruce, deciduous, and total)

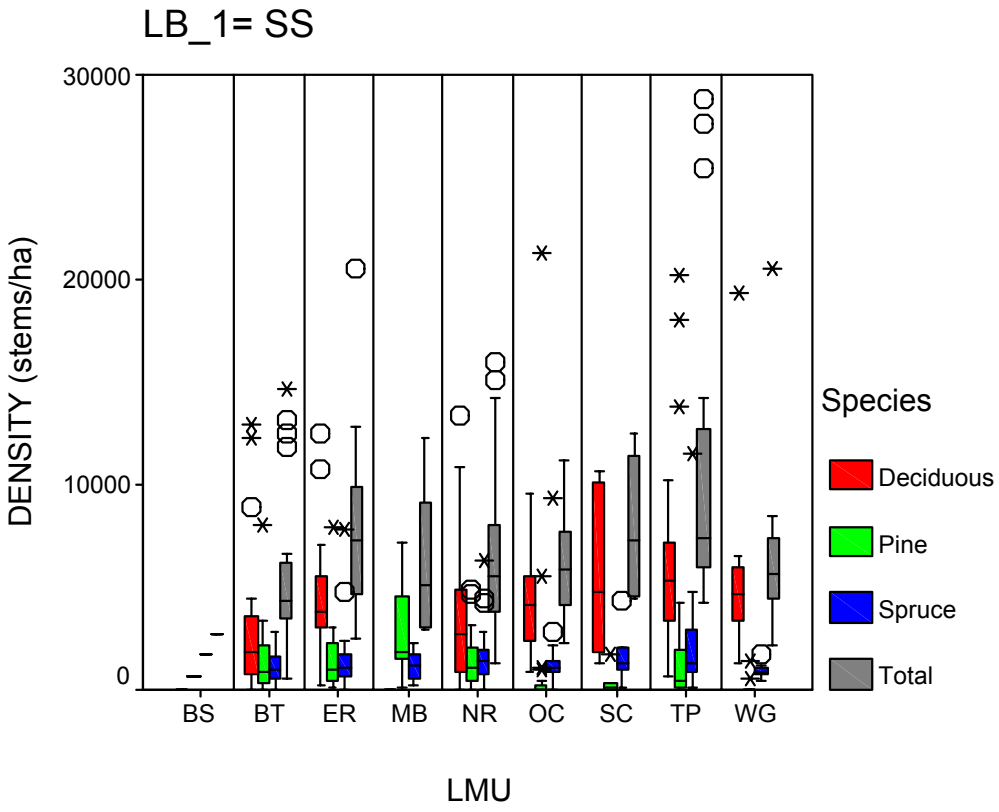


Table A-8-3 Density: LB SS, MS, HS by LMU and species group (pine, spruce, deciduous, and total)

LB				Valid N	Median	Percentile 25	Percentile 75
SS	BS	Species	Deciduous	N=1	.0000	.0000	.0000
			Pine	N=1	633.0000	633.0000	633.0000
			Spruce	N=1	1767.0000	1767.0000	1767.0000
			Total	N=1	2767.0000	2767.0000	2767.0000
	BT	Species	Deciduous	N=24	2050.0000	716.2500	3770.7500
			Pine	N=24	949.7500	345.7500	2179.5000
			Spruce	N=24	999.7500	562.6250	1704.5000
			Total	N=24	4366.7500	3449.8750	6516.7500
	ER	Species	Deciduous	N=17	3849.7500	2925.0000	6753.8750
			Pine	N=17	1058.5000	383.8750	2529.5000
			Spruce	N=17	1166.3333	654.2500	1875.0000
			Total	N=17	7483.0000	4651.6250	10425.0000
	MB	Species	Deciduous	N=8	.0000	.0000	24.7500
			Pine	N=8	1941.7500	1495.6250	5266.6250
			Spruce	N=8	1183.2500	545.7500	2033.3750
			Total	N=8	5650.2500	3013.0000	10715.8750
	NR	Species	Deciduous	N=31	2733.2500	741.7500	5078.7500
			Pine	N=31	1138.6667	371.1250	2370.5000
			Spruce	N=31	1375.2500	791.7500	2083.5000
			Total	N=31	5883.0000	3837.1250	8708.0000
	OC	Species	Deciduous	N=19	4182.8333	2274.6250	5983.1250
			Pine	N=19	33.0000	.0000	620.5000
			Spruce	N=19	1072.5000	841.3750	1708.0000
			Total	N=19	5949.2500	3791.0000	8545.0000
	SC	Species	Deciduous	N=6	5591.2500	1767.2500	10466.5000
			Pine	N=6	166.7500	28.8750	1220.7500
			Spruce	N=6	1358.2500	891.6250	3525.1250
			Total	N=6	7600.2500	4550.2500	12095.1250
	TP	Species	Deciduous	N=20	5416.7500	3300.5000	7824.6250
			Pine	N=20	416.5000	108.2500	2692.0000
			Spruce	N=20	1358.5000	883.2500	3266.3750
			Total	N=20	7500.7500	5854.6250	13274.8750
	WG	Species	Deciduous	N=12	4908.0000	3375.0000	6253.0000
			Pine	N=12	.0000	.0000	91.3750
			Spruce	N=12	833.0000	692.0000	1150.1250
			Total	N=12	5799.2500	4350.1250	7529.2500

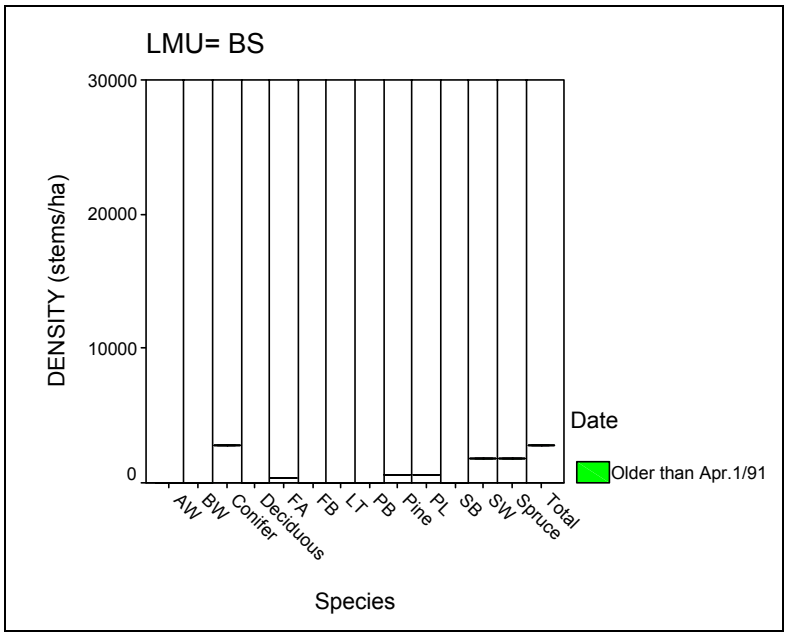


Figure A-4 Density: LMU BS by species and block age

Figure A-5 Density: LMU BT by species and block age

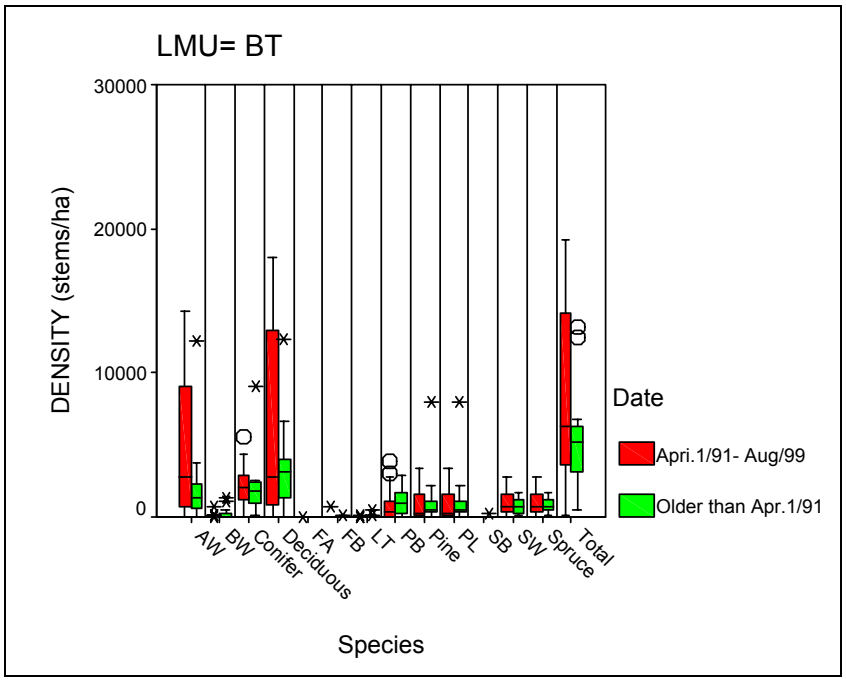


Figure A-6 Density: LMU ER by species and block age

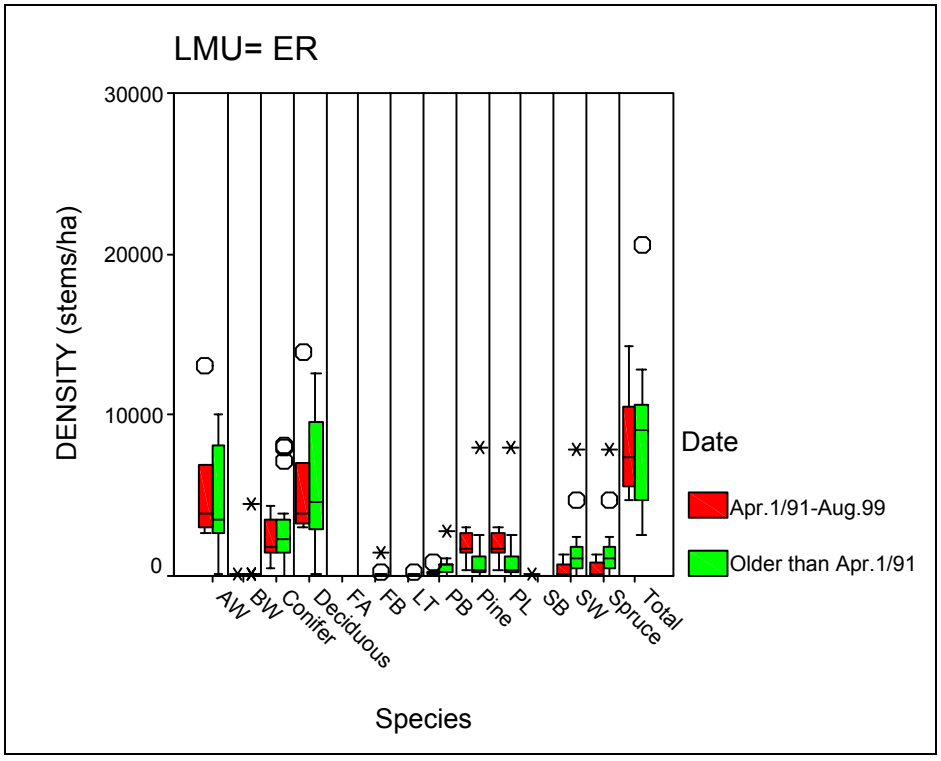


Figure A-7 Density: LMU MB by species and block age

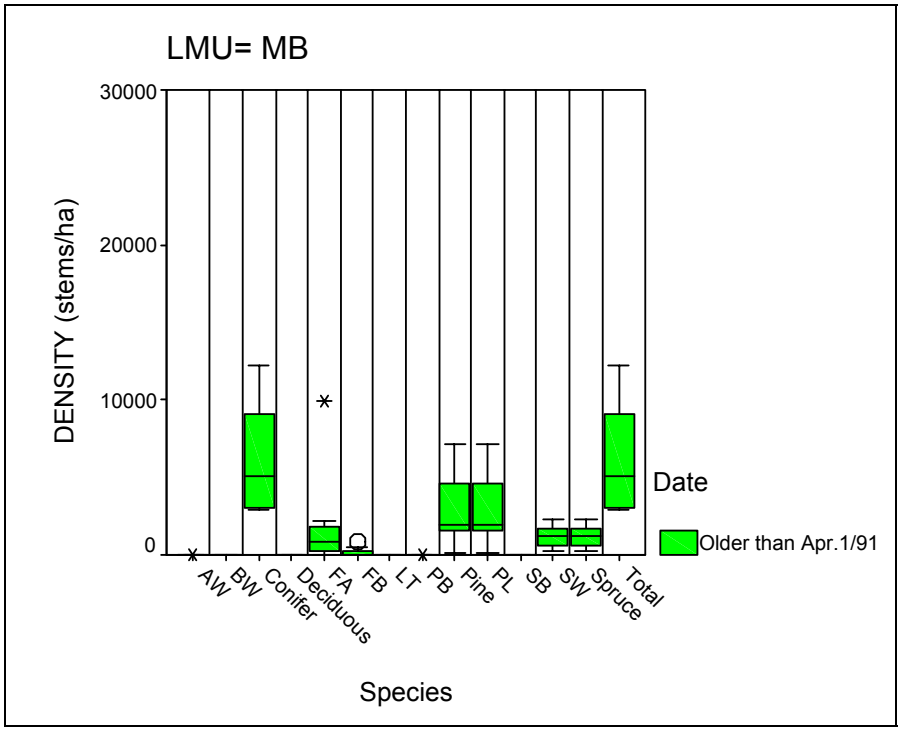


Figure A-8 Density: LMU NR by species and block age

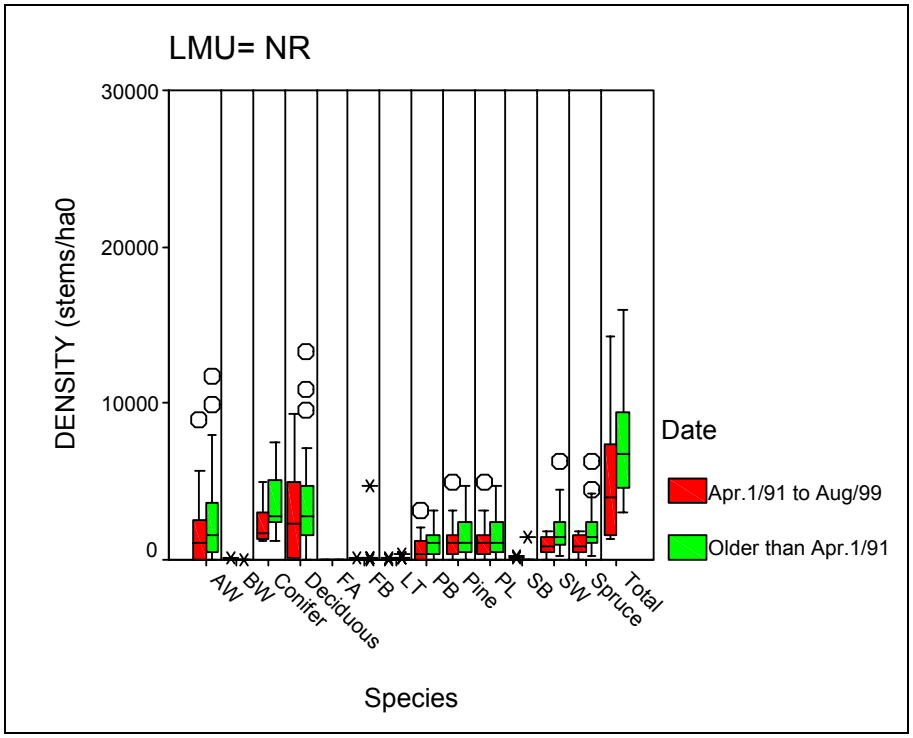


Figure A-9 Density: LMU OC by species and block age

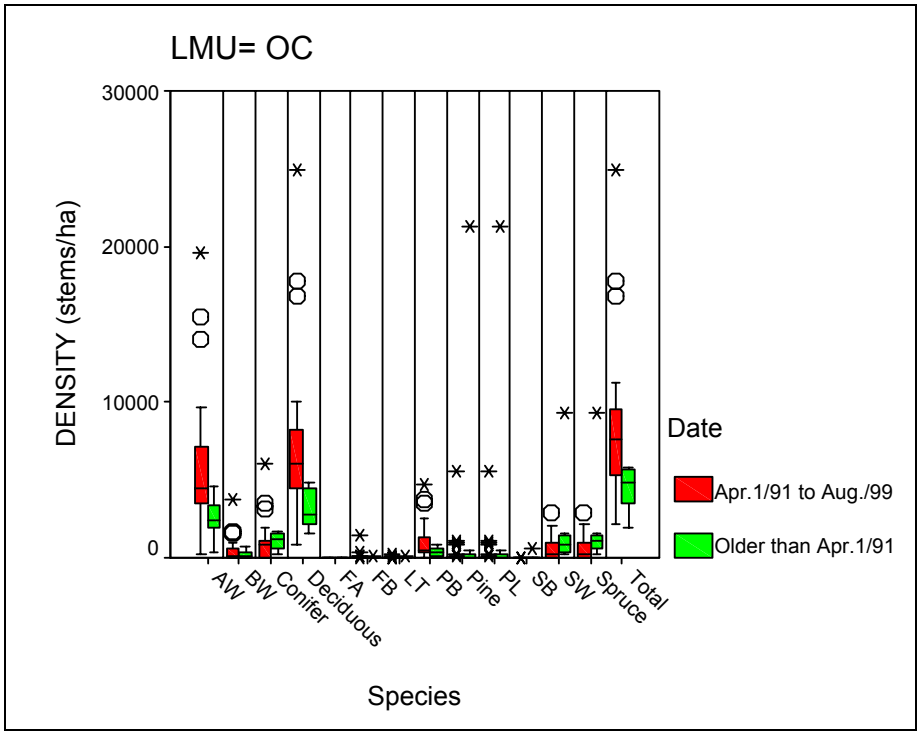


Figure A-10 Density: LMU SC by species and block age

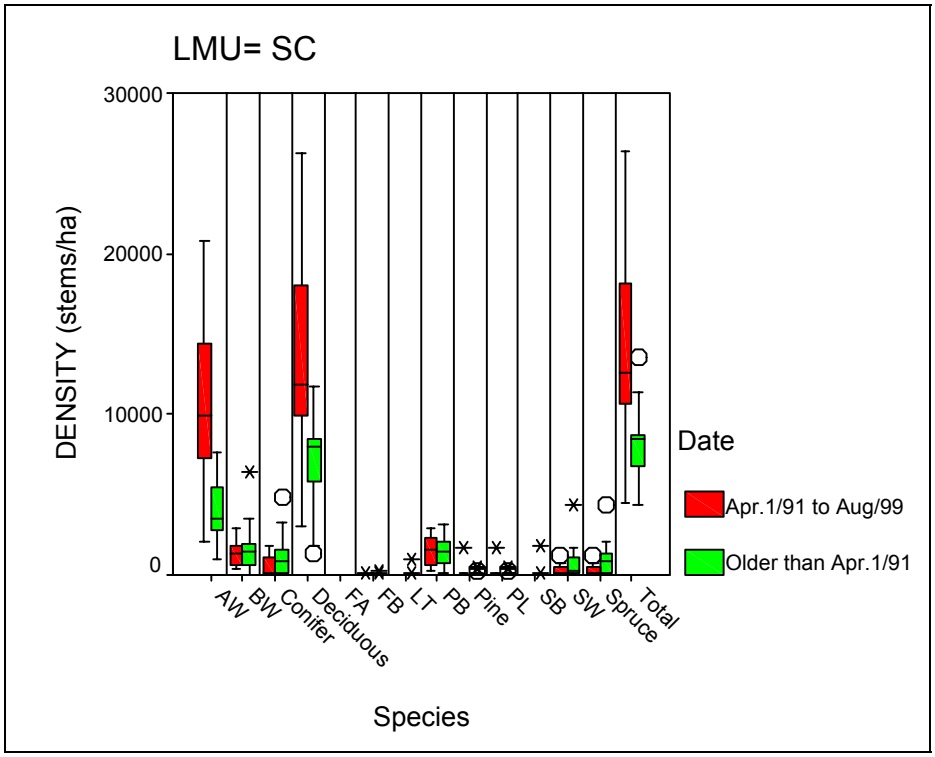


Figure A-11 Density: LMU TP by species and block age

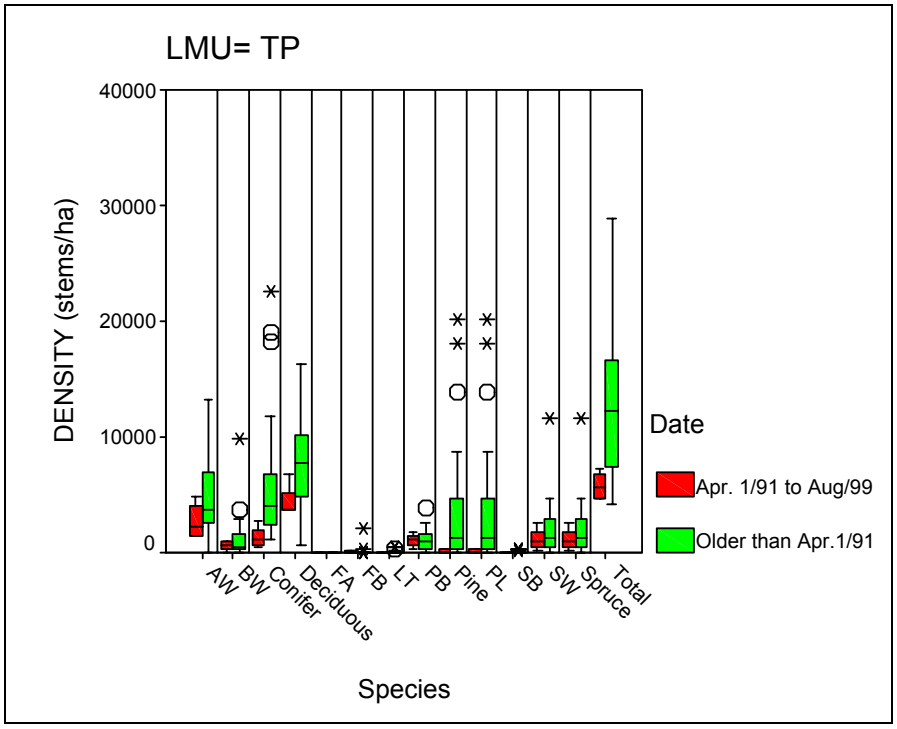


Figure A-12 Density: LMU WG by species and block age

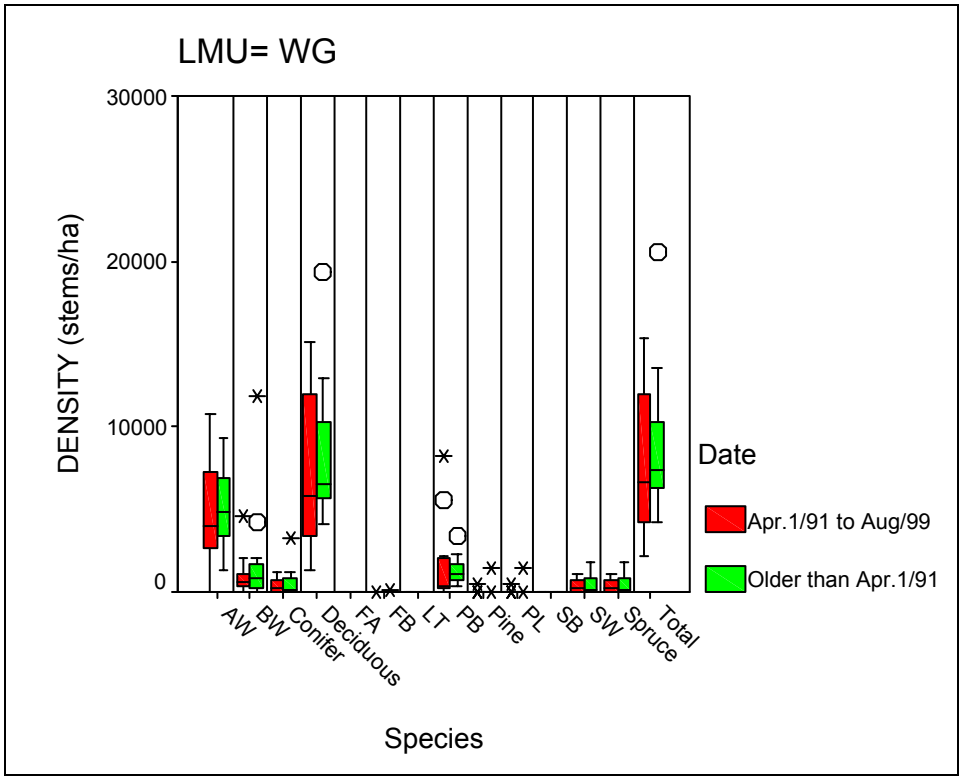


Table A-8-4 Density: LMU BS by species and block age

		Valid N	Median	Percentile 25	Percentile 75
Species	AW	N=1	.0000	.0000	.0000
	BW	N=1	.0000	.0000	.0000
	Conifer	N=1	2767.0000	2767.0000	2767.0000
	Deciduous	N=1	.0000	.0000	.0000
	FA	N=1	367.0000	367.0000	367.0000
	FB	N=1	.0000	.0000	.0000
	LT	N=1	.0000	.0000	.0000
	PB	N=1	.0000	.0000	.0000
	Pine	N=1	633.0000	633.0000	633.0000
	PL	N=1	633.0000	633.0000	633.0000
	SB	N=1	.0000	.0000	.0000
	SW	N=1	1767.0000	1767.0000	1767.0000
	Spruce	N=1	1767.0000	1767.0000	1767.0000
	Total	N=1	2767.0000	2767.0000	2767.0000

Table A-8-5 Density: LMU BT by species and block age

		Valid N	Median	Percentile 25	Percentile 75
Species	AW	N=33	1541.5000	616.7500	8049.7500
	BW	N=33	.0000	.0000	28.8750
	Conifer	N=33	2005.5000	977.8333	2658.6250
	Deciduous	N=33	3033.7500	966.8750	8691.1250
	FA	N=33	.0000	.0000	.0000
	FB	N=33	.0000	.0000	.0000
	LT	N=33	.0000	.0000	.0000
	PB	N=33	649.7500	33.0000	1808.6250
	Pine	N=33	441.5000	115.6250	1633.0000
	PL	N=33	441.5000	115.6250	1633.0000
	SB	N=33	.0000	.0000	.0000
	SW	N=33	741.5000	354.2500	1520.5000
	Spruce	N=33	741.5000	387.6250	1520.5000
	Total	N=33	5766.2500	3574.8750	12416.5000

Table A-8-6 Density: LMU ER by species and block age

		Valid N	Median	Percentile 25	Percentile 75
Species	AW	N=21	3841.5000	2695.5000	8233.6250
	BW	N=21	.0000	.0000	28.8750
	Conifer	N=21	2266.2500	1433.0000	3845.8750
	Deciduous	N=21	4291.2500	3022.5000	9879.2500
	FA	N=21	.0000	.0000	.0000
	FB	N=21	.0000	.0000	28.8750
	LT	N=21	.0000	.0000	28.8750
	PB	N=21	574.7500	104.3750	786.2500
	Pine	N=21	800.2500	308.2500	2200.2500
	PL	N=21	800.2500	308.2500	2200.2500
	SB	N=21	.0000	.0000	.0000
	SW	N=21	964.7500	87.6250	1666.6250
	Spruce	N=21	964.7500	87.6250	1666.6250
	Total	N=21	8825.0000	4866.8750	10967.2500

Table A-8-7 Density: LMU MB by species and block age

		Valid N	Median	Percentile 25	Percentile 75
Species	AW	N=8	.0000	.0000	4.1250
	BW	N=8	.0000	.0000	.0000
	Conifer	N=8	5642.0000	3013.0000	10687.0000
	Deciduous	N=8	.0000	.0000	24.7500
	FA	N=8	892.0000	266.7500	3103.8750
	FB	N=8	.0000	.0000	541.6250
	LT	N=8	.0000	.0000	.0000
	PB	N=8	.0000	.0000	4.1250
	Pine	N=8	1941.7500	1495.6250	5266.6250
	PL	N=8	1941.7500	1495.6250	5266.6250
	SB	N=8	.0000	.0000	.0000
	SW	N=8	1183.2500	545.7500	2033.3750
	Spruce	N=8	1183.2500	545.7500	2033.3750
	Total	N=8	5650.2500	3013.0000	10715.8750

Table A-8-8 Density: LMU NR by species and block age

		Valid N	Median	Percentile 25	Percentile 75
Species	AW	N=31	1472.0000	208.5000	3520.7500
	BW	N=31	.0000	.0000	.0000
	Conifer	N=31	2641.5000	1778.6250	4712.3750
	Deciduous	N=31	2733.2500	741.7500	5078.7500
	FA	N=31	.0000	.0000	.0000
	FB	N=31	.0000	.0000	.0000
	LT	N=31	.0000	.0000	8.2500
	PB	N=31	783.5000	245.5000	1612.3750
	Pine	N=31	1138.6667	371.1250	2370.5000
	PL	N=31	1138.6667	371.1250	2370.5000
	SB	N=31	.0000	.0000	.0000
	SW	N=31	1316.7500	769.7500	1958.2500
	Spruce	N=31	1375.2500	791.7500	2083.5000
	Total	N=31	5883.0000	3837.1250	8708.0000

Table A-8-9 Density: LMU OC by species and block age

		Valid N	Median	Percentile 25	Percentile 75
Species	AW	N=39	4061.1667	2453.8750	6445.7500
	BW	N=39	138.6667	.0000	579.3750
	Conifer	N=39	922.0000	49.6667	1312.3750
	Deciduous	N=39	5241.2500	3637.5000	8045.3750
	FA	N=39	.0000	.0000	.0000
	FB	N=39	.0000	.0000	.0000
	LT	N=39	.0000	.0000	.0000
	PB	N=39	467.0000	241.3750	1249.7500
	Pine	N=39	.0000	.0000	33.0000
	PL	N=39	.0000	.0000	33.0000
	SB	N=39	.0000	.0000	.0000
	SW	N=39	508.5000	2.7500	1025.1250
	Spruce	N=39	649.6667	2.7500	1075.2500
	Total	N=39	7258.0000	4774.3750	9433.8750

Table A-8-10 Density: LMU SC by species and block age

		Valid N	Median	Percentile 25	Percentile 75
Species	AW	N=23	5250.0000	3049.7500	9066.7500
	BW	N=23	1441.5000	553.8750	2008.2500
	Conifer	N=23	391.7500	83.2500	1554.3750
	Deciduous	N=23	8450.0000	6108.3750	11379.2500
	FA	N=23	.0000	.0000	.0000
	FB	N=23	.0000	.0000	.0000
	LT	N=23	.0000	.0000	.0000
	PB	N=23	1475.2500	675.2500	2266.7500
	Pine	N=23	.0000	.0000	79.3750
	PL	N=23	.0000	.0000	79.3750
	SB	N=23	.0000	.0000	.0000
	SW	N=23	238.6667	41.3750	1049.8750
	Spruce	N=23	241.5000	41.3750	1258.1250
	Total	N=23	8674.7500	6953.8750	12532.7500

Table A-8-11 Density: LMU TP by species and block age

		Valid N	Median	Percentile 25	Percentile 75
Species	AW	N=27	3349.7500	1570.5000	6870.5000
	BW	N=27	560.8333	304.1250	1442.0000
	Conifer	N=27	3533.5000	1762.2500	6428.6250
	Deciduous	N=27	6424.7500	3678.5000	10062.2500
	FA	N=27	.0000	.0000	.0000
	FB	N=27	.0000	.0000	33.0000
	LT	N=27	.0000	.0000	112.3750
	PB	N=27	1016.7500	371.1250	1763.9167
	Pine	N=27	733.2500	124.7500	4516.7500
	PL	N=27	733.2500	124.7500	4516.7500
	SB	N=27	.0000	.0000	.0000
	SW	N=27	1275.2500	537.2500	2883.0000
	Spruce	N=27	1305.5000	537.2500	2883.0000
	Total	N=27	11683.75	6424.1250	16474.6250

Table A-8-12 Density: LMU WG by species and block age

		Valid N	Median	Percentile 25	Percentile 75
Species	AW	N=35	4655.2500	2679.5000	7045.7500
	BW	N=35	692.0000	271.1250	1604.5000
	Conifer	N=35	208.2500	35.8333	830.2500
	Deciduous	N=35	6482.7500	4304.2500	10903.7500
	FA	N=35	.0000	.0000	.0000
	FB	N=35	.0000	.0000	.0000
	LT	N=35	.0000	.0000	.0000
	PB	N=35	925.5000	404.1250	1983.2500
	Pine	N=35	.0000	.0000	.0000
	PL	N=35	.0000	.0000	.0000
	SB	N=35	.0000	.0000	.0000
	SW	N=35	208.2500	35.8333	783.5000
	Spruce	N=35	208.2500	35.8333	783.5000
	Total	N=35	7338.7500	4949.8750	11146.1250

8.3 Stocking

Figure A-13 Stocking: LB HH, MH, SH by LMU and species group (deciduous "A", deciduous "B", and total stocking)

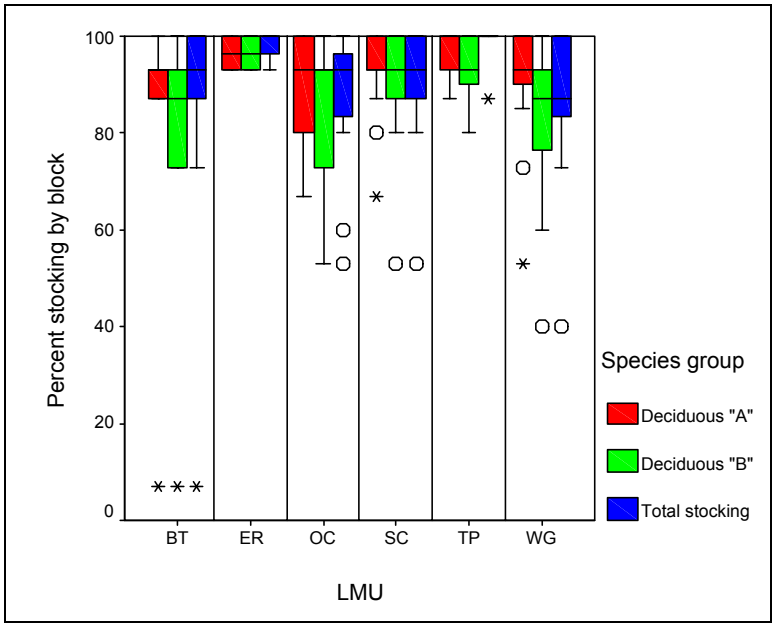


Table A-8-13 Stocking: LB HH, MH, SH by LMU and species group (deciduous “A”, deciduous “B”, and total stocking)

			Percent stocking by block			
			Valid N	Median	Percentile 25	Percentile 75
BT	Species group	Deciduous "A"	N=9	93.0000	87.0000	97.0833
		Deciduous "B"	N=9	88.0000	73.0000	97.0833
		Total stocking	N=9	94.1667	78.8333	100.0000
ER	Species group	Deciduous "A"	N=4	96.5000	93.0000	100.0000
		Deciduous "B"	N=4	96.5000	93.0000	100.0000
		Total stocking	N=4	100.0000	94.7500	100.0000
OC	Species group	Deciduous "A"	N=20	93.0000	80.0000	100.0000
		Deciduous "B"	N=20	93.0000	73.0000	93.5833
		Total stocking	N=20	93.0000	81.7500	98.2500
SC	Species group	Deciduous "A"	N=17	93.0000	89.5000	100.0000
		Deciduous "B"	N=17	93.0000	82.9167	100.0000
		Total stocking	N=17	93.0000	82.9167	100.0000
TP	Species group	Deciduous "A"	N=7	98.8333	91.5000	100.0000
		Deciduous "B"	N=7	94.1667	87.5000	100.0000
		Total stocking	N=7	100.0000	96.7500	100.0000
WG	Species group	Deciduous "A"	N=23	93.0000	87.5000	100.0000
		Deciduous "B"	N=23	87.0000	73.5833	94.7500
		Total stocking	N=23	88.0000	80.5833	100.0000

Figure A-14 Stocking: LB HH, MH, SH by LMU and species group (deciduous "B", coniferous, and total stocking)

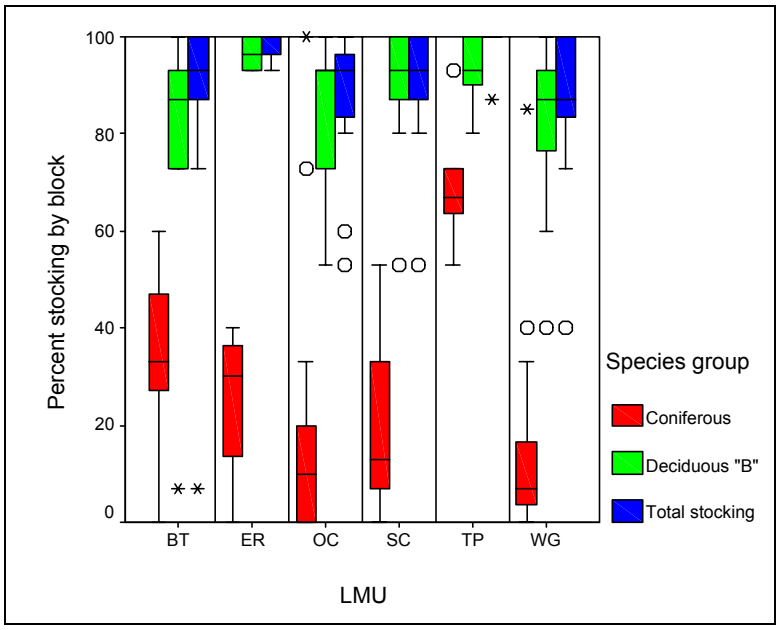


Table A-8-14 Stocking: LB HH, MH, SH by LMU and species group (deciduous “B”, coniferous, and total stocking)

			Percent stocking by block			
			Valid N	Median	Percentile 25	Percentile 75
BT	Species group	Coniferous	N=9	34.7500	22.9167	52.2500
		Deciduous "B"	N=9	88.0000	73.0000	97.0833
		Total stocking	N=9	94.1667	78.8333	100.0000
ER	Species group	Coniferous	N=4	31.5000	10.1250	37.0000
		Deciduous "B"	N=4	96.5000	93.0000	100.0000
		Total stocking	N=4	100.0000	94.7500	100.0000
OC	Species group	Coniferous	N=20	10.0000	.0000	20.8750
		Deciduous "B"	N=20	93.0000	73.0000	93.5833
		Total stocking	N=20	93.0000	81.7500	98.2500
SC	Species group	Coniferous	N=17	13.0000	7.0000	37.0833
		Deciduous "B"	N=17	93.0000	82.9167	100.0000
		Total stocking	N=17	93.0000	82.9167	100.0000
TP	Species group	Coniferous	N=7	68.0000	60.5833	80.5000
		Deciduous "B"	N=7	94.1667	87.5000	100.0000
		Total stocking	N=7	100.0000	96.7500	100.0000
WG	Species group	Coniferous	N=23	7.0000	.5833	19.4167
		Deciduous "B"	N=23	87.0000	73.5833	94.7500
		Total stocking	N=23	88.0000	80.5833	100.0000

Figure A-15 Stocking: LB SS, MS, HS by LMU and species group (deciduous "A", coniferous, and total)

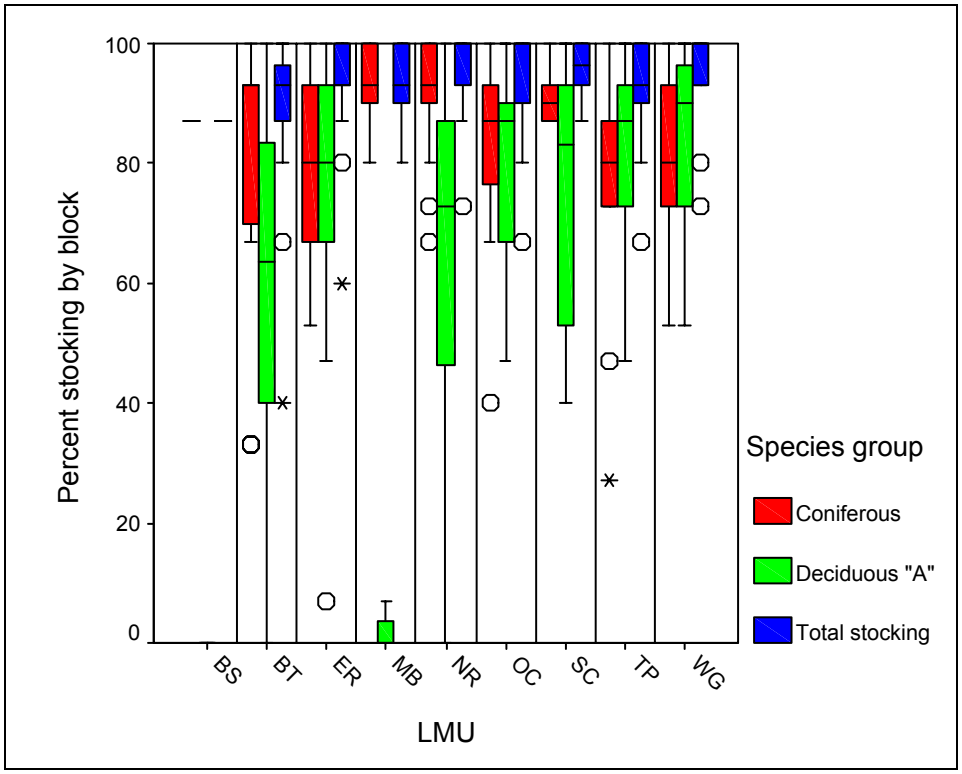


Table A-8-15 Stocking: LB SS, MS, HS by LMU and species group (deciduous “A”, coniferous, and total)

			Percent stocking by block			
			Valid N	Median	Percentile 25	Percentile 75
BS	Species group	Coniferous	N=1	87.0000	87.0000	87.0000
		Deciduous "A"	N=1	.0000	.0000	.0000
		Total stocking	N=1	87.0000	87.0000	87.0000
BT	Species group	Coniferous	N=24	93.0000	69.2500	93.0000
		Deciduous "A"	N=24	65.2500	38.3333	85.2500
		Total stocking	N=24	93.0000	87.0000	98.2500
ER	Species group	Coniferous	N=17	81.7500	62.9167	93.0000
		Deciduous "A"	N=17	81.7500	62.9167	93.0000
		Total stocking	N=17	94.1667	89.5000	100.0000
MB	Species group	Coniferous	N=8	93.0000	88.5000	100.0000
		Deciduous "A"	N=8	.0000	.0000	5.2500
		Total stocking	N=8	93.0000	88.5000	100.0000
NR	Species group	Coniferous	N=31	94.1667	87.5000	100.0000
		Deciduous "A"	N=31	73.0000	41.6250	87.0000
		Total stocking	N=31	100.0000	93.0000	100.0000
OC	Species group	Coniferous	N=19	88.0000	73.5833	93.0000
		Deciduous "A"	N=19	84.6667	67.0000	92.5000
		Total stocking	N=19	100.0000	87.5000	100.0000
SC	Species group	Coniferous	N=6	90.0000	87.0000	97.3750
		Deciduous "A"	N=6	83.0000	51.3750	97.3750
		Total stocking	N=6	96.5000	90.5000	100.0000
TP	Species group	Coniferous	N=20	80.0000	73.0000	87.5000
		Deciduous "A"	N=20	87.0000	73.0000	93.0000
		Total stocking	N=20	93.0000	88.5000	100.0000
WG	Species group	Coniferous	N=12	80.0000	72.5000	93.5833
		Deciduous "A"	N=12	90.0000	71.3333	98.2500
		Total stocking	N=12	100.0000	91.9167	100.0000

Figure A-16 Stocking: LB SS, MS, HS by LMU and species group (deciduous "B", coniferous, and total)

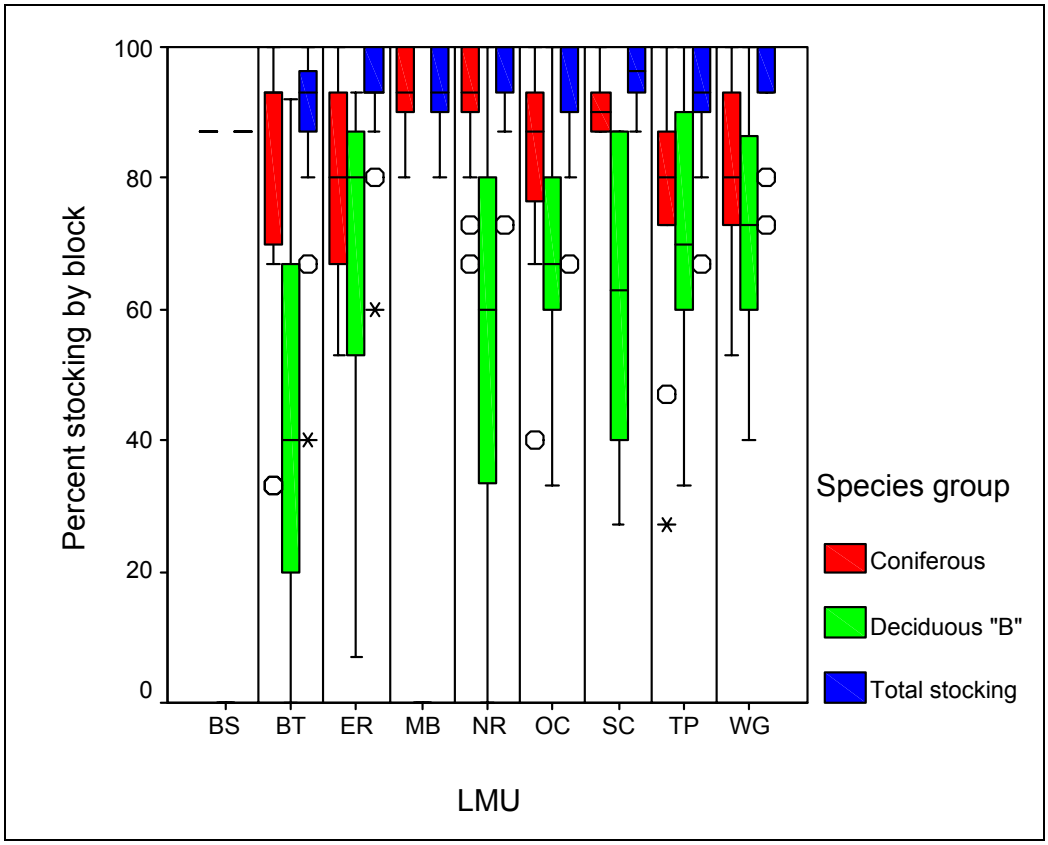


Table A-8-16 Stocking: LB SS, MS, HS by LMU and species group (deciduous “B”, coniferous, and total)

			Percent stocking by block			
			Valid N	Median	Percentile 25	Percentile 75
BS	Species group	Coniferous	N=1	87.0000	87.0000	87.0000
		Deciduous "B"	N=1	.0000	.0000	.0000
		Total stocking	N=1	87.0000	87.0000	87.0000
BT	Species group	Coniferous	N=24	93.0000	69.2500	93.0000
		Deciduous "B"	N=24	40.0000	16.5000	67.5000
		Total stocking	N=24	93.0000	87.0000	98.2500
ER	Species group	Coniferous	N=17	81.7500	62.9167	93.0000
		Deciduous "B"	N=17	77.8333	50.7500	87.0000
		Total stocking	N=17	94.1667	89.5000	100.0000
MB	Species group	Coniferous	N=8	93.0000	88.5000	100.0000
		Deciduous "B"	N=8	.0000	.0000	.0000
		Total stocking	N=8	93.0000	88.5000	100.0000
NR	Species group	Coniferous	N=31	94.1667	87.5000	100.0000
		Deciduous "B"	N=31	61.1667	28.0833	81.7500
		Total stocking	N=31	100.0000	93.0000	100.0000
OC	Species group	Coniferous	N=19	88.0000	73.5833	93.0000
		Deciduous "B"	N=19	67.0000	58.2500	81.7500
		Total stocking	N=19	100.0000	87.5000	100.0000
SC	Species group	Coniferous	N=6	90.0000	87.0000	97.3750
		Deciduous "B"	N=6	68.0000	38.3750	87.0000
		Total stocking	N=6	96.5000	90.5000	100.0000
TP	Species group	Coniferous	N=20	80.0000	73.0000	87.5000
		Deciduous "B"	N=20	71.5000	58.9167	91.5000
		Total stocking	N=20	93.0000	88.5000	100.0000
WG	Species group	Coniferous	N=12	80.0000	72.5000	93.5833
		Deciduous "B"	N=12	73.0000	53.5000	93.5833
		Total stocking	N=12	100.0000	91.9167	100.0000

Figure A-17 Stocking: Before and after March 31 1991 by LB HH, MH, and SH and species groups Deciduous “B”, Coniferous, and Total

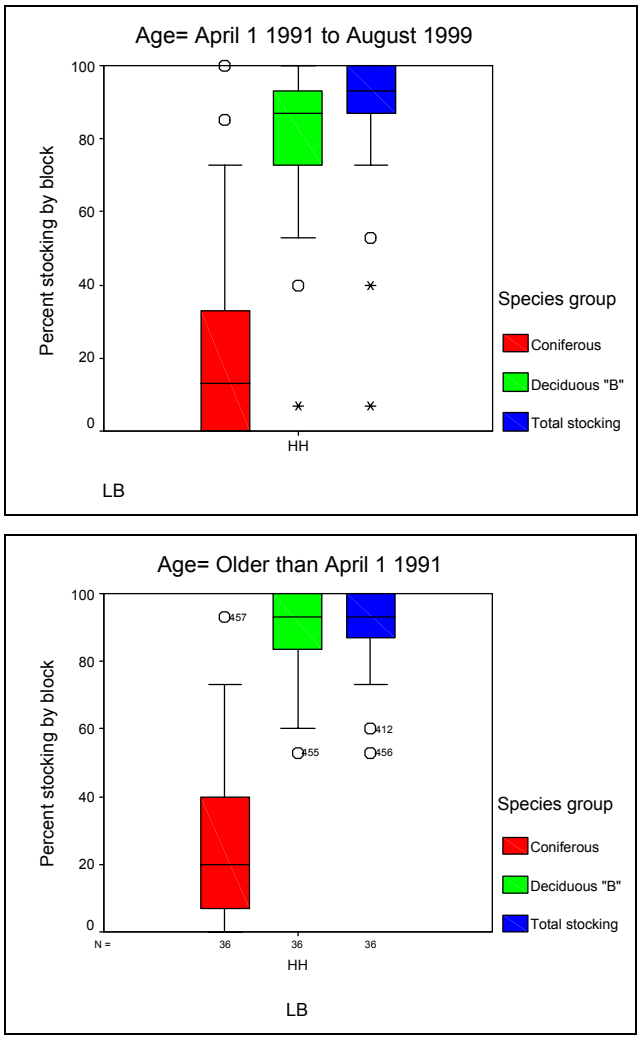


Table A-8-17 Stocking: Before and after March 31 1991 by LB HH, MH, and SH and species groups Deciduous “B”, Coniferous, and Total

Date					Percent stocking by block			
					Valid N	Median	Percentile 25	Percentile 75
April 1 1991 to August 1999	LB	HH	Species group	Coniferous	N=44	13.0000	.0000	33.5833
				Deciduous "B"	N=44	87.0000	73.0000	93.0000
				Total stocking	N=44	93.0000	86.4167	100.0000
Older than April 1 1991	LB	HH	Species group	Coniferous	N=36	20.0000	7.0000	41.0833
				Deciduous "B"	N=36	93.0000	81.7500	100.0000
				Total stocking	N=36	93.0000	87.0000	100.0000

Figure A-18 Stocking: Before and after March 31 1991 by LB SS, MS, and HS and species groups Deciduous “B”, Coniferous, and Total

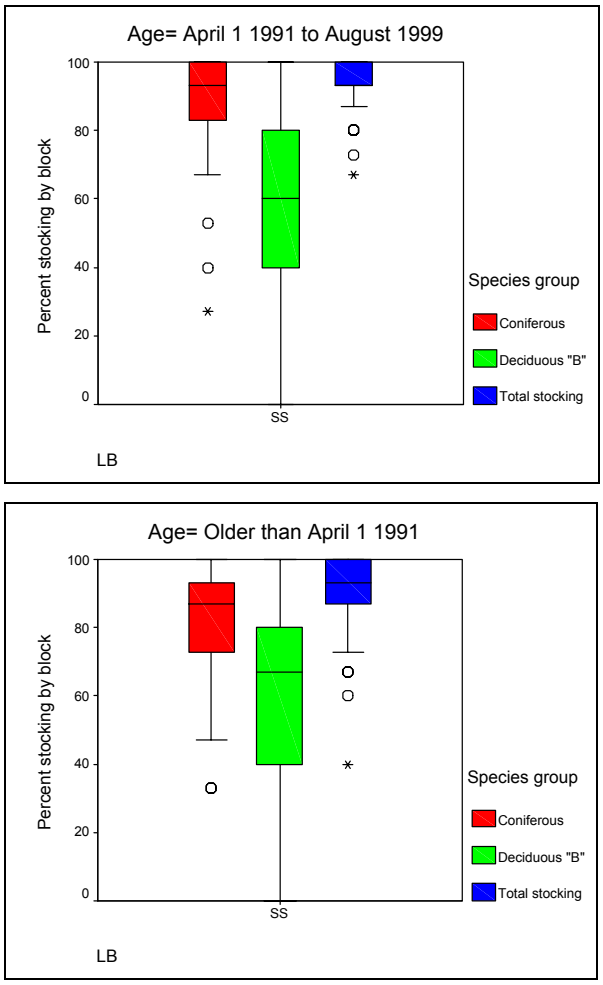


Table A-8-18 Stocking: Before and after March 31 1991 by LB SS, MS, and HS and species groups Deciduous “B”, Coniferous, and Total

					Percent stocking by block			
Date					Valid N	Median	Percentile 25	Percentile 75
April 1 1991 to August 1999	LB	SS	Species group	Coniferous	N=53	93.0000	81.8750	100.0000
				Deciduous "B"	N=53	61.1667	35.9167	84.0833
				Total stocking	N=53	94.1667	93.0000	100.0000
Older than April 1 1991	LB	SS	Species group	Coniferous	N=85	87.0000	73.0000	93.0000
				Deciduous "B"	N=85	67.0000	40.0000	84.0833
				Total stocking	N=85	94.1667	87.0000	100.0000

8.4 Height

Figure A-19 Height: All blocks in all LB types

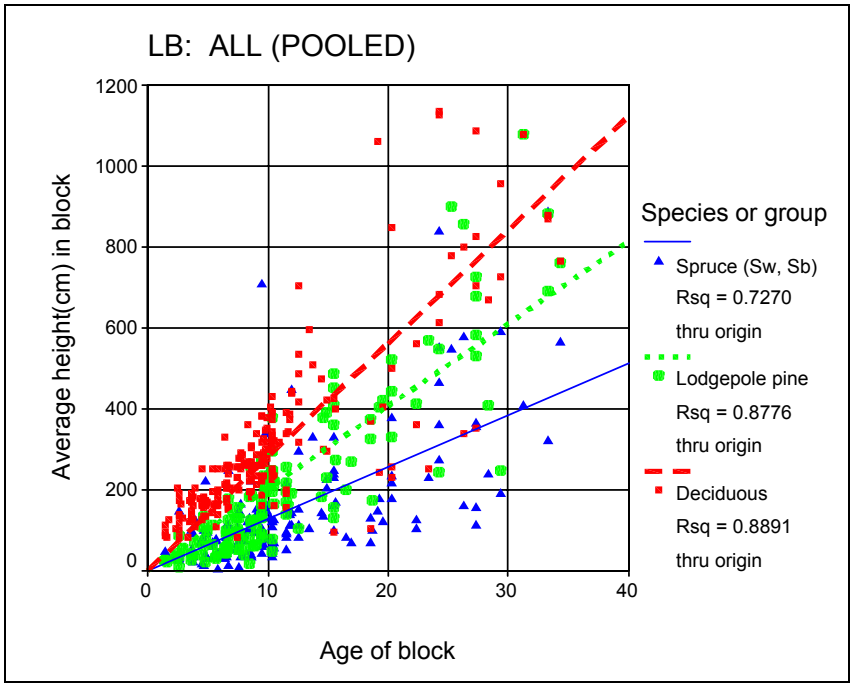


Figure A-20 Height: All blocks combined, LB category HH (incl. MH, SH)

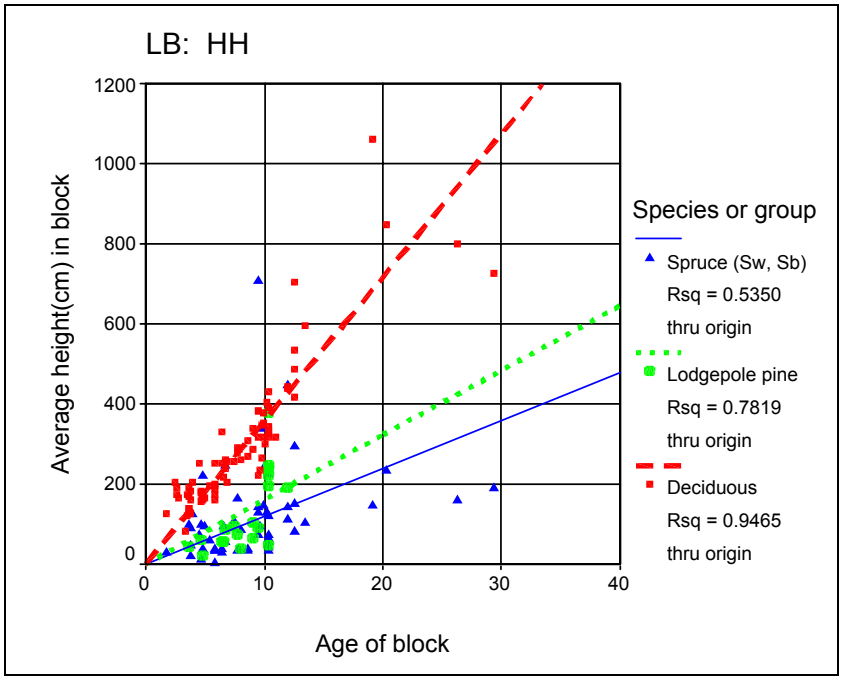


Figure A-21 Height: All blocks combined, LB category SS (incl. MS, HS)

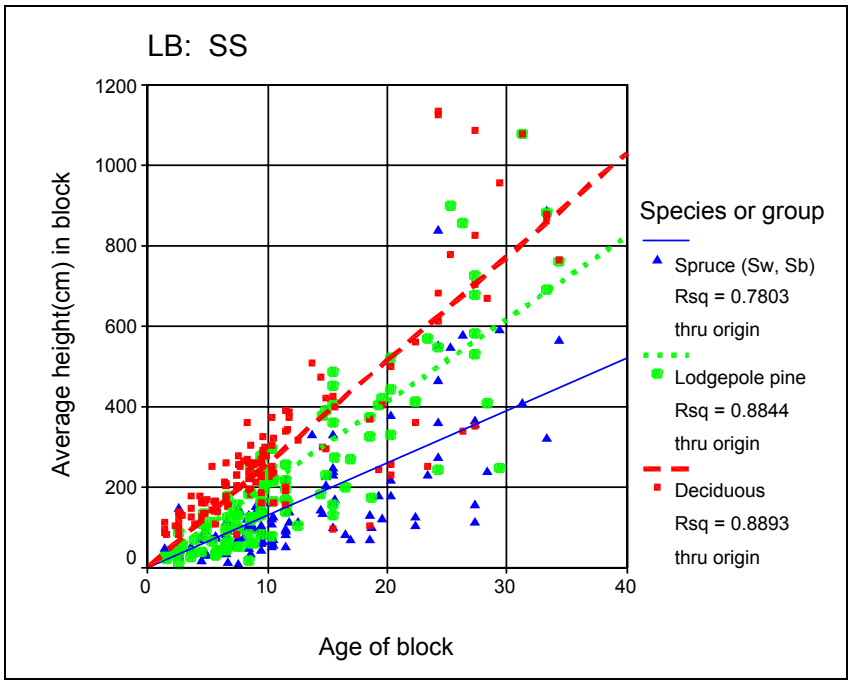


Figure A-22 Height: LMU BS

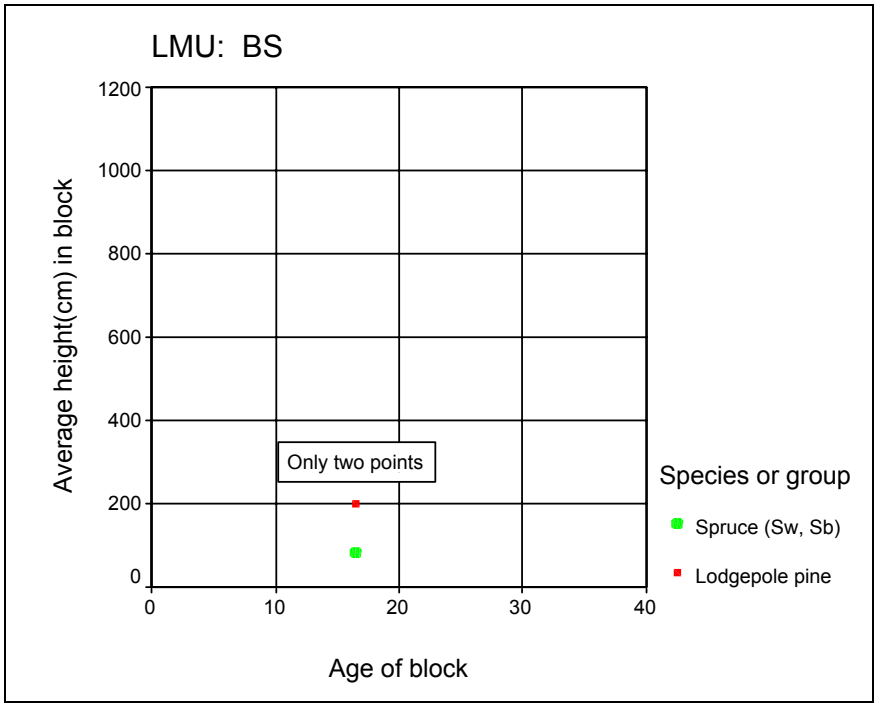


Figure A-23 Height: LMU BT

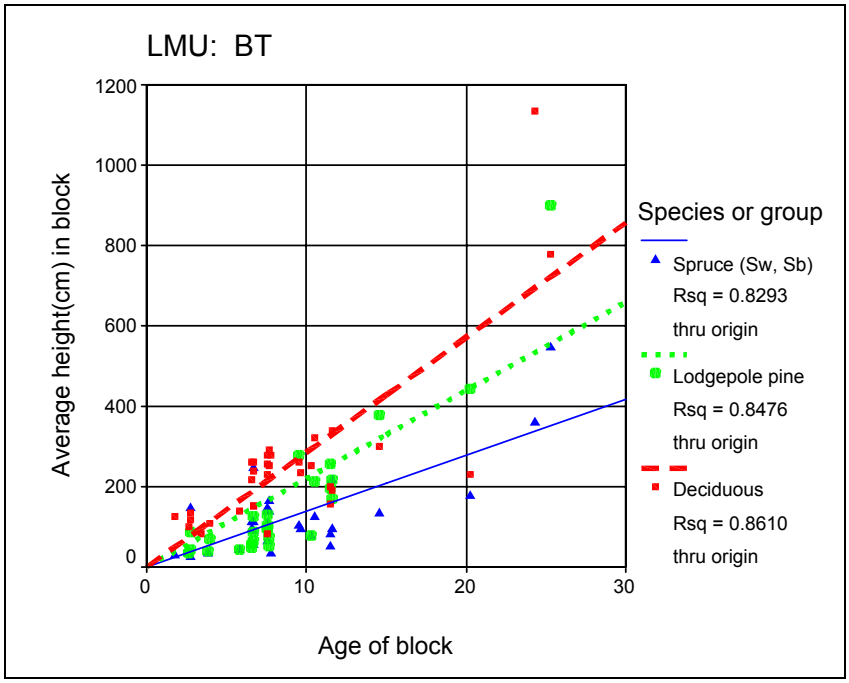


Figure A-24 Height: LMU ER

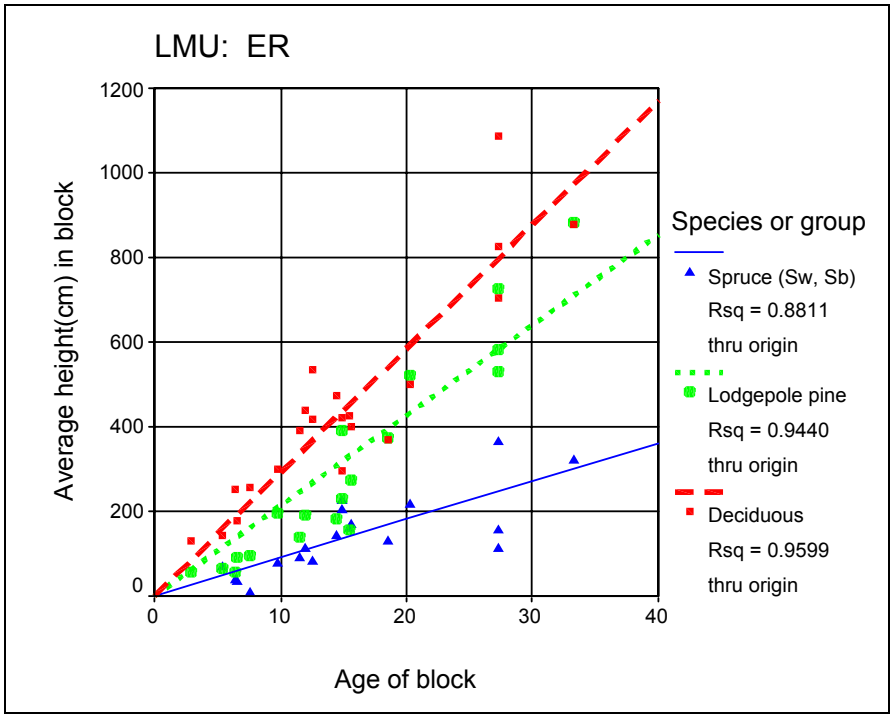


Figure A-25 Height: LMU MB

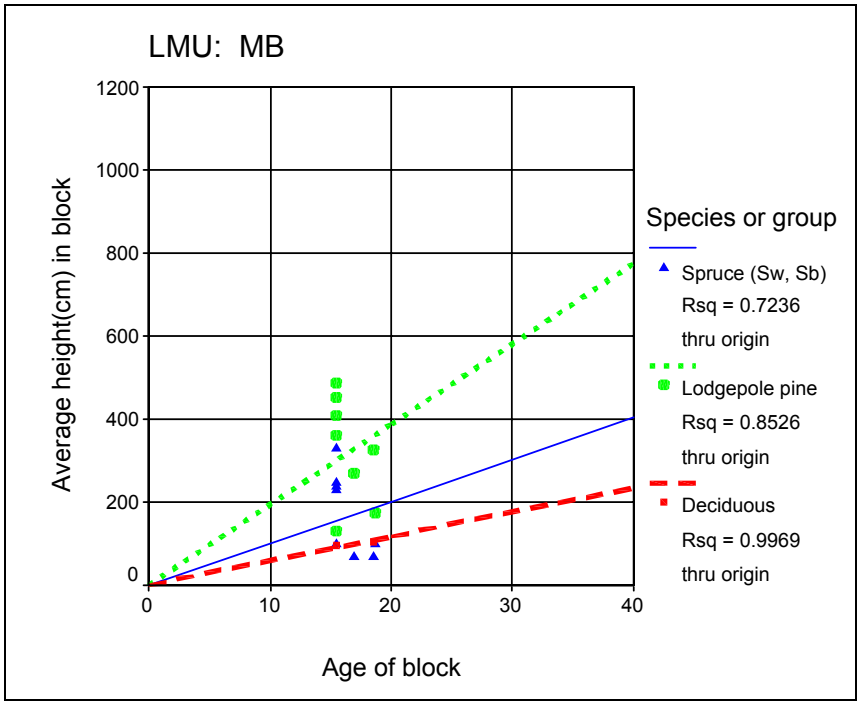


Figure A-26 Height: LMU NR

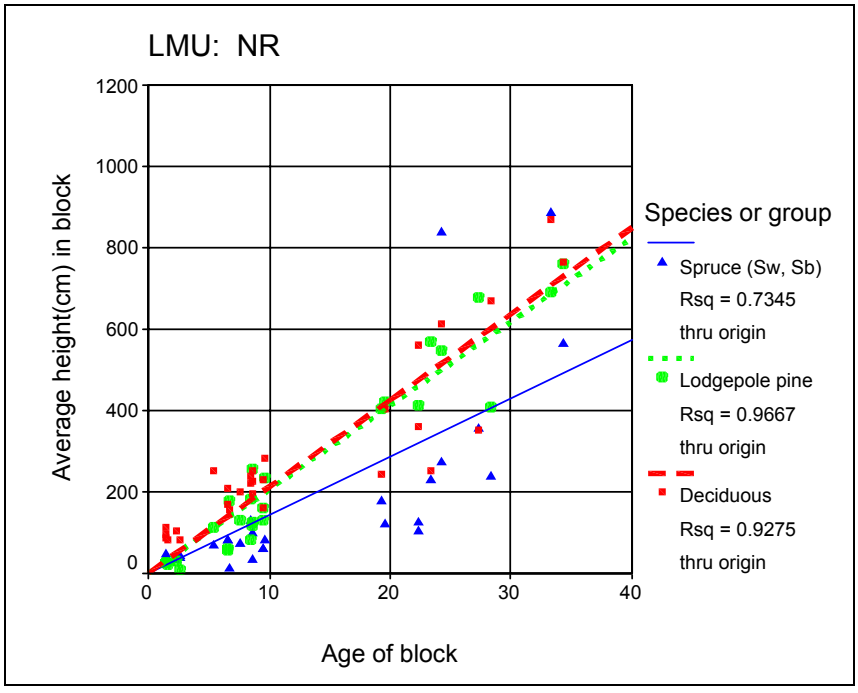


Figure A-27 Height: LMU OC

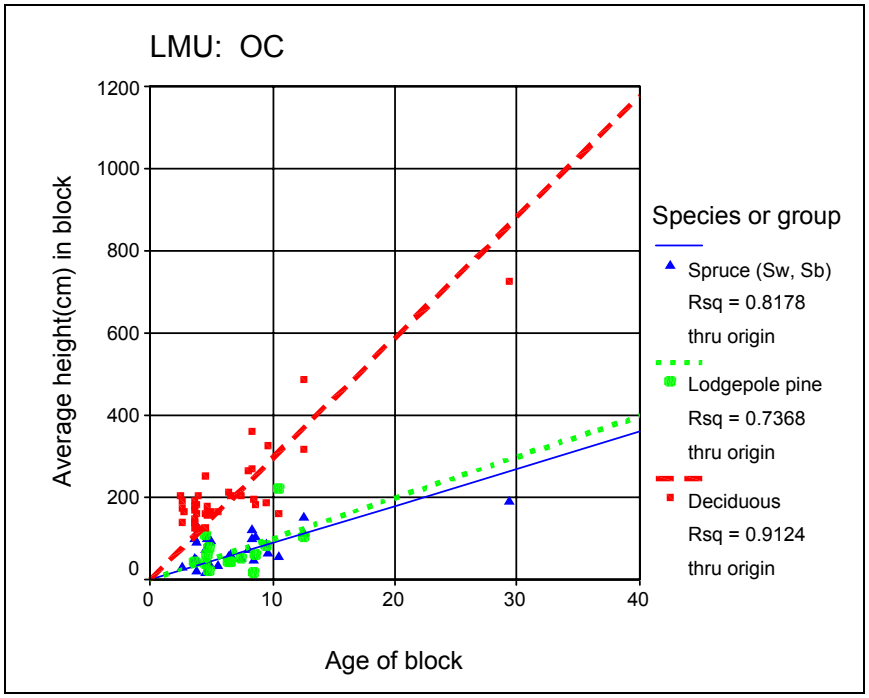


Figure A-28 Height: LMU SC

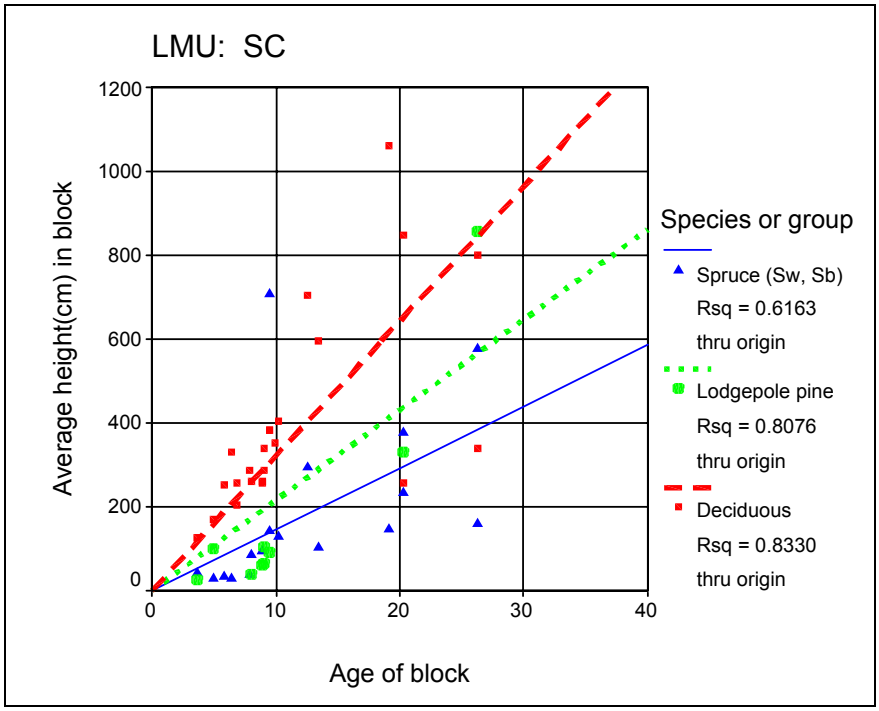


Figure A-29 Height: LMU TP

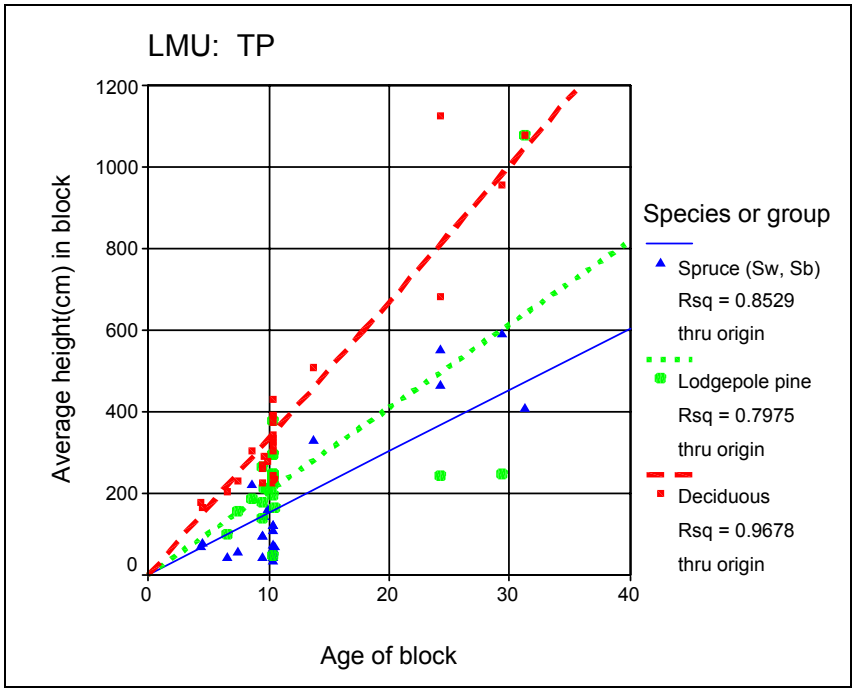
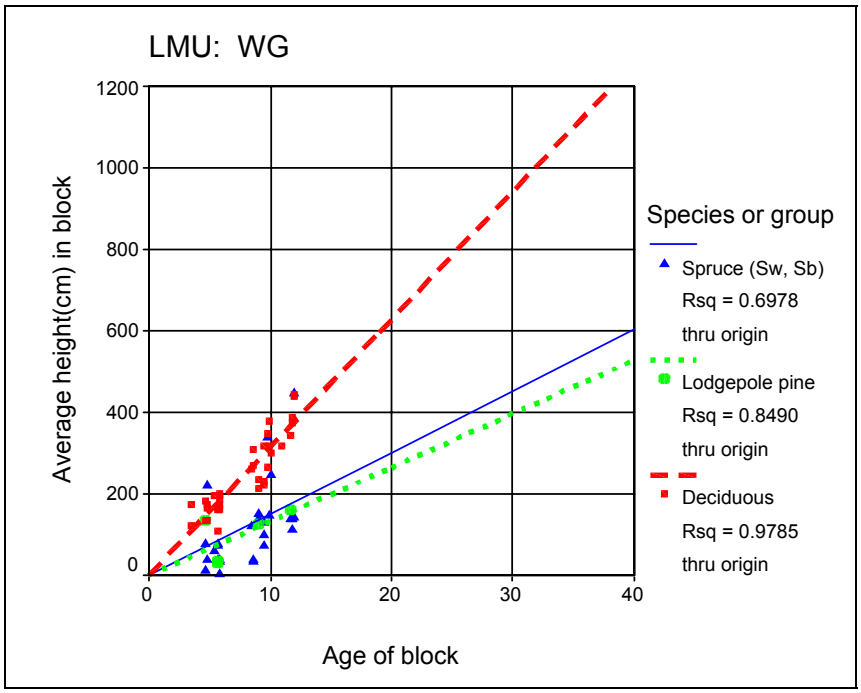


Figure A-30 Height: LMU WG



9 Appendix 1E Landbase Gross Summary

Table A-9-1 Gross Landbase Summary for SYU R12

Category	Forest Management Units Area (ha)						SYU
	N/A	IR	R1*	R2	R3	R4	
1. Non-Forested Area Reductions							
01. Anthropogenic Non-Vegetated	2	0	1,245	1,128	249	1,568	4,191
02. Naturally Non-Vegetated	0	0	2,821	1,829	4,935	1,609	11,193
03. Anthropogenic Vegetated	0	0	6,368	1,112	335	2,751	10,566
04. Non-Forested Vegetated	1	0	9,484	7,156	2,282	4,187	23,110
Sub-Total	**3**	**0**	**19,918**	**11,225**	**7,800**	**10,114**	**49,060**
2. Dispositions and Other Area Removals							
05. Wapiabi Provincial Park					3,609		3,609
06. O'Chiese Natural Area (NAA920002)				379			379
07. Permanent Sample Plots			82	94	86	99	360
08. I.R. 202 and 203		19,303					19,303
09. Private Area	1		4,697	664	122	1,701	7,185
10. Protected Notation (excluded)					160	16	177
11. Prime Protection Area (defined by ESIP)	0				1,943		1,944
12. Grazing Disposition (outside FMA area)							0
13. Disposition Reservation (excluded)			205	103		0	308
14. Crown Recreation Areas	0		673				673
15. Land Use Dispositions	0	0	2,530	1,896	497	2,867	7,789
Voluntary Protective Notation (excluded)			2	0			3
17. Voluntary Dispostion Reservation (excluded)							0
18. Landuse Lines	0	1	5,033	2,761	2,539	5,207	15,541
19. Seismic Lines	1	4	2,696	2,403	1,298	3,223	9,626
	3	**19,308**	**15,918**	**8,301**	**10,254**	**13,114**	**66,897**
3. Steep Slopes, Water and Road Buffers							
20. Steep Slopes	0	0	2,303	631	10,875	945	14,755
21. Stream Buffer (30m or 60m)	1	804	3,879	4,983	6,601	2,815	19,083
22. North Saskatchewan River Buffer (100m)	0		1,364	1	2	254	1,621
23. Lake Buffer (100m)	0	20	1,124	1,168	2,398	1,442	6,152
24. Highway Corridor Buffer (100m)	0		918	324			1,242
Sub-Total	**1**	**824**	**9,589**	**7,108**	**19,875**	**5,456**	**42,854**
4. Subjective and Ecosite Deletions							
25. Unidentified Openning	0	0	4,565	1,622	736	2,112	9,035
26. Invalid Ecosites (x,y,z) and Alpine NSR	3	19,302	11,851	4,222	6,289	6,317	47,985
27. Larch Deletion	1	0	17,415	18,508	11,939	17,204	65,067
28. Black Spruce Deletion	2	0	8,156	10,982	5,656	7,141	31,939
29. Undefined	16	19,302	132	110	173	77	19,811
30. Horizontal Stand Adjustment		0	241	30	74	70	416
Sub-Total	**22**	**38,605**	**42,361**	**35,474**	**24,868**	**32,922**	**174,253**

* R1 is composed of the FMU R1 area inside and outside the FMA.