

COMMON ATTRIBUTE SCHEMA (CAS) FOR FOREST INVENTORIES ACROSS CANADA

BOREAL AVIAN MODELLING PROJECT
AND
CANADIAN **BEACONS** PROJECT

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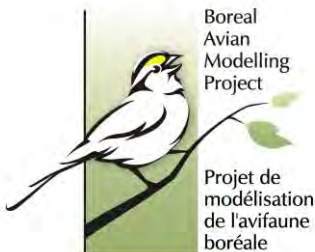
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1.0 INTRODUCTION

Canada's vast boreal ecosystem hosts one of the most diverse bird communities in North America. Development pressure within the boreal region is on the increase, and there is an urgent need to understand the impact of changing habitats on boreal bird populations and to make sound management decisions. The Boreal Avian Modeling Project was initiated to help address the lack of basic information on boreal birds and their habitats across boreal forests in Canada. The need to effectively manage bird species and their habitats has resulted in the effort to collect and gather data across Canada to develop models that will predict bird abundance and distribution, and that will clarify population and habitat associations with climate and land cover.

Current national databases developed from satellite-based products using biophysical variables have limited application at regional levels because many bird species are sensitive to variation in canopy tree species composition, height, and age; vegetation attributes that satellite-based products cannot measure. Because satellite-based land cover maps lack the thematic detail needed to model the processes of stand growth, succession, and regeneration, avian habitat models derived from satellite land cover data cannot be used to link forest management actions to the desired biotic indicators at the scale of forest tenure areas.

Digital forest inventory data can overcome many of the deficiencies identified with satellite-based land cover data. These data exist for most operational and planned commercial forest tenures in the Canadian boreal forest; however, differences among data formats, attributes, and standards across the various forest inventories make it difficult to develop models that are comparable and can be consistently applied across regions. To do so, it is necessary to address the variation between different forest inventories and bring all available inventories into one explicitly defined database where attributes are consistently defined without loss of precision. The starting point is to review all forest inventory classifications and develop a set of common attributes. This document addresses the inventory review developed for the Boreal Avian Monitoring Project; this review is called the Common Attribute Schema (CAS).

2.0 COMMON ATTRIBUTE SCHEMA

The common attribute schema (CAS) is a comprehensive attribute classification suitable for avian habitat modeling. Its development requires the selection of vegetation cover attributes useful for avian habitat modeling, and the assignment of common codes for each attribute that are broad enough to capture all relevant existing forest inventory attributes. CAS attributes represent the most common attributes that are consistently recorded in forest inventories across Canada including: stand structure (layers), moisture regime, crown closure, species composition, height, age (origin), site class or site index, non-forested cover types, non-vegetated cover types, and disturbance history. CAS also includes two attributes of ecological interest: ecosite and wetland. These two attributes are not common to most forest inventories across Canada; however, these attributes are considered important for avian habitat models and can possibly be acquired from other sources or partially or wholly derived from other attributes.

Development of the CAS attribute codes and rule sets for inventory attribute code conversion to CAS codes required an extensive review of previous and current inventory standards and specifications across Canada. Gillis and Leckie¹ provided a good starting point for review of previous inventory standards. More current and other inventory standards and documents are listed in the bibliography. A summary of recent or current inventories across Canada are presented in Appendix 1. These inventories are the most likely sources for data that can contribute to the avian bird modeling project.

Based on the review, detailed tables were produced to summarize each inventory standard by province and territory. Two national parks, Wood Buffalo and Prince Albert are included. Conversion rule sets were then produced as part of the detailed tables to identify how each province or territory inventory attribute codes translate into CAS attribute codes. Detailed tables and conversion rule sets for each CAS attribute are presented in Appendices noted in the appropriate sections of this document.

Although many CAS attributes have a one-to-one conversion, not all do; some are identified by an interval or class that has an upper and lower bound (lower bound is \geq and the upper bound is $<$). Interval coding for height, crown closure, age, and similar quantitative attributes is a unique feature of CAS. Crown closure, height, age, and disturbance extent use bounds to define an attribute class. For example, the CAS captures crown closure as an interval providing two values, the lower bound and upper bound. In the Alberta Vegetation Inventory, crown closure is captured in four cover classes: A, B, C and D, while the British Columbia Vegetation Resource Inventory captures crown closure as values ranging from 1 to 100 to the nearest 1 percent. In

¹ Gillis, M.D.; Leckie, D.G. 1993. Forest Inventory Mapping Procedures Across Canada. Petawawa National Forestry Institute, Information Report PI-X-114.

CAS, an Alberta “B”-value would be represented as an interval: 31 for the lower bound and 50 for the upper bound. A British Columbia crown closure value of 36 would be represented as a CAS value of 36 for both the lower and upper bounds. All of the information contained in the original inventories is preserved and the attributes are not converted to a common resolution or set of values.

Attributes for CAS are stored in six attribute files to facilitate conversion and translation:

- 1) Header (HDR) attributes – values assigned to all polygons based on provenance or reference information;
- 2) CAS Base Polygon (CAS) attributes – values that identify a polygon and provide a link between the CAS polygon and the original inventory polygon;
- 3) Forest-Level (LYR) attributes – values that pertain to the polygon for productive and non-productive forest land;
- 4) Non-Forest Land (NFL) attributes – values that pertain to naturally non-vegetated, non-forest anthropogenic, and non-forest vegetated land;
- 5) Disturbance history (DST) attributes – values that pertain to any disturbance that has occurred in a polygon including type, year, and extent; and
- 6) Ecological specific (ECO) attributes – values representing ecosites and wetlands.

The main body of this report (Sections 2.1 through 2.3 and Section 3) defines each of the six attribute categories and tabulates the attributes and their characteristics. A summary of the data structure and data dictionary is presented in Appendix 2.

Each inventory data base has a unique data structure. A conversion procedure must be documented describing how to load the source inventory into CAS. A sample procedure is presented in Appendix 16.

2.1 Header Information

Header information is a primary element of CAS. Header information identifies the source data set including jurisdiction, spatial reference, ownership, tenure type, inventory type, inventory version, inventory start and finish date and the year of acquisition for CAS. These attributes are detailed on the following pages.

2.1.1 Jurisdiction

Jurisdiction identifies the province or territory from which the inventory data came.

Field: JURISDICTION	Attribute Value
British Columbia	BC
Alberta	AB
Saskatchewan	SK
Manitoba	MB
Ontario	ON
Quebec	QC
Prince Edward Island	PE
New Brunswick	NB
Nova Scotia	NS
Newfoundland and Labrador	NL
Yukon Territory	YK
Northwest Territories	NT
Wood Buffalo National Park	WB
Prince Albert National Park	PA

2.1.2 Spatial Reference

Spatial reference describes the reference frame for, and the means to encode, coordinates in the data set including a coordinate system, projection, and datum. Coordinates can be referenced to any desired geographic grid. The coordinate system is a method of representing points in a space of given dimensions by coordinates to establish position. A projection is a systematic construction of lines drawn on a plane surface representative of and corresponding to the meridians and parallels of the curved surface of the earth. A datum is the geodetic datum specifying that coordinate system in which horizontal control points are located. The North American Datum (NAD) of 1983 is the current datum used in Canada. Some inventories may use the NAD of 1927.

Field: COORDINATE_SYSTEM	Attribute Value
Universal Trans Mercator	UTM
British Columbia Geographic System	BCGS
National Topographic System	NTS
Ontario Base Map	OBM
Township System	TOWNSHIP

Field: PROJECTION	Attribute Value
Albers System	ALBERS
Universal Trans Mercator System	UTM

Field: DATUM	Attribute Value
North American Datum 1927	NAD27
North American Datum 1983	NAD83

2.1.3 Ownership

Ownership identifies who owns the inventory data, who owns the land that the inventory covers, and degree of permission to which the data can be used. Ownership of the inventory can be federal, provincial, territory, industry, private, or First Nation. Ownership of the land is identified as being crown, private, military, or First Nation. Permission identifies whether the use of the data is unrestricted, restricted or limited.

Field: INV_OWNER	Attribute Value
Provincial Government	PROV_GOV
Federal Government	FED_GOV
Yukon Territory or Northwest Territories	TERRITORY
First Nations	FN
Industry	INDUSTRY
Private	PRIVATE

Field: LAND_OWNER	Attribute Value
Crown	CROWN
Private	PRIVATE
Military	MILITARY
First Nation	FN

Field: PERMISSIONS	Attribute Value
Use of the inventory data is unrestricted	UNRESTRICTED
Use of the inventory data has restrictions	RESTRICTED
Use of the data has limitations.	LIMITED

2.1.4 Tenure Type

Tenure type identifies the kind of agreement or license under which the inventory was done. Various tenure types exist across Canada. The most common types are included in the list below; any others are to be coded as “other”.

Field: TENURE_TYPE	Attribute Value
Tree Farm License	TFL
Forest License	FL
Tree Farm	TF
Managed Forest	MF
Forest Management Agreement	FMA
Forest Management License Agreement	FMLA
Sustainable Forest License	SFL

National or Provincial Park	PARK
Northern Boreal Initiative	NBI
Private Land	PRIVATE
Administered by the Military	MILITARY
First Nation or Métis Area	FN
Tenure type not on list	OTHER
Timber Limit	TL
No tenure	NONE

2.1.5 Inventory Metadata

Inventory metadata provides general information with regard to a particular forest or vegetation inventory. The inventory type identifies the kind of inventory that was produced for an area. The name, abbreviation, or acronym usually becomes the name used to identify an inventory. For example, Alberta had a series of successive forest inventories called Phase 1, Phase 2, and Phase 3. As inventories became more inclusive of attributes other than just the trees, they became known as vegetation inventories, for example, the Alberta Vegetation Inventory or AVI. The inventory type along with a version number usually identifies an inventory.

The inventory version identifies the standards used to produce a consistent inventory, usually across large landbases and for a relatively long period of time. Inventory Reference Year identifies the year the inventory done. An inventory can take several years to complete; therefore, Reference Year Minimum and Maximum dates are included to identify the interval for when the inventory was completed. In some cases inventory reference year and air photo year will be the same. Several years of successive or periodic acquisition are possible; therefore, a minimum and a maximum year are recorded. Inventory Start and Finish Year identifies the year the inventory was started and finished. Year of Update indicates the year that an inventory was updated.

Field: INV_TYPE	Attribute Value
Inventory name or type of inventory	Alpha Numeric

Field: INV_VERSION	Attribute Value
The standard and version of the standard used to create the inventory	Alpha Numeric

Field: REFERENCE_YEAR_MIN and REFERENCE_YEAR_MAX	Attribute Value
Reference Year Minimum – first year of inventory	1960 – 2020
Reference Year Maximum – last year of inventory	1960 - 2020

Field: INV_START_YR and INV_FINISH_YR	Attribute Value
Inventory start year – year inventory was started	1960 - 2020
Inventory finish year – year inventory was finished	1960 - 2020

Field: INV_UPDATE_YR	Attribute Value
Year when an update to the inventory data was updated	1960 - 2020

2.1.6 CAS Data Acquisition

CAS data acquisition identifies the year that the inventory was acquired for CAS. A unique number is assigned to each inventory for purposes of CAS identification.

Field: INV_ACQ_YR	Attribute Value
Year inventory was acquired for CAS	2008 - 2020

Field: INV_ACQ_ID	Attribute Value
Data acquisition identification number	1 - 1000

2.2 CAS Base Polygon Attributes

The CAS base polygon data provides polygon specific information and links the original inventory polygon ID to the CAS ID. Identification attributes include original stand ID, CAS Stand ID, Mapsheet ID, and Identification ID. Polygon attributes include polygon area and polygon perimeter. Inventory Reference Year, Photo Year, and Administrative Unit are additional identifiers.

2.2.1 Polygon Identification

Field: ORIGINAL_STAND_ID	Attribute Value
Original stand identification – unique number for each polygon within the original inventory	1 – 10,000,000

Field: CAS_STAND_ID	Attribute Value
CAS stand identification – unique number for each polygon within CAS	Alpha Numeric

Field: MAPSHEET_ID	Attribute Value
Map sheet identification according to original naming convention for an inventory	Alpha Numeric

Field: IDENTIFICATION_ID	Attribute Value
Unique number for a particular inventory section	1 – 1000

2.2.2 Polygon Area and Perimeter

Each polygon area and perimeter is recorded.

Field: POLYGON_AREA and POLYGON_PERIMETER	Attribute Value
Polygon area (ha).	0.1 – 10,000
Polygon perimeter (ha).	0.1 - infinity

2.2.3 Year of Aerial Photography

Photo Year is the year in which the inventory was considered initiated and completed. An inventory can take several years to complete; therefore, Photo Year Minimum and Maximum dates are included to identify the interval for when the inventory was completed. In some cases inventory reference year and air photo year are the same. Several years of successive or periodic acquisition are possible; therefore, a minimum and a maximum year are recorded.

Field: PHOTO_YEAR_MIN and PHOTO_YEAR_MAX	Attribute Value
Photo Year Minimum – earliest year of aerial photo acquisition	1960 - 2020
Photo Year Maximum – last year of aerial photo acquisition	1960 - 2020

2.2.4 Administration Unit

Administration unit identifies any inventory sub-unit boundaries that exist within an inventory. Sub-unit boundaries can possibly split a polygon; therefore, this CAS attribute is applied at the CAS base polygon level. Two administration unit (possibly hierarchical) levels of organization are identified, such as Forest Management Units (FMUs) and Working Circle (WC) or Compartment (CMPT). Their interpretation is source-data-set explicit.

Field: ADM_UNIT_1 and ADM_UNIT_2	Attribute Value
Administration Unit 1	Alpha Numeric, e.g. FMU
Administration Unit 2	Alpha Numeric, e.g. WC

2.3 CAS Forest and Non-Forest Attributes

2.3.1 Stand Structure

Structure is the physical arrangement or vertical pattern of organization of the vegetation within a polygon. A stand can be identified as single layered, multilayered, complex, or horizontal. A single layered stand has stem heights that do not vary significantly and the vegetation has only one main canopy layer.

A multilayered stand can have several distinct layers and each layer is significant, has a distinct height difference, and is evenly distributed. Generally the layers are intermixed and when viewed vertically, one layer is above the other. Layers can be treed or non-treed. Up to 9 layers are allowed; most inventories recognize only one or two layers. The largest number of layers recognized is in the British Columbia VRI with 9 followed by Saskatchewan SFVI with 7 and Manitoba FLI with 5. Each layer is assigned an independent description with the tallest layer described in the upper portion of the label. The number of layers and a ranking of the layers can also be assigned. Some inventories (e.g. Saskatchewan UTM, Quebec TIE, Prince Edward Island, and Nova Scotia) can imply that a second layer exists; however, the second layer is not described or only a species type is indicated.

Complex layered stands exhibit a high variation in tree heights. There is no single definitive forested layer as nearly all height classes (and frequently ages) are represented in the stand. The height is chosen from a stand midpoint usually followed by a height range.

Horizontal structure represents vegetated or non-vegetated land with two or more homogeneous strata located within other distinctly different homogeneous strata within the same polygon but the included strata are too small to map separately based on minimum polygon size rules. This attribute is also used to identify multi-label polygons identified in biophysical inventories such as Wood Buffalo National Park and Prince Albert National Park. The detailed table for stand structure is presented in Appendix 3.

Field: STAND STRUCTURE	Attribute Value
Single layered – vegetation within a polygon where the heights do not vary significantly.	S
Multilayered – two or more distinct layers of vegetation occur. Each layer is significant, clearly observable and evenly distributed. Each layer is assigned an independent description.	M
Complex – stands exhibit a high variation of heights with no single definitive forest layer. May be used with non-forested layers.	C

Horizontal – two or more significant strata within the same polygon; at least one of the strata is too small to delineate as a separate polygon.

H

2.3.2 Structure Percent or Range

Stand Structure Percent or Range is assigned when a complex or horizontal structured polygon is identified. Stand structure percent is used with horizontal stands and identifies the percentage of stand area, assigned in 10% increments, attributed by each stratum within the entire polygon and must add up to 100%. Any number of horizontal strata can be described per horizontal polygon.

Stand Structure Range is used with complex stands and represents the height range (m) around the stand midpoint. For example, height range 6 means that the range around the midpoint height is 3 meters above and 3 meters below the midpoint.

Field: **STAND_STRUCTURE_PER** and **STAND_STRUCTURE_RANGE**

Stand Structure Percent - used with horizontal stands to identify the percentage, in 10% increments, represented by each homogeneous strata within the polygon. Must add up to 100%. Only two strata descriptions are allowed per polygon.

Stand Structure Range – height range (m) around the midpoint height of the stand.

Attribute Value

1 - 9

1 - 9

2.3.3 Number of Layers

Number of Layers is an attribute related to stand structure and identifies how many layers have been identified for a particular polygon.

Field: **NUMBER_OF_LAYERS**

Identifies the number of vegetation or non vegetation layers assigned to a particular polygon. A maximum of 9 layers can be identified.

Attribute Value

1 - 9

2.3.4 Layer

Layer is an attribute related to stand structure that identifies which layer is being referred to in a multi-layered stand. The layer identification creates a link between each polygon attribute and the corresponding layer. Layer 1 will always be the top (uppermost) layer in the stand sequentially followed by Layer 2 and so on.

The maximum number of layers recognized is nine. The uppermost layer may also be a veteran (V) layer. A veteran layer refers to a treed layer with a crown closure of 1 to 5 percent and must occur with at least one other layer; it typically includes the oldest trees in a stand.

Field: LAYER	Attribute Value
Identifies the number of vegetation or non vegetation layers assigned to a particular polygon. A maximum of 9 layers can be identified.	1 – 9, V

2.3.5 Layer Rank

Layer Rank value is an attribute related to stand structure and refers to layer importance for forest management planning, operational, or silvicultural purposes. When a Layer Rank is not specified, layers can be sorted in order of importance by layer number.

Field: LAYER RANK	Attribute Value
Layer Rank - value assigned sequentially to layer of importance. Rank 1 is the most important layer followed by Rank 2, etc.	1 – 9
Blank – no value	

2.3.6 Soil Moisture Regime

Soil moisture regime describes the available moisture supply for plant growth over a period of several years. Soil moisture regime is influenced by precipitation, evapotranspiration, topography, insolation, ground water, and soil texture. The CAS soil moisture regime code represents the similarity of classes across Canada. The detailed soil moisture regime table and CAS conversion is presented in Appendix 4.

Field: SMR	Attribute Value
Dry – Soil retains moisture for a negligible period following precipitation with very rapid drained substratum.	D
Mesic – Soils retains moisture for moderately short to short periods following precipitation with moderately well drained substratum.	F
Moist – Soil retains abundant to substantial moisture for much of the growing season with slow soil infiltration.	M
Wet – Poorly drained to flooded where the water table is usually at or near the surface, or the land is covered by shallow water.	W
Aquatic – Permanent deep water areas characterized by hydrophytic vegetation (emergent) that grows in or at the surface of water.	A
Blank – no value	

2.3.7 Crown Closure

Crown closure is an estimate of the percentage of ground area covered by vertically projected tree crowns, shrubs, or herbaceous cover. Crown closure is usually estimated independently for each layer. Crown closure is commonly represented by classes and differs across Canada; therefore, CAS recognizes an upper and lower percentage bound for each class. The detailed crown closure table is presented in Appendix 5.

Field: CROWN_CLOSURE_UPPER and CROWN_CLOSURE_LOWER	Attribute Value
Upper Bound – upper bound of a crown closure class	0 – 100
Lower Bound – lower bound of a crown closure class	0 – 100
Blank – no value	

2.3.8 Height

Stand height is based on an average height of leading species of dominant and co-dominant heights of the vegetation layer and can represent trees, shrubs, or herbaceous cover. Height can be represented by actual values or by height class and its representation is variable across Canada; therefore, CAS will use upper and lower bounds to represent height. The detailed height table is presented in Appendix 6.

Field: HEIGHT_UPPER and HEIGHT_LOWER	Attribute Value
Upper Bound – upper bound of a height class.	0 - 100
Lower Bound – lower bound of a height class.	0 - 100

2.3.9 Species Composition

Species composition is the percentage of each tree species represented within a forested polygon by layer. Species are listed in descending order according to their contribution based on crown closure, basal area, or volume depending on the province or territory. A total of ten species can be used in one label. The CAS attribute will capture estimation to the nearest percent; however, most inventories across Canada describe species to the nearest 10% (in actual percent value or multiples of 10). Species composition for each forest stand and layer must sum to 100%.

The detailed table for species composition is presented in Appendix 7. Some inventories (Alberta Phase 3, Saskatchewan UTM, Quebec TIE, and Newfoundland, and National Parks) do not recognize a percentage breakdown of species but rather group species as contributing a major (greater than 26 percent) or minor (less than 26 percent) amount to the composition. Also included in Appendix 7 is a translation table that assigns a species composition percentage breakdown for those inventories that do not have a percentage breakdown.

CAS species codes are derived from the species' Latin name using the first four letters of the Genus and the first four letters of the Species unless there is a conflict, then the last letter of the species portion of the code is changed. Unique codes are required for generic groups and hybrids. A species list has been developed representing every inventory species identified across Canada including hybrids, exotics and generic groups (Appendix 8). Generic groups represent situations where species were not required to be recognized past the generic name or where photo interpreters could not identify an individual species. A list of species that is

represented by the generic groups by province, territory, or Park has also been developed and is presented in Appendix 9.

Field: SPEC1, SPEC1_PER, SPEC2, SPEC2_PER, SPEC3, SPEC3_PER, SPEC4, SPEC4_PER, SPEC5, SPEC5_PER, SPEC6, SPEC6_PER, SEPC7, SPEC7_PER, SPEC8, SPEC8_PER, SPEC9, SPEC9_PER, SPEC10, SPEC10_PER	Attribute Value
Species (SPEC#) – Example: <i>Populus tremuloides</i> , Trembling Aspen. Ten species can be listed per layer per polygon.	POPU TREM
Species Percent (SPEC#_PER) – Percentage of a species or generic group of species that contributes to the species composition of a polygon. Must add up to 100%.	1 - 100

2.3.10 Stand Origin

Stand origin is the average initiation year of codominant and dominant trees of the leading species within each layer of a polygon. Origin is determined either to the nearest year or decade. An upper and lower bound is used to identify CAS origin. The detailed stand origin table is presented in Appendix 10.

Field: ORIGIN_UPPER and ORIGIN_LOWER	Attribute Value
Upper Bound – upper bound of an age class	0 - 2020
Lower Bound – lower bound of an age class	0 - 2020

2.3.11 Site Class

Site class is an estimate of the potential productivity of land for tree growth. Site class reflects tree growth response to soils, topography, climate, elevation, and moisture availability. See Appendix 11 for the detailed site table.

Field: SITE_CLASS	Attribute Value
Unproductive – cannot support a commercial forest	U
Poor – poor tree growth based on age height relationship	P
Medium - medium tree growth based on age height relationship	M
Good - medium tree growth based on age height relationship	G
Blank – no value	

2.3.12 Site Index

Site Index is an estimate of site productivity for tree growth. It is derived for all forested polygons based on leading species, height, and stand age based on a specified reference age. Site index is not available for most inventories across Canada. See Appendix 11 for the detailed site table.

Field: SITE_INDEX	Attribute Value
Site Index – estimate of site productivity for tree growth based on a specified reference age.	0 - 99

2.3.13 Unproductive Forest

Unproductive forest is forest land not capable of producing trees for forest operations. They are usually wetlands, very dry sites, exposed sites, rocky sites, higher elevation sites, or those sites with shallow or poor soils. The detailed table, CAS codes, and conversion rule sets are presented in Appendix 12.

Field: UNPRODUCTIVE_FOREST	Attribute Value
Treed Muskeg – treed wetland sites	TM
Open Muskeg – open (<10% trees) wetland sites	OM
Alpine forest – high elevation forest usually above 1800 m	AL
Scrub Deciduous – scrub deciduous trees on poor sites	SD
Scrub Coniferous – scrub coniferous trees on poor sites	SC
Non Productive Forest – poor forest types on rocky or wet sites	NP
Productive Forest – any other forest	P
Blank – no value	

2.3.14 Naturally Non Vegetated

The Naturally Non-Vegetated class refers to land types with no vegetation cover. The maximum vegetation cover varies across Canada but is usually less than six or ten percent. The detailed table, CAS codes, and CAS conversion rule set are presented in Appendix 12.

Field: NATURALLY_NON_VEGETATED	Attribute Value
Alpine – high elevation exposed land	AP
Lake – ponds, lakes or reservoirs	LA
River – double-lined watercourse	RI
Ocean – coastal waters	OC
Rock or Rubble – bed rock or talus or boulder field	RK
Sand – sand dunes, sand hills, non recent water sediments	SA
Snow/Ice – ice fields, glaciers, permanent snow	SI
Slide – recent slumps or slides with exposed earth	SL
Exposed Land – other non vegetated land	EX
Beach – adjacent to water bodies	BE
Water Sediments – recent sand and gravel bars	WS
Flood – recent flooding including beaver ponds	FL
Island – vegetated or non vegetated	IS
Tidal Flats – non vegetated feature associated with oceans	TF
Blank – no value	

2.3.15 Non-Vegetated Anthropogenic

Non-vegetated anthropogenic areas are influenced or created by humans. These sites may or may not be vegetated. The detailed table, CAS codes, and CAS conversion rule set are presented in Appendix 12.

Field: NON_VEGETATED_ANTHROPOGENIC	Attribute Value
Industrial – industrial sites	IN
Facility/Infrastructure – transportation, transmission, pipeline	FA
Cultivated – pasture, crops, orchards, plantations	CL
Settlement – cities, towns, ribbon development	SE
Lagoon - water filled, includes treatment sites	LG
Borrow Pit – associated with facility/infrastructure	BP
Other – any not listed	OT
Blank – no value	

2.3.16 Non-Forested Vegetated

Non-forested vegetated areas include all natural lands that have vegetation cover with usually less than 10% tree cover. These cover types can be stand alone or used in multi-layer situations. The detailed table, CAS codes, and CAS conversion rule set are presented in Appendix 12.

Field: NON_FORESTED_VEGETATED	Attribute Value
Tall Shrub – shrub lands with shrubs \geq 2 meters tall	ST
Low Shrub – shrub lands with shrubs $<$ 2 meters tall	SL
Forbs - herbaceous plants other than graminoids	HF
Herbs – no distinction between forbs and graminoids	HE
Graminoids – grasses, sedges, rushes, and reeds	HG
Bryoid – mosses and lichens	BR
Open Muskeg – wetlands less than 10% tree cover	OM
Tundra – flat treeless plains	TN
Blank – no value	

2.3.17 Disturbance

Disturbance identifies the type of disturbance history that has occurred or is occurring within the polygon. The type of disturbance, the extent of the disturbance and the disturbance year, if known, may be recorded. The disturbance may be natural or human-caused. Up to three disturbance events can be recorded with the oldest event described first. Silviculture treatments have been grouped into one category and include any silviculture treatment or treatments recorded for a polygon. The detailed table, CAS codes, and CAS conversion rule set are presented in Appendix 13.

Field: DISTURBANCE1, DISTURBANCE2, DISTURBANCE3	Attribute Value
Cut – logging with known extent	CO
Partial Cut – portion of forest has been removed, extent known or unknown	PC
Burn – wildfires or escape fires	BU
Windfall – blow down	WF

Disease – root, stem, branch diseases	DI
Insect – root, bark, leader, or defoliation insects	IK
Flood – permanent flooding from blockage or damming	FL
Weather – ice, frost, red belt	WE
Slide – damage from avalanche, slump, earth or rock slides	SL
Other – unknown or other damage	OT
Dead Tops or Trees – dead or dying trees, cause unknown	DT
Silviculture Treatments – Planting, Thinning, Seed Tree	SI

2.3.18 Disturbance Extent

Disturbance extent provides an estimate of the proportion of the polygon that has been affected by the disturbance listed. Extent codes and classes vary across Canada where they occur; therefore, CAS identifies upper and lower bounds for this category. Three disturbance extents can be identified, one for each disturbance event.

Field: DIST1_EXT_UPPER, DIST2_EXT_UPPER, DIST3_EXT_UPPER, DIST1_EXT_LOWER, DIST2_EXT_LOWER, DIST3_EXT_LOWER	Attribute Value
Disturbance extent upper – upper bound of extent class	10 – 100
Disturbance extent lower – lower extent of extent class	1 - 95

2.3.19 Disturbance Year

Disturbance year is the year a disturbance event occurred. The disturbance year may be unknown. Three disturbance years can be identified, one for each disturbance event.

Field: DIST1_YR, DIST2_YR, DIST3_YR	Attribute Value
Disturbance Year – year that a disturbance event occurred.	1900 - 2020

3.0 ECOLOGICAL ATTRIBUTES

Ecological attributes are generally not included or are incompletely recorded in typical forest inventories across Canada. Two attributes have been included for CAS: ecosite and wetland. These attributes are to be translated or derived for CAS from other attributes whenever possible.

3.1 Wetland

The wetland classification scheme used for CAS follows the classes developed by the National Wetlands Working Group² and modified by Vitt and Halsey^{3,4}. The scheme was further modified to take into account coastal and saline wetlands. The CAS wetland attribute is composed of four parts: wetland class, wetland vegetation modifier, wetland landform modifier, and wetland local modifier.

Five major wetland classes are recognized based on wetland development from hydrologic, chemical, and biotic gradients that commonly have strong cross-correlations. Two of the classes; fen and bog, are peat-forming with greater than 40 cm of accumulated organics. The three non-peat forming wetland types are shallow open water, marsh (fresh or salt water), and swamp. A non-wetland class is also included. The Vegetation Modifier is assigned to a wetland class to describe the amount of vegetation cover. The Landform Modifier is a modifier label used when permafrost, patterning, or salinity are present. The Local Landform Modifier is a modifier label used to define the presence or absence of permafrost features or if vegetation cover is shrub or graminoid dominated.

The detailed wetland table, CAS code set, and CAS translation rule set are presented in Appendix 14. Not many forest inventories across Canada provide a wetland attribute. Some inventories have complete or partial wetland attributes while others will need to have wetland classes derived from other attributes or ecosite information. The level of wetland detail that is possible to describe from a particular inventory database is dependent on the attributes that already exist. A rule set for each province or territory that identifies a method to derive wetland attributes using forest attributes or ecosite data is presented in Appendix 15. The wetland derivation may not be complete nor will it always be possible to derive or record all four wetland attributes in the CAS database.

² National Wetlands Working Group 1988. Wetlands of Canada. Ecological Land Classification Series No. 24.

³ Alberta Wetland Inventory Standards. Version 1.0. June 1977. L. Halsey and D. Vitt.

⁴ Alberta Wetland Inventory Classification System. Version 2.0. April 2004. Halsey, et. al.

Field: WETLAND_CLASS	Attribute Value
Bog - > 40 cm peat, receive water from precipitation only, low in nutrients and acid, open or wooded with sphagnum moss	B
Fen - > 40 cm of peat, groundwater and runoff flow, mineral rich with mostly brown mosses, open, wooded or treed	F
Swamp - woody vegetation with ≥ 30 shrub cover or 6% tree cover. Mineral rich with periodic flooding and near permanent subsurface water. Various mixtures of mineral sediments and peat.	S
Marsh - emergent vegetation with < 30% shrub cover, permanent or seasonally inundated with nutrient rich water	M
Shallow Open Water - freshwater lakes < 2 m depth	O
Tidal Flats - ocean areas with exposed flats	T
Estuary - mixed freshwater/saltwater marsh areas	E
Wetland - no distinction of class	W
Not Wetland - upland areas	Z
Blank - no value	

Field: WETLAND_VEGETATION_MODIFIER	Attribute Value
Forested - closed canopy > 70% tree cover	F
Wooded - open canopy > 6% to 70% tree cover	T
Open Non-Treed Freshwater - < 6% tree cover with shrubs	O
Open Non-Treed Coastal - < 6% tree cover, with shrubs	C
Mud - no vegetation cover	M
Blank - no value	

Field: WETLAND_LANDFORM_MODIFIER	Attribute Value
Permafrost Present	X
Patterning Present	P
No Permafrost or Patterning Present	N
Saline or Alkaline Present	A
Blank – no value	

Field: WETLAND_LOCAL_MODIFIER	Attribute Value
Collapse Scar Present in permafrost area	C
Internal Lawn With Islands of Forested Peat Plateau	R
Internal Lawns Present (permafrost was once present)	I
Internal Lawns Not Present	N
Shrub Cover $\geq 25\%$	S
Graminoids With Shrub Cover < 25%	G
Blank – no value	

3.2 Ecosite

Ecosites are site-level descriptions that provide a linkage between vegetation and soil/moisture and nutrient features on the site. The detailed ecosite table is presented in Appendix 16. A common attribute structure for ecosite is not provided for CAS because ecosite is not available for most forest inventories across Canada nor can it be derived from existing attributes. An ecosite field is included in CAS to accommodate inventories that do include ecosite data. The original inventory attribute value is captured in CAS. For example some codes: Quebec = MS25S, Ontario = ES11 or 044 or S147N and Alberta = UFb1.2.

Field: ECOSITE	Attribute Value
Ecosite – an area defined by a specific combination of site, soil, and vegetation characteristics as influenced by environmental factors.	A-Z / 0-199

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APPENDIX 1

CURRENT CANADIAN INVENTORIES

Appendix 1 Current Canadian Inventories

JURISDICTION	INVENTORY TYPE	INVENTORY VERSION	TIME PERIOD	COMMENTS
British Columbia	Forest Cover Inventory	Periodic Revisions	1978 -1998	Completely digital. Class-based attributes up to 1987, then to absolute values. Province wide excluding parks and reserves. Conversion to VRI is ongoing.
	VRI – Vegetation Resource Inventory	2.4	1995 - ongoing	Completely digital, absolute values. Province wide may include parks and reserves. Some landbases have rolled FCI into VRI; therefore some VRI attributes will be missing.
Alberta	Phase 3	None	1972 - 1984	Hardcopy maps with digital database. Most maps are now converted to digital. Class-based attributes. Most of green zone. Updated for disturbance.
	AVI – Alberta Vegetation Inventory	2.1 and 2.1.1	1988 - ongoing	Completely digital, class-based and absolute attributes. Green zone and portions of the white zone.
		2.1+	1991 - ongoing	Industry initiatives. Same as AVI 2.1 but with enhancements and additional attributes. License holders within green zone. Can include wetland data.

Appendix 1 Current Canadian Inventories

JURISDICTION	INVENTORY TYPE	INVENTORY VERSION	TIME PERIOD	COMMENTS
Saskatchewan	UTM	None	1985 - 1995	Hardcopy maps (UTM grid) with digital database. Maps now converted to digital. Commercial forest zone.
	SFVI – Saskatchewan Forest Vegetation Inventory	4.0	1998 - ongoing	Completely digital. Commercial forest zone.
Manitoba	FLI – Forest Land Inventory	1.0, 1.1	2001 - ongoing	Completely digital, wooded and aspen parkland areas included. Some wetland data.
	FRI – Forest Resource Inventory	1.2, 1.3	1992 - 1998	Completely digital. 1.2 Height not recorded, age added. 1.3 Height and moisture added. Forested areas of province.
		1.0, 1.1	Prior to 1992	Completely digital. Age and height not recorded. Forest areas of province
Ontario	FRI – Forest Resource Inventory	Numerous revisions	1977 - 2000	Completely digital, forest land up to the Line of Undertaking. With or without ecosite data.
	FRI-FIM – Forest Resource Inventory with Forest Information Management attributes.	FIM1 and FIM 2	2006 - ongoing	Completely digital, re-inventory of FRI areas. Several new attributes incorporated into FRI, including, structure and ecosites.
	FRI-NBI – Forest Resource Inventory in Northern Boreal Initiative area	With or without FIM2	2000 - ongoing	Completely digital, FRI above Line of Undertaking. First Nations initiatives. Enhanced attributes with complete wetland attributes.

Appendix 1 Current Canadian Inventories

JURISDICTION	INVENTORY TYPE	INVENTORY VERSION	TIME PERIOD	COMMENTS
Quebec	TIE – Troisième Inventaire Écoforestier	3rd	1990 - 2008	Completely digital, 4 th inventory just underway.
Prince Edward Island	Forest Inventory	None	2000 - ongoing	Completely digital. 10 yr cycle
New Brunswick	NB Integrated Land Classification System	Periodic Revisions	1993 - ongoing	Completely digital. 10 yr cycle
Nova Scotia	Spatially Referenced Forest Resources Inventory	None	1987 – 1996 1996 – ongoing	Completely digital, updated on a ten-year cycle.
Newfoundland and Labrador	Forest Inventory	Periodic Revisions	Newfoundland 1996 -2006	Completely digital. 10 yr cycle.
			Labrador 1991 - ongoing	Indeterminate cycle.
Yukon Territory	YVI – Yukon Vegetation Inventory	2.1	1999 - ongoing	Completely digital, southeast and central Yukon and along Porcupine River.
Northwest Territories	NWTFVI – Northwest Territories Forest Vegetation Inventory	1.0, 1.01 1.2, 2.1, 2.1.1, 3.0	1994 - ongoing	Completely digital, commercial forest areas only along Slave, Mackenzie and Liard Rivers.
Prince Albert National Park	Prince Albert National Park Forest Cover Data	None	1968	Biophysical inventory at scale of 1:50,000. Digitized 1994. No updates. Overlay fire history. Can contain up to three cover types per polygon.
Wood Buffalo National Park	Integrated Resources Inventory	None	1975 - 1979	Biophysical inventory at 1:100,000 scale. Digitized 1986. No updates. Overlay fire history. Can contain up to seven cover types per polygon.

APPENDIX 2

DATA STRUCTURE AND DATA DICTIONARY

Appendix 2 Data Structure and Data Dictionary

Category	Attribute	Field Name	Field Type	Domain Values or Ranges	Description
HEADER (HDR)	Jurisdiction	JURISDICTION	C	BC,AB,SK,MB,ON QC,PE,NB,NS,NL YK,NT	Province, Territory, or National Park
	Coordinate System	COORDINATE_SYSTEM	C	UTM,BCGS,NTS OBM,TOWNSHIP	A set of numbers representing points in a space of given dimensions to establish position and referenced to a geographic grid. Grid systems include: Universal Transverse Mercator, British Columbia Geographic System, National Topographic System, Ontario Base Map system, and the Township system.
	Projection	PROJECTION	C	ALBERS,UTM	A function relating the points on a surface (plane, cylinder or cone) to points on another surface (spheroid or ellipsoid). Projection systems include Albers Equal-Area Conic projection and the Universal Transverse Mercator projection.
	Datum	DATUM	N	27,83	A set of constants specifying the coordinate system used for geodetic control. The North American Datum of 1927 or 1983.
	Owner of Inventory	INV_OWNER	C	PROV_GOV,FED_GOV,TERRITORY FN,INDUSTRY PRIVATE	Provincial government, federal government, territory government, first nations, industry or private.
	Owner of Land	OWNER_LAND	C	CROWN,PRIVATE MILITARY,FN	Crown, private, military or first nations.
	Permissions	PERMISSIONS	C	UNRESTRICTED RESTRICTED LIMITED	Permission to use the data is unrestricted, restricted or limited.

Appendix 2 Data Structure and Data Dictionary

Category	Attribute	Field Name	Field Type	Domain Values or Ranges	Description
HEADER (HDR) CON" T	Tenure Type	TENURE_TYPE	C	TFL,FL,TF,MF,FMA FMLA,SFL,PARK NBI,PRIVATE MILITARY,FN OTHER, NONE	Agreement or license to which the inventory was produced. Tree Farm License, Forest License, Tree Farm, Managed Forest, Forest Management Agreement, Forest Management Agreement License, Sustainable Forest License, National or Provincial Park, Northern Boreal Initiative, Private, Military, First nations or Métis area, Other type or no license.
	Inventory Type	INV_TYPE	CN	A-Z / 1-10	Inventory name or type of inventory.
	Inventory Version	INV_VERSION	N	A-Z /1.0-9.0	Standard and version of the standard used to create the inventory.
	Inventory Start Year	INV_START_YR	N	1960 -2020	Year inventory was started.
	Inventory Finish Year	INV_FINISH_YR	N	1960 - 2020	Year Inventory was completed.
	Inventory Update Year	INV_UPDATE_YR	N	1960 - 2020	Year inventory was updated.
	Inventory Acquisition Year	INV_ACQ_YR	N	2008 - 2020	Year inventory data was acquired for CAS
	Inventory Acquisition Id	INV_ACQ_ID	N	1 - 1000	Identification number assigned to inventory.
CAS BASE POLYGON ATTRIBUTES (CAS)	Original stand Identification	ORIGINAL_STAND_ID	N	1 – 10,000,000	Unique number for each polygon within the original inventory.
	CAS stand Identification	CAS_STAND_ID	N		Unique number of each polygon within CAS.
	Map sheet Identification	MAPSHEET_ID	CN		Map sheet identification according to original naming convention for an inventory.
	Identification	IDENTIFICATION_ID	N	1 - 1000	Unique number for a particular inventory section.
	Polygon Area	POLYGON_AREA	N	0.1 – 10,000	Area of a polygon in hectares.
	Polygon Perimeter	POLYGON_PERIMETER	N	0.1 - infinity	Perimeter of polygon in meters.
	Reference Year Min	REFERENCE_YEAR_MIN	N		Inventory reference year start
	Reference Year Max	REFERENCE_YEAR_MAX	N		Inventory reference year finish
	First Photo Acquisition Year	PHOTO_YEAR_MIN	N	1960 - 2020	Earliest year of aerial photo acquisition for inventory.
	Last Photo Acquisition Year	PHOTO_YEAR_MAX	N	1960 - 2020	Last year of aerial photo acquisition.
	Administration Subunit 1	ADM_UNIT_1	C		Inventory subunit administration boundary
	Administration Subunit 2	ADM_UNIT_2	C		Inventory subunit administration boundary

Appendix 2 Data Structure and Data Dictionary

Category	Attribute	Field Name	Field Type	Domain Values or Ranges	Description
FORESTED LAYER (LYR)	Stand Structure	STAND_STRUCTURE	C	S,M,C,H	Vertical pattern of organization of vegetation layers. Single layered, multi-layered, complex layered and horizontal layered.
	Stand s Structure Percent	STAND_STRUCTURE_PER	N	1 - 9	Percentage of polygon, in 10% increments, represented by each horizontal structure strata.
	Stand Structure Range	STAND_STRUCTURE_RANGE	N	1 - 9	Height range (m) around the midpoint height of a complex structured stand.
	Number of Layers	NUMBER_OF_LAYERS	N	1 - 9	Number of vegetation or non-vegetated layers identified in a polygon.
	Layer	LAYER	N	1 – 9, V	Each layer within a polygon is assigned a layer number with 1 being the uppermost layer unless it is a veteran layer (V). Also for biophysical Inventory
	Layer Rank	LAYER_RANK	N	1 - 9	Value assigned sequentially to layers with most important layer ranked first.
	Soil Moisture Regime	SMR	C	D,F,M,W,A	Available moisture supply for plant growth. Dry, Mesic (Fresh), Moist, Wet, and Aquatic.
	Crown Closure Lower Bound	CROWN_CLOSURE_LOWER	N	0 - 100	Estimate of percentage of ground area covered by vertical projection of crowns. Lower bound of crown closure class.
	Crown Closure Upper Bound	CROWN_CLOSURE_UPPER	N	0 - 100	Estimate of percentage of ground area covered by vertical projection of crowns. Lower bound of crown closure class.
	Height Lower Bound	HEIGHT_LOWER	N	0 -100	Average stand height by layer of the dominant and codominant trees (leading species) or other vegetation. Lower bound of height class.
	Height Upper Bound	HEIGHT_UPPER	N	0 - 100	Average stand height by layer of the dominant and codominant trees (leading species) or other vegetation. Lower bound of height class.
Species 1	SPEC1	C	e.g. TREM POPU	Leading or only species. First four letters of Genus followed by the first four letters of Species. See CAS species list.	

Appendix 2 Data Structure and Data Dictionary

Category	Attribute	Field Name	Field Type	Domain Values or Ranges	Description
FORESTED LAYER (LYR) CONT	Species 1 Percent	SPEC1_PER	N	10 - 100	Percent species composition in 10% increments.
	Species 2	SPEC2	C	See CAS species list.	First four letters of Genus followed by the first four letters of Species.
	Species 2 Percent	SPEC2_PER	N	10 - 50	Percent species composition in 10% increments
	Species 3	SPEC3	C	See CAS species list.	First four letters of Genus followed by the first four letters of Species.
	Species 3 Percent	SPEC3_PER	N	10 - 30	Percent species composition in 10% increments
	Species 4	SPEC4	C	See CAS species list.	First four letters of Genus followed by the first four letters of Species.
	Species 4 Percent	SPEC4_PER	N	10 - 20	Percent species composition in 10% increments
	Species 5	SPEC5	C	See CAS species list.	First four letters of Genus followed by the first four letters of Species.
	Species 5 Percent	SPEC5_PER	N	10 - 20	Percent species composition in 10% increments
	Species 6	SPEC6	C	See CAS species list.	First four letters of Genus followed by the first four letters of Species.
	Species 6 Percent	SPEC6_PER	N	10	Percent species composition in 10% increments
	Species 7	SPEC7	C	See CAS species list.	First four letters of Genus followed by the first four letters of Species.
	Species 7 Percent	SPEC7_PER	N	10	Percent species composition in 10% increments
	Species 8	SPEC8	C	See CAS species list.	First four letters of Genus followed by the first four letters of Species.
	Species 8 Percent	SPEC8_PER	N	10	Percent species composition in 10% increments
	Species 9	SPEC9	C	See CAS species list.	First four letters of Genus followed by the first four letters of Species.
	Species 9 Percent	SPEC9_PER	N	10	Percent species composition in 10% increments
	Species 10	SPEC10	C	See CAS species list.	First four letters of Genus followed by the first four letters of Species.
	Species 10 Percent	SPEC10_PER	N	10	Percent species composition in 10% increments

Appendix 2 Data Structure and Data Dictionary

Category	Attribute	Field Name	Field Type	Domain Values or Ranges	Description
FORESTED LAYER (LYR) CON'T	Origin Lower Bound	ORIGIN_LOWER	N	0 - 2020	Average age of dominant and codominant trees of the leading species. Lower bound of age class.
	Origin Upper Bound	ORIGIN_UPPER	N	0 - 2020	Average age of dominant and codominant trees of the leading species. Upper bound of age class.
	Site Class	SITE_CLASS	C	U,P,M,G	Estimate of potential productivity of polygon for tree growth. Unproductive, Poor, Medium, and Good.
	Site Index	SITE_INDEX	N	0 - 99	Estimate of site productivity of polygon for tree growth based on a reference age.
	Unproductive Forest	UNPRODUCTIVE_FOREST	C	TM,OM,AL,SD SC,NP,P	Not capable of growing trees for forest operations. Treed Muskeg, Open Muskeg, Alpine Forest, Scrub Deciduous, Scrub Coniferous, Non Productive Forest, Productive Forest.
NON-FOREST LAND (NFL)	Naturally Non-Vegetated	NATURALLY_NON_VEG	C	AP,LA,RI,OC RK,SD,SI,SL EX,BE,WS,FL IS,TF	Naturally non-vegetated land. Alpine, lake, River, Ocean, Rock, Sand, Snow, Slide, Exposed Land, Beach, Water Sediments, Flood, Island, Tidal Flats
	Non-Forest Anthropogenic	NON_FOREST_ANTHRO	C	IN,FA,CL,SE,L G,BP,OT,	Non-vegetated anthropogenic land. Industrial, Facility/Infrastructure, Cultivated, Settlement, Lagoon, Borrow Pit, Other
	Non-Forested Vegetated	NON_FORESTED_VEG	C	ST,SL,HF,HE HG,BR,OM,TN	Non-forested vegetated land. Tall Shrub, Low Shrub, Forbs, Herbs, Graminoids, Bryoid, Open Muskeg, Tundra
DISTURBANCE (DST)	Disturbance History 1	DIST1	C	CO,PC,BU,WF DI,IK,FL,WE SL,OT,DT,SI	Type of disturbance that has occurred. Cut, Partial, Cut, Burn, Windfall, Disease, Insect, Flood, Weather, Slide, Other, Dead Tops or Trees, Silviculture Treatments. Oldest disturbance recorded first.
	Disturbance Year 1	DIST1_YEAR	N	1900 2020	Year disturbance event occurred.
	Disturbance Extent 1 Lower	DIST1_EXTENT_LOWER	N	1 - 95	Extent of disturbance. Lower bound of class.
	Disturbance Extent 1 Upper	DIST1_EXTENT_UPPER	N	10 - 100	Extent of disturbance. Upper bound of class.

Appendix 2 Data Structure and Data Dictionary

Category	Attribute	Field Name	Field Type	Domain Values or Ranges	Description
DISTURBANCE (DST) CONT	Disturbance History 2	DIST2	C	CO,PC,BU,WF DI,IK,FL,WE SL,OT,DT,SI	Type of disturbance that has occurred.
	Disturbance Year 2	DIST2_YEAR	N	1900 - 2020	Year disturbance event occurred.
	Disturbance Extent 2 Lower	DIST2_EXTENT_LOWER	N	1 - 95	Extent of disturbance. Lower bound of class.
	Disturbance Extent 2 Upper	DIST2_EXTENT_UPPER	N	10 - 100	Extent of disturbance. Upper bound of class.
	Disturbance History 3	DIST3	C	CO,PC,BU,WF DI,IK,FL,WE SL,OT,DT,SI	Type of disturbance that has occurred.
	Disturbance Year 3	DIST3_YEAR	N	1900 - 2020	Year disturbance event occurred.
	Disturbance Extent 3 Lower	DIST3_EXTENT_LOWER	N	1 - 95	Extent of disturbance. Lower bound of class.
	Disturbance Extent 3Upper	DIST3_EXTENT_UPPER	N	10 - 100	Extent of disturbance. Upper bound of class.
ECOLOGICAL (ECO)	Wetland Class	WETLAND_CLASS	C	B,F,S,M O T E W Z	Wetland type. Bog, Fen, Swamp, Marsh, Shallow Open Water, Tidal Flats, Estuary, Wetland, Not Wetland
	Wetland Vegetation Modifier	WETLAND_VEG_MOD	C	F,T,O,C,M	Amount of vegetation cover. Forested, Treed, Open Non Treed Freshwater, Open Non Treed Coastal, Mud
	Wetland Landform Modifier	WETLAND_LAND_MOD	C	X,P,N,A	Modifying agent to wetland. Permafrost Present, Patterning Present, No permafrost or patterning present, Alkaline or Saline Present
	Wetland Local Modifier	WETLAND_LOCAL_MOD	C	C,R,I,N,S,G	Indicates the presence or absence of permafrost features and type of non tree cover present.
	Ecosite	ECOSITE	CN	A-Z / 0 - 199	Ecosite identified for a polygon.

APPENDIX 3

STAND STRUCTURE – SUMMARY OF CANADIAN FOREST INVENTORIES

(UNDER SEPARATE COVER - SEE EXCEL SPREADSHEET)

Appendix 3 Stand Structure - Summary of Canadian Forest Inventories

PROVINCE	STANDARD	FIELD(S)			RANK	COMMENTS	CAS INVENTORY
		STRUCTURE	LAYER	NUMBER OF LAYERS			
BC	For. Cov. Inv.	S, M, C	Layer	No Field	1,2	Up to 2 layers identified	NO LIMIT TO LAYERS Need to identify rank
	VRI	S,M	Layer_cnt	Layers_id 0-9,V	1,2,3-9	11 Layers + Vertical Complexity Code	
AB	Phase 3	S,M	No Field	No Field	-	Up to 2 layers identified	Need to identify structure type, i.e if Single, multi, complex or horizontal STRUCTURE TYPE
	AVI 2.1	S,M,C,H	No Field	No Field	-	Up to 2 layers identified	
	AVI 2.1 +	S,M,C,H	No Field	No Field	-	Up to 2 layers identified	
SK	UTM	NONE	Default to single (S) layer	No Field	-	1 Layer with bracket to indicate understory	NUMBER OF LAYERS
	SFVI 4.0	S,M,C	Layer	No Field	-	Up to 7 layers identified	STRUCTURE % OR RANGE
MB	Pre 1998	NONE	Default to single (S) layer	No Field	-	Only 1 layer identified	LAYER
	FLI	S,V,C,M,U	CANLAY	SEQ 1,2,3,4,5	CANRANK 1-5	Up to 5 layers; to determine the number of layers refer to SEQ	LAYER RANK
ON	FRI	NONE	Default to single (S) layer	No Field	-	Only 1 layer identified	
	FRI FIM	VERT	SI, SV, TT, MV, CX	No Field	-	Up to 2 layers identified	
	FRI NBI	S,M	No Field	No Field	1,2	Up to 2 layers with Vertical Complexity Code	
QC	3rd	Equienne (even aged), Inequienne (uneven aged) young=JIN or old=VIN, Etagee (Multi-layered). No field for structure or layer, it is implied via age class.			Only one layer described	2 layers can be implied via age class; however second layer is not described	
PE	2000	History1	No Field	No Field	1	(2S) indicates two-storied stand, no 2nd layer is described	
NB	Pre 2003	NONE	Default to single (S) layer	No Field	-	Only 1 layer identified	
	2003	1,2,3	No Field	No Field	-	1 Layer with structure code 1= one canopy layer, 2= two layers, 3= multi-canopied	
NS	Pre 2006+2006	Two Story ALL HEIGHTS/AGE	No Field	No Field	-	2 Layers Second story species composition = S, SH, HS, H	
NL	2005	NONE	Default to single (S) layer	No Field	-	Only 1 layer identified	
WBNP	1979	NONE	No Field	vegct		Seven veg communities per polygon. Term 'structure' refers to different field type	
PANP	1968	Overstory, Understory, Ground Vegetation	C1, C2, C3; U1, U2, U3; G1, G2, G3	No Field		Three layers. Up to three coverages with or without other layers per poly identified.	
YT	2.1	NONE	Default to single (S) layer	No Field	-	Only 1 layer identified	
NT	3.0	STRUCTURE	S, M, H, C	No Field	-	Up to 2 layers identified	

APPENDIX 4

SOIL MOISTURE REGIME – SUMMARY OF CANADIAN FOREST INVENTORIES AND CAS CONVERSION

(UNDER SEPARATE COVER - SEE EXCEL SPREADSHEET)

Appendix 4 Soil Regime Moisture - Summary of Canadian Forest Inventories and CAS Conversion

															COMMON: MOISTURE_REGIME							
															D	F	M	W	A			
															DRY	MESIC	MOIST	WET	AQUATIC			
PROVINCE	STANDARD	FIELD	CODES												CONVERSION TO CAS							
BC	Forest Cover Inventory	NO FIELD																				
	VRI	Soil_Moisture_Regime	VX 0	X 1	SX 2	SM 3	M 4	SG 5	HG 6	SD 7			HD 8				VX, X, SX = D	SM, M=F	SG, HG=M	SD, HD=W		
AB	AVI 2.1	MOISTURE REGIME		D			M					W			A	D=D	M=F	W=W	A=A			
	AVI2.1+	MOISTURE REGIME	VX 0	X 1	SX 2	SM 3	M 4	SG 5	HG 6	SD 7			HD 8			0,1,2 = D	3,4=F	5=M	6,7=W	8=A		
	PHASE 3	NO FIELD																				
SK	SERM	NO FIELD	CAN DERIVE FROM DRINAGE CLASS AND UNPRODUCTIVE WETLAND TYPES										Very poorly drained = W Poorly drained = M		Imperfectly drained = M Moderately drained = F		Well drained = F Rapidly drained = D		Very rapidly drained = D			
	SFVI 4.0	Soil_Moisture_Regime	VD	D	MF	F	VF	MM	M	VM	MW	W	VW			VD, D=D	MF, F, VF=F	MM, M, VM-M	MW, W, VW=W			
MB	Pre 1997	NO FIELD																				
	1997	MOIST	1=arid	2=dry						3=moist						1=D	2=D	3=M	4=W			
	FLI	MR	D			F	V	M				W			D=D	W=W	F,V=F	M=M	W=W			
ON	FRI	NO FIELD (CAN DERIVE FROM ECOSITE)																				
	FRI FIM	NO FIELD (CAN DERIVE FROM ECOSITE)																				
	FRI NBI	Soil_Moisture_Regime	VD	D	MF	F	VF	MM	M	VM	MW	W	VW			VD, D=D	MF, F, VF=F	MM, M, VM=M	MW, W, VW=W			
QC	3rd Inventory	RHY_CO Regime Hydrique	1 X	2 SX	SM	3 M							4 SH		5 W		1,2=D	3=F	4=M	5=W		
		Class de Drainage	Moisture can also be derived from drainage class (CDR_CO): Use the first number of the two number code.													0,1=D	2,3=F	4=M	5,6=W			
PE	2000	NO FIELD																				
NB	2003	NO FIELD																				
NS	2006	NO FIELD																				
NL	2005	NO FIELD	Identifies W (wet) and D (dry) Biophysical Class for Non Commercial Forest Land														D=D		W=W			
WBNP	1979	v#moi	Describes vegetation class moisture regime. Values range from 0 to 3 with 1 being wettest and 3 the driest. Zero is associated with water and unclassified areas.										Do not confuse with moist field		1=W	2=F	3=D	0=blank				
PANP	1968	NO FIELD	Identifies upland and lowland sites (wet sites). Can derive a wet moisture using lowland site field and leading species. Lowland sites=wet (W), leading species larch,larch black spruce, and black spruce larch=wet																			
YT	2.1	SMR		D									M		W		A	D=D	M=F	W=W	A=A	
NT	3.0	MOISTURE	VX	X	SX	SM							M	SG	HG	SD	HD		VX, X, SX=D	SM, M=F	SG, HG=M	SD, HD=W

APPENDIX 5

CROWN CLOSURE – SUMMARY OF CANADIAN FOREST INVENTORIES

(UNDER SEPARATE COVER - SEE EXCEL SPREADSHEET)

APPENDIX 6

STAND HEIGHT – SUMMARY OF CANADIAN FOREST INVENTORIES

(UNDER SEPARATE COVER - SEE EXCEL SPREADSHEET)

Appendix 6 Stand Height - Summary of Canadian Forest Inventories

PROVINCE	STANDARD	TYPE	FIELD	COMMON INVENTORY LOWER AND UPPER BOUND (Meters) (Lower bound is ≥ and < for upper bound)												
BC	Forest Cover Inventory	CLASS	HEIGHT	1 0-10.4	2 10.5-19.4	3 19.5-28.4	4 28.5-37.4	5 37.5-46.4	6 46.5-55.4	7 55.5-64.4	8 64.5-INFINITY					
	VRI	Nearest 0.1m	HEIGHT	0.1 +	Vertical Complexity code will give idea of stand structure height variability											
AB	Phase 3	CLASS	HEIGHT	0 0-6.0	1 6.1-12.0	2 12.1-18.0	3 18.1 - 24.0	4 24.1-30.0	5 30.1-INFINITY							
	AVI 2.1	Nearest 1m	HEIGHT	1+	Also have complex height range around the stand mid-point when STAND STRUCTURE=C											
	AVI 2.1+	Nearest 0.1m	HEIGHT	0.5+	Also have complex height range around the stand mid-point when STAND STRUCTURE=C											
SK	UTM	CLASS	HEIGHT	5 2.5 - 7.5	10 7.6-12.5	15 12.6 - 17.5	20 17.6 - 22.5	25 22.6-INFINITY								
	SFVI 4.0	Nearest 1m	HEIGHT	1+	Can also have complex (Stand Structure=C) height tolerance around the stand mid-point											
MB	Pre 1997	NONE	No Field	Height was not recorded prior to 1997												
	1997	Nearest 1m	HT	1+												
	FLI	Nearest 1m	HEIGHT	1+	Also have complex minimum and maximum height range (COMHT) when CANLAY = C											
ON	FRI	Nearest 1m	HT	1+												
	FRI FIM	Nearest 1m	HT	1+												
	NBI	Nearest 1m	HT	0.1+												
QC	3rd	CLASS	CHA_CO Hauteur	6 <4	5 4-7	4 7-12	3 12-17	2 17-22	1 22-INFINITY							
PE	Pre 2000	CLASS	HEIGHT	1 0.0-5.0	2 5.1-10.0	3 10.1 15.0	4 15.1-20.1	5 20.1-INFINITY								
	2000	Nearest 1m	HEIGHT	1+												
NB	Pre 2003	NONE	No Field	Not interpreted, but incorporated in age and site class data												
	2003	Nearest 1m	HEIGHT	1+												
NS		Nearest 1m	HEIGHT	1+												
	2006	Nearest 1m	HEIGHT	1+												
NL	2005	CLASS	HEIGHT	1 0 - 3.5	2 3.6-6.5	3 6.6-9.5	4 9.6-12.5	5 12.6-15.5	6 15.6-18.5	7 18.6-21.5	8 21.6- INFINITY	Codes 1-5 also assigned to non commercial forest				
WBNP	1979	CLASS	v#htc	0 <1	1 1 - 5	2 6 - 10	3 11 - 15	13 1 - 15	14 1 - 20	23 6 - 10	24 6 - 15	34 11 - 20	35 11 - 20	45 16 - 26		
PANP	1968	CLASS	C1HT, C2HT, C3HT; U1HT, U2HT, U3HT	1 0 - 6	3 7 - 12	5 13 - 18	7 > 19							Overstory and one understory height possible per polygon		
YT	2.1	Nearest 1m	AVE_HT	1+	Also have minimum and maximum height fields											
NT	3.0	Nearest 1m	HEIGHT	1+	Can also have complex (Stand Structure=C) height range around the stand mid-point											

APPENDIX 7

SPECIES COMPOSITION – SUMMARY OF CANADIAN FOREST INVENTORIES

CAS SPECIES PERCENT TRANSLATION
(For Forest Inventories that do not provide species percent)

(UNDER SEPARATE COVER - SEE EXCEL SPREADSHEET)

Appendix 7 Species Composition - Summary of Canadian Forest Inventories

PROVINCE	STANDARD	FIELD	SPECIES COMPOSITION INFORMATION (1)*
BC	Forest Cover Inventory	Species Species%	5 Species to nearest 10% by volume. Composition codes 1(6-15), 2(16-25), 3(26-35), 4(36-45), 5(46-55), 6(56-65), 7(66-75), 8(76-85), 9(86-95), 10(96-100).
	VRI 2.4	Species Species%	6 Species to nearest 1% by basal area or density (trees ave ht< 2m).
AB	Phase 3	S1,S2,S3,S4 U1,U2,U3,U4	4 Species based on % of gross roundwood volume and/ or percentage of crown closure (0 and 1 ht class). Up to 3 species, each comprising at least 20% of stand content and no more than 1 species constituting 11%-20%. 10% or less is not recorded but included with similar species. (SEE RULES FOR SPECIES % ASSIGNMENT).
	AVI 2.1	Species Species%	5 Species to nearest 10% based on crown closure. Composition codes 1(6-15), 2(16-25), 3(26-35), 4(36-45), 5(46-55), 6(56-65), 7(66-75), 8(76-85), 9(86-95), 10(96-100).
	AVI 2.1+	Species Species%	5 Species same as AVI 2.1.
SK	UTM	Species	5 Species Described by 2-part cover type; a general designation of forest type (Softwood (S), Mixedwood (SH,HS) and Hardwood (H)) and a specific designation of species group (Primary and Secondary) Primary species have $\geq 25\%$ of volume of stand. Secondary species have $<25\%$ of volume of stand. Understory species (Field U1 or U2) are designated by species symbol in brackets on maps.
	SFVI	Species Species %	6 Species to nearest 10% by crown closure.
MB	Prior 1998	Cover type Sub type Species Comp	5 Species to nearest 10% by basal area; also see cover type/sub type for general species cover- Look in COVERTYPE field, the first two digits define tree cover: 10 cover type codes (0-3=S, 4-7=M softwood leading, 8=N hardwood leading, 9=H) 22 softwood (S), 24 mixedwood (M), 9 mixedwood (N), 15 hardwood (H) subtypes
	FLI	SP# SP# PER	6 Species to nearest 10% by crown closure. Numeric codes from 1 to 10 representing 10% cover classes are used.
ON	FRI	SPC	10 Species to nearest 10% by basal area.
	FRI FIM	OSPCOMP USPCOMP	10 Species to nearest 10% by crown closure.
	FRI NBI	SPC	10 Species to nearest 10% by crown closure.
QC	TIE (3rd)	GES_CO	Species designated in terms of cover type, species groups and subgroups. (Codes may represent a combination of species or species association). Plantation spp and certain islands with white spruce are identified separately. Cover type: Softwood (3 types), mixedwood (47 types), hardwood (16 types) Species group: Major species in stand based on % crown closure 75% or 50% Sub group: Secondary species at least 25% of cover type. Three species codes can be entered, a code can represent a species or group.
	QIE (4th)	GES_CO	Same set up as per the 3rd, however species list and codes are revised and better defined - moving towards species % by crown closure.
PE	Pre 2000	Cover Class	3-5 Species to nearest 10% by crown closure. First species designates major component of stand, second species important minor component, third any other component. First and second must represent $\geq 75\%$.
	2000	CoverClass# Percent#	7 Species to nearest 10% by crown closure.
NB	Pre 2003	Species	3 Species to nearest 10% by gross merch. volume. Minimum requirement of 20% per species, 18 species and species groups recognized, hardwoods not specified by species but by 3 groups (TH,IH, H) for productive forest stand types.
	2003	Species	5 Species FST1 (all merchantable) FST2 (with unmerchantable understory) FST3 (no merchantable component), non-productive forest does not identify species beyond hardwood/ softwood
NS	Pre 2006	Species	4 Species to nearest 10% of crown composition
	2006	Species	4 Species to nearest 10% of crown composition. For two-storied stands the second story identifies only broad species groups (S, SH, HS, H).
NL	2005	Species	3 Species based on total basal area, any single species must comprise $\geq 25\%$.
WBNP	1979	v#sp#	4 Species per each vegetation plant community (up to seven:V1 to V7) based on percent cover. Note: also includes non tree codes for Alder(AL), Willow(WW), Ericaceous(ER), and Graminoid(GR). Birch, balsam fir and larch not listed
PANP	1968	C#SPEC U#SPEC	Three species, each must represent at least 20% of canopy. Note: codes 0, WATER, and ISLAND represent non forest or non vegetated cover.
YT	2.1	SP # SP# PER	4 Species to nearest 10% by crown closure.
NT	3.0	SP # SP# PER	4 Species to nearest 10% by crown closure.

* (1) Numeric codes from 1 to 10 representing 10% cover classes are used for many inventories - will need to first convert to percent (%) prior to entry into CAS.

Sept 7 2010

Appendix 7 CAS SPECIES PERCENT TRANSLATION

(For forest inventories that do not provide species percent)

PROVINCE	STANDARD	Percent Translation for CAS					
AB	Phase 3	Major species $\geq 25\%$	Minor species < 25%				
		If: 1 major species =	100%				
		2 major species	1st=65%	2nd=35%			
		3 major species	1st=43%	2nd=30%	3rd=27%		
		1 major, 1 minor	1st=85%	2nd=15%			
		2 major, 1 minor	1st=55%	2nd=30%	3rd=15%		
		3 major, 1 minor	1st=30%	2nd=30%	3rd=25%	4th=15%	
		1 major, 3 minor	1st=70%	2nd=10%	3rd=10%	4th=10%	
		1 major, 2 minor	1st=75%	2nd=15%	3rd=10%		
2 major, 2 minor	1st=40%	2nd=35%	3rd=15%	4th=10%			
SK (If converting using a map label)	UTM	If: 1 species=100%	S=Softwood H=Hardwood				
		PURE					
		2 species and primary	is either S or H	1st=80%	2nd=20%		
		3 species and primary	is either S or H	1st=60%	2nd=20%	3rd=20%	
		4 species and primary	is either S or H	1st=50%	2nd=20%	3rd=15%	4th=15%
		MIXEDWOOD					
				SH (softwood dominant)		HS (hardwood dominant)	
		2 species and primary	is either SH or HS	1st=60%	2nd=40%		
3 species and primary	is either SH or HS	1st=40%	2nd=20%	3rd=40%			
4 species and primary	is either SH or HS	1st=35%	2nd=15%	3rd=35%	4th=15%		
		Primary Species #1 (SP 10), #2 (SP11),and #3 (SP12); Secondary Species #1 (SP20) and #2 (SP21). Secondary Species 10 to 25 %					
		If: PURE species (i.e. Softwood S or Hardwood H). Species field position is determined by percent contribution of species:					
		1 species	SP10=100%				
		2 species, one primary and one secondary, either all S or all H	SP10=80%	SP 20=20%			
		2 species, both primary, except Jack Pine and Black Spruce	SP 10=70%	SP 11=30%			

SK (If using data base)	UTM	2 species, both primary and are Jack Pine and Black Spruce	SP10=60%	SP11=40%		
		3 species all primary is either S or H	SP10=40%	SP11=30%	SP12=30%	
		3 species, 2 primary is either S or H	SP10=50%	SP11=30%	SP20=20%	
		3 species, 1 primary is either S or H	SP 10=70%	SP 20=20%	SP 21=10%	
		4 species, 2 or 3 primary, either S or H	SP 10=40%	SP 11=30%	SP 20=20%	SP 21=10%
		4 species, 1 primary, either S or H	SP 10=50%	SP 11=20%	SP 20=20%	SP 21=10%
		5 species, 1 primary, either S or H	SP 10=50%	SP 11=20%	SP 12=20%	SP20=20% SP21=10%
		If: MIXEDWOOD (i.e. softwood/hardwood SH or hardwood/softwood HS). Total H and S must be $\geq 30\%$				
		2 species, both must be primary	SP 10=60%	SP 11=40%		
		3 species, first species is S or H, other two opposite of first	SP 10=60%	SP 11=30%	SP 20=10%	
		3 species, first two species S or H, third is opposite of first two	SP 10=40%	SP 20=20%	SP 11=40%	
		4 species, first two are S or H and others opposite of first two	SP 10=30%	SP 20=20%	SP 11=30%	SP 21=20%
		4 species, first three are S or H, fourth opposite of first three	SP 10=40%	SP 20=20%	SP 21=10%	SP 11=30%
		4 species, first species is S or H, last three are opposite the first	SP 10=50%	SP 11=30%	SP 20=10%	SP 21=10%
		5 species, first four are S or H, fifth is opposite of first four	SP 10=30%	SP 12=20%	SP 20=10%	SP 21=10% SP 11=30%
		5 species, first three are S or H, last two are opposite of others	SP 10=30%	SP 12=20%	SP 20=10%	SP 11=30% SP 21=10%
		5 species, first two are S or H, last three are opposite of first two	SP 10=30%	SP 12=20%	SP 11=30%	SP 20=10% SP 21=10%
5 species, first species is S or H, last four are opposite	SP 10=40%	SP 11=30%	SP 12= 10%	SP 20=10% SP 21=10%		
QC	3rd (TIE)	If: Single species or group=100% (Note: If only a single species, then second species is also filled in with the first species, (e.g. BbBb)				
		If: Two species, one major and one minor; e.g. BbBbS, PePeG	1st=80%	2nd=20%		
		If: 2 species or group or 1 spp and 1 spp group, e.g.PbPg or SE or PbE	1st=65%	2nd=35%		
		If: 1st spp is followed by a plus (+) sign or a one (1), e.g.Pr+Pe	1st=70%	2nd=30%		
		If: 2nd spp is followed by plus (+) sign, e.g. RBj+	1st=60%	2nd=40%		
		If: 2nd spp is followed by minus (-) sign, e.g. CBj-	1st=70%	2nd=30%		
		If: There are 3 spp and the 2nd spp is the same as the 1st, then only tranfer the 1st and 3rd spp to CAS as spp 1 and 2	1st=65%	2nd=35%		
		If: 1st spp is followed by a minus (-) sign then a third generic spp must be added in place of the minus sign as species 2 in the CAS species, e.g. Pb-Bb becomes PbRBb	1st=35%	2nd=35%	3rd=30%	
If: 3 species or 2 species and 1 species group, e.g.BbPePg	1st=51%	2nd=25%	3rd=24%			

		<p>If: Softwood is at least 3 species and it is assigned R followed by the most dominant species, e.g. RPb, then assign Pb to CAS species 1 and R to CAS species 2 and 3.</p> <p>1st=51% 2nd=25% 3rd=24%</p>
WBNP	1979	<p>Up to four species listed.</p> <p>If: 1 species = 100%</p> <p>If: 2 species 1st=70% 2nd=30%</p> <p>If: 3 species 1st=40% 2nd=30% 3rd=30%</p> <p>If: 4 species 1st=35% 2nd=35% 3rd=15% 4th=15%</p>
PANP	1968	<p>Up to three species listed.</p> <p>If: 1 species = 100%</p> <p>If: 2 species, pine (PB) and black spruce (PM) 1st=60% 2nd=40%</p> <p>If: 2 species, any other combination 1st=70% 2nd=30%</p> <p>If: 3 species, any combination 1st=50% 2nd=30% 3rd=20%</p>
NL	2005	<p>If: 1 species ($\geq 75\%$ of the basal area)=100% E.g. bF PURE</p> <p>If: 2 species (at least 50% of BA is 1st species) 1st=60% 2nd=40% E.g. bFwB</p> <p>If: 3 species E.g. bFbSwB 1st=40% 2nd=30% 3rd=30%</p>

APPENDIX 8

CAS SPECIES LIST AND CODES

(UNDER SEPARATE COVER - SEE EXCEL SPREADSHEET)

Appendix 8 CAS Species List and Codes

COMMON NAME		SCIENTIFIC NAME	TYPE (N, V, X E, G) **	CAS COMMON CODE	ENGLISH INVENTORY CODES	QUEBEC INVENTORY CODES	SOURCE INVENTORY LIST	COMMENTS
ENGLISH	FRENCH *							
Western red cedar		<i>Thuja plicata</i>	N	Thuj plic	Cw		BC, AB	
Yellow cedar		<i>Chamaecyparis nootkatensis</i>	N	Cham root	Yc		BC	
Eastern white cedar	Thuja occidentalis	<i>Thuja occidentalis</i>	N	Thuj occi	Ca, eC, EC, CE, Cw	To, ThO, C	ON, QC, PE, NB, NS	
Eastern red cedar		<i>Juniperus virginiana</i>	N	Thuj juni	Cr, Cer		ON	
Douglas-fir		<i>Pseudotsuga menziesii</i>	N	Pseu menz	Fd, DF		BC, AB, PE, NS	
Coastal Douglas-fir		<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	V	Pseu menm	Fdc		BC	
Interior Douglas-fir		<i>Pseudotsuga menziesii</i> var. <i>glauca</i>	V	Pseu menq	Fdi, Fd		BC, AB	
Amabilis fir		<i>Abies amabilis</i>	N	Abie amab	Ba		BC	
Grand fir		<i>Abies grandis</i>	N	Abie gran	Bg		BC	
Subalpine fir, alpine fir		<i>Abies lasiocarpa</i>	N	Abie lasi	Bl, F, Fa		BC, AB, YT, NT	
Balsam fir	Sapin baumier	<i>Abies balsamea</i>	N	Abie bals	Fb, bF, BF, Bf, Bb, AB	Sb, SaB	AB, SK, MN, ON, QC, PE, NB, NS, NL, NT, PANP	
Mountain hemlock		<i>Tsuga mertensiana</i>	N	Tsug mert	Hm		BC	
Western hemlock		<i>Tsuga heterophylla</i>	N	Tsug hete	Hw		BC, AB	
Eastern hemlock	Pruche de l'est	<i>Tsuga canadensis</i>	N	Tsug cana	He, eH, EH, HE	Pu, PrU	ON, QC, PE, NB, NS	
Mountain x western hemlock		<i>Tsuga mertensiana</i> x <i>heterophylla</i>	X	Tsug merx	Hxm		BC	
Rocky mountain juniper		<i>Juniperus scopulorum</i>	N	Juni scop	Jr		BC, AB	
Alpine larch		<i>Larix laricina</i>	N	Lari lyal	La		BC, AB	
Tamarack, Eastern larch	Mélieze laricin	<i>Larix laricina</i>	N	Lari lari	Ll, TL, La, lL, LA, LL	MI, Me, MeL	BC, AB, SK, MN, ON, QC, PE, NB, NS, NL, YK, NT, PANP	
Western larch		<i>Larix occidentalis</i>	N	Lari occi	Lw, wL, WL		BC, AB, NS	
Jack pine	Pin gris	<i>Pinus banksiana</i>	N	Pinu bank	Pj, JP, jP, PB, PN	Pg, PiG	BC, AB, SK, MN, ON, QC, PE, NB, NS, NL, YK, NT, WBNP, PANP	
Limber pine		<i>Pinus flexilis</i>	N	Pinu flex	Pf		BC, AB	
Lodgepole pine		<i>Pinus contorta</i>	N	Pinu cont	Pi, IP, LP		BC, AB, YT, PE, NL, YK, NT	
Shore pine		<i>Pinus contorta</i> var. <i>contorta</i>	V	Pinu conc	Pic		BC	
Lodgepole x jack pine		<i>Pinus x murraybanksiana</i>	X	Pinu mux	Pxj		BC	
Western white pine		<i>Pinus monticola</i>	N	Pinu mont	Pw		BC	
Eastern white pine	Pin blanc	<i>Pinus strobus</i>	N	Pinu stro	Pw, wP, WP	Pb, PiB	ON, QC, PE, NB, NS, NL	
Whitebark pine		<i>Pinus albicaulis</i>	N	Pinu albi	Pa		BC, AB	
Yellow pine (Ponderosa)		<i>Pinus ponderosa</i>	N	Pinu pond	Py		BC	
Red pine	Pin rouge	<i>Pinus resinosa</i>	N	Pinu resi	Pr, RP, rP	Pr, PIR	ON, QC, PE, NB, NS, NL	
Pitch pine	Pin rigide (pin des corbeaux)	<i>Pinus rigida</i>	N	Pinu rigi	Pp	Pc, PID	ON, QC	
Paper birch, white	Bouleau à papier, Bouleau blanc	<i>Betula papyrifera</i>	N	Betu papy	Ea, WB, wB, Bw, Ep, BP	Bp	BC, AB, SK, MN, ON, QC, PE, NB, NS, NL, YK, NT, PANP	
Alaska paper birch		<i>Betula neolaskana</i>	N	Betu neoa	Ep, Ea		BC	
Alaska x paper birch hybrid		<i>Betula x winteri</i>	X	Betu winx	Exp		BC	
Cherry birch		<i>Betula lenta</i>	N	Betu lent	Bc		ON	
Grey birch	Bouleau gris	<i>Betula populifolia</i>	N	Betu popu	Bg, gB, GB	Bg	ON, QC, PE, NS	
Water birch		<i>Betula occidentalis</i>	N	Betu occi	Ew		BC	
Yellow birch	Bouleau jaune	<i>Betula alleghaniensis</i>	N	Betu alle	By, YB, yB	Bi, BoJ	ON, QC, PE, NB, NS, NL	
Black spruce	Épinette noire	<i>Picea mariana</i>	N	Pice mari	Sb, BS, bS, PM	En, EpN	BC, AB, SK, MN, ON, QC, PE, NB, NS, NL, YK, NT, WBNP, PANP	
Engelmann spruce		<i>Picea engelmannii</i>	N	Pice enge	Se, eS		BC, AB, NL	
Engelmann x white		<i>Picea engelmannii</i> x <i>glauca</i>	X	Pice engx	Sxw		BC	
Sitka x white		<i>Picea x lutzii</i>	X	Pice lutz	Sxl		BC	
Sitka spruce		<i>Picea sitchensis</i>	N	Pice sitc	Ss, SS		BC, PE, NS, NL	
Sitka x unknown hybrid		<i>Picea sitchensis</i> x ?	X	Pice sitx	Sxs		BC	
Spruce hybrid		<i>Picea spp x</i>	X	Pice sppx	Sx		BC, PE	
Red spruce	Épinette rouge	<i>Picea rubens</i>	N	Pice rube	rs, RS	Eu, EpH	ON, QC, PE, NB, NS	
White spruce	Épinette blanche	<i>Picea glauca</i>	N	Pice glau	Sw, WS, wS, PG	Eb, EpL, G	BC, AB, SK, MN, ON, QC, PE, NB, NS, NL, YK, NT, WBNP, PANP	
Mountain alder		<i>Alnus incana</i>	N	Alnu inca	Dm		BC	
Green and Sitka alder		<i>Alnus viridis</i>	N	Alnu viri	Dg		BC	
Red alder		<i>Alnus rubra</i>	N	Alnu rubr	Dr		BC	
Arbutus		<i>Arbutus menziesii</i>	N	Arbu menz	Ra		BC	
Cascara		<i>Rhamnus purshianus</i>	N	Rham purs	Kc		BC	
Bitter cherry		<i>Prunus emarginata</i>	N	Prun emar	Vb		BC	
Sour cherry, pie or sour red		<i>Prunus cerasus</i>	N	Prun cera	Ch		ON	
Black cherry	Cerisier tardif	<i>Prunus serotina</i>	N	Prun sero	Cb, BC	Ct	ON, QC, NS	
Choke cherry		<i>Prunus virginiana</i>	N	Prun virg	Vv, Cv	Cv	BC, ON, QC	
Pin cherry		<i>Prunus pensylvanica</i>	N	Prun pens	Vp		ON, QC, PE	
Pacific dogwood		<i>Cornus nuttallii</i>	N	Corn nutt	Gp		BC	
Western yew		<i>Taxus brevifolia</i>	N	Taxu brev	Tw		BC	
White elm or American elm	Orme d'Amérique	<i>Ulmus americana</i>	N	Ulmu amer	wE, Ew, Em, EM, E	Oa	SK, MN, ON, QC, PE, NS	
Slippery elm	Orme rouge	<i>Ulmus rubra</i>	N	Ulmu rubr	Es	Oo	ON, QC	
Rock elm	Orme de Thomas	<i>Ulmus thomasii</i>	N	Ulmu thom	Eu	Ot	ON, QC	
Narrow-leaf Cottonwood		<i>Populus angustifolia</i>	N	Popu angu	Cn, Pb		AB	
Plains cottonwood		<i>Populus deltoides</i> v. <i>occidentalis</i>	N	Popu delo	pC, Pb		AB, ON, QC	
Eastern cottonwood	Peuplier à feuilles deltoides	<i>Populus deltoides</i>	N	Popu delt	Pd	Pi, PeD	ON, QC, PE	
Carolina poplar		<i>Populus X canadensis</i>	X	Popu cana	Pc		ON	
Hybrid poplar, Southern cottonwood	Feuille hybride	<i>Populus deltoides</i>	X	Popu delx	Ad	Ph, PeH	ON, QC, PE	

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COMMON NAME		SCIENTIFIC NAME	TYPE (N, V, X E, G)**	CAS COMMON CODE	ENGLISH INVENTORY CODES	QUEBEC INVENTORY CODES	SOURCE INVENTORY LIST	COMMENTS
ENGLISH	FRENCH *							
Black cottonwood		<i>Populus balsamifera v. trichocarpa</i>	V	Popu balt	Ac, BA, Pb, bP, bPo		BC, AB, YT, NT	
Balsam poplar	Peuplier baumier	<i>Populus balsamifera v. balsamifera</i>	V	Popu balb	Ac, Acb, BA, Pb, bP, BP	Pa	BC, AB, SK, MN, ON, QC, PE, NB, NS, NL, YT, NT	
Trembling aspen	Peuplier faux-tremble	<i>Populus tremuloides</i>	N	Popu trem	At, TA, Pt, Aw, tA, PT	Pt	BC, AB, SK, MN, ON, QC, NB, NS, NL, YT, NT, PANP	
Large-tooth aspen	Peuplier à grandes dents	<i>Populus grandidentata</i>	N	Popu gran	PI	Pd	ON, OC, NB	
Black ash	Frêne noir	<i>Fraxinus nigra</i>	N	Frax nigr	Ab	Fo, FfN	ON, QC, PE, NS	
White ash	Frêne d'Amérique (blanche)	<i>Fraxinus americana</i>	N	Frax amer	Aw, wA	Fa, FfA	ON, QC, PE, NS	
Blue ash		<i>Fraxinus quadrangulata</i>	N	Frax quad	Aq		ON	
Pumpkin ash		<i>Fraxinus profunda</i>	N	Frax prof	Ap		ON	
Green ash		<i>Fraxinus pennsylvanica</i>	N	Frax penn	gA, GA		SK, MN, ON	
Red ash	Frêne de Pennsylvanie (rouge)	<i>Fraxinus pennsylvanica</i>	N	Frax penn	Aq	Fp, FfP	ON, QC	
Basswood	Tilleul d'Amérique	<i>Tilia americana</i>	N	Tili amer	Bd, BN	Ta	ON, QC, PE	
American beech	Hêtre à grandes feuilles	<i>Fagus grandifolia</i>	N	Fagu gran	Be, BE	Hg	ON, QC, PE, NB, NS	
Blue-beech, American hornbeam		<i>Carpinus caroliniana</i>	N	Carp caro	Bb		ON	
Butternut	Noyés cendre	<i>Juglans cinerea</i>	N	Jugl cine	Bn	Nc	ON, QC, PE	
Ironwood (hop hornbeam)	Ostryer de Virginie	<i>Ostrya virginiana</i>	N	Ostr virg	Iw, IW	Ov	ON, QC, NS	
Honey locust		<i>Gleditsia triacanthos</i>	N	Gled tria	Lh		ON	
Black locust		<i>Robinia pseudoacacia</i>	N	Robi pseu	Lb		ON	
Big leaf maple		<i>Acer macrophyllum</i>	N	Acer macr	Mb		BC	
Sugar maple (hard maple)	Érable à sucre	<i>Acer saccharum</i>	N	Acer sacc	Mh, SM, sM	Es, Efs	ON, QC, PE, NB, NS	
Red maple (soft maple)	Érable rouge	<i>Acer rubrum</i>	N	Acer rubr	Mr, RM, rM	Eo	ON, QC, PE, NB, NS, NL	
Silver maple	Érable argenté	<i>Acer saccharinum</i>	N	Acer sach	MS, Ms	Ea	ON, QC	
Mountain maple		<i>Acer spicatum</i>	N	Acer spic	Mt		ON	
Striped maple		<i>Acer pensylvanicum</i>	N	Acer pens	Mp		ON	
Rocky mountain maple		<i>Acer glabrum</i>	N	Acer glab	Mr		BC	
Manitoba maple, Box elder		<i>Acer negundo</i>	N	Acer negu	mM, MM, Me		SK, MN, ON	
Vine maple		<i>Acer circinatum</i>	N	Acer circ	Mv		BC	
Freeman maple		<i>Acer X freemanii</i>	X	Acer free	Mf		ON	
Black maple	Érable noir	<i>Acer nigrum</i>	N	Acer nigr	Mb	Ei	ON, QC	
Bur oak	Chêne à gros fruits	<i>Quercus macrocarpa</i>	N	Quer macr	bO, Ob	Cq	MB, ON, QC	
Garry oak		<i>Quercus garryana</i>	N	Quer garr	Cq		BC	
Red oak	Chêne rouge	<i>Quercus rubra</i>	N	Quer rubr	OR, RO, rO	Cr, ChR	ON, QC, PE, NS	
White oak	Chêne blanc	<i>Quercus alba</i>	N	Quer alba	Ow	Cb, ChB	ON, QC	
Pin Oak		<i>Quercus palustris</i>	N	Quer palu	Op		ON	
Black oak		<i>Quercus velutina (nigra)</i>	N	Quer velu	On		ON	
Chinquapin oak, yellow oak		<i>Quercus muehlenbergii</i>	N	Quer mueh	Och		ON	
Shumard oak		<i>Quercus shumardii</i>	N	Quer shum	Osw, Os		ON	
Swamp white oak	Chêne bicolor	<i>Quercus bicolor</i>	N	Quer bico	Osw	Cc	ON, QC	
American chestnut		<i>Castanea dentata</i>	N	Cast dent	Cd		ON	
Horsechestnut		<i>Aesculus hippocastanum</i>	N	Aesc hipp	Hc		ON	
Black walnut	Noyer noir	<i>Juglans nigra</i>	N	Jugl nigr	wb	Na	ON, QC	
Black gum		<i>Nyssa sylvatica</i>	N	Nyss sylv	Gb		ON	
Sassafras		<i>Sassafras albidum</i>	N	Sass albi	Sa		ON	
Sycamore		<i>Platanus occidentalis</i>	N	Plan occi	Sy		ON	
Hawthorn		<i>Crataegus spp</i>	N	Crat spp	Ht		ON	
Hackberry		<i>Celtis occidentalis</i>	N	Celt occi	Hk		ON	
Kentucky coffee tree		<i>Gymnocladus dioica</i>	N	Gymn dioi	Kk		ON	
Big leaf linden		<i>Tilia platyphyllos</i>	N	Tili plat	Bl		ON	
Little leaf linden		<i>Tilia cordata</i>	N	Tili cord	Li		ON	
Cucumber tree		<i>Magnolia acuminata</i>	N	Magn acum	Ct		ON	
Northern catalpa, bean-tree		<i>Catalpa speciosa</i>	N	Cata spec	Cat		ON	
American witch-hazel		<i>Hamamelis virginiana</i>	N	Hana virg	Haz		ON	
Redbud		<i>Cercis canadensis</i>	N	Cerci cana	Red		ON	
Red mulberry		<i>Morus rubra</i>	N	Moru rubr	Mo		ON	
Tulip tree		<i>Liriodendron tulipifera</i>	N	Liri tuli	Tl		ON	
Paw paw		<i>Asimina triloba</i>	N	Asim tril	Pa		ON	
Pacific crab apple		<i>Malus fusca</i>	N	Malu fusc	Up		BC	
Bebb's willow		<i>Salix bebbiana</i>	N	Sali bebb	Wb		BC	
Black willow		<i>Salix nigra</i>	N	Sali nigr	Wl		ON	
Pacific willow		<i>Salix lucida</i>	N	Sali luci	Wp		BC	
Peachleaf willow		<i>Salix amygdaloides</i>	N	Sali amyg	Wa		BC	
Pussy willow		<i>Salix discolor</i>	N	Sali disc	Wd		BC	
Scouler's willow		<i>Salix scouleriana</i>	N	Sali scou	Ws		BC	
Sitka willow		<i>Salix sitchensis</i>	N	Sali sitc	Wt		BC	
Bitternut hickory	Caryer cordiforme	<i>Carya cordiformis</i>	N	Cary cord	Hi	Ce	ON, QC	
Shagbark hickory	Caryer à fruits doux	<i>Carya ovata</i>	N	Cary ovav	Hi	Cf	ON, QC	
Big shellbark hickory		<i>Carya laciniosa</i>	N	Cary laci	Hi		ON	
Mockernut hickory		<i>Carya tomentosa</i>	N	Cary tome	Hm		ON	

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COMMON NAME		SCIENTIFIC NAME	TYPE (N, V, X E, G)**	CAS COMMON CODE	ENGLISH INVENTORY CODES	QUEBEC INVENTORY CODES	SOURCE INVENTORY LIST	COMMENTS
ENGLISH	FRENCH *							
Pignut hickory		<i>Carya glabra</i>	N	Cary glab	Hp		ON	
Scots pine	Pin sylvestre	<i>Pinus sylvestris</i>	E	Pinu sylv	sP, Ps, SP	Ps, PIS	BC, AB, ON, QC, NB, NS, PE, NL	
Siberian larch		<i>Larix sibirica</i>	E	Lari sibi	SL		BC, AB, ON, QC, NB, NS	
Austrian pine, European black pine		<i>Pinus nigra</i>	E	Pinu nigr	AP, YP		ON, PE, NS	
European larch	Mélèze européen	<i>Larix decidua</i>	E	Lari deci	EL	MeU	QC, PE, NS, NL	
Japanese larch	Mélèze japonais	<i>Larix kaempferi</i>	E	Lari kaem	JL	Mj, MeJ	QC, PE, NS	
Norway spruce	Épinette de Norvège	<i>Picea abies</i>	E	Pice abie	NS, Sn	Ev, EpO	QC, PE, NS, NL	
Colorado spruce		<i>Picea pungens</i>	E	Pice pung	Sc		ON	
Koyama spruce		<i>Picea koyamai</i>	E	Pice koya	Sk		ON	
Apple		<i>Malus pumila</i>	E	Malu pumi	Ua		BC	
European birch		<i>Betula pendula</i>	E	Betu pend	Ee		BC, ON	
Japanese birch		<i>Betula mandschurica var japonica</i>	E	Betu mand	JB		NL	
Silver birch		<i>Betula pubescens</i>	E	Betu pube	Es		BC	
Sweet cherry, Mazzard cherry		<i>Prunus avium</i>	E	Prun aviu	Vs		BC, ON	
Port Orford-cedar		<i>Chamaecyparis lawsoniana</i>	E	Cham laws	Yp		BC	
Noble fir		<i>Abies procera</i>	E	Abie proc	Bp		BC	
Shasta red fir		<i>Abies magnifica var shastensis</i>	E	Abie magn	Bm		BC	
White fir		<i>Abies concolor</i>	E	Abie conc	Bc		BC	
Norway maple		<i>Acer platanoides</i>	E	Acer plat	Mn		BC	
Sycamore maple		<i>Acer pseudoplatanus</i>	E	Acer pseu	Ms		BC	
Incense-cedar		<i>Calocedrus decurrens</i>	E	Calc decu	Oa		BC	
Giant sequoia		<i>Sequoiadendron giganteum</i>	E	Sequ giga	Ob		BC	
Coast redwood		<i>Sequoia sempervirens</i>	E	Sequ semp	Oc		BC	
European mountain-ash		<i>Sorbus aucuparia</i>	E	Sorb aucu	Od		BC	
Siberian elm		<i>Ulmus pumila</i>	E	Ulmu pumi	Oe		BC	
Common pear		<i>Pyrus communis</i>	E	Pyru comm	Oi		BC	
Oregon ash		<i>Fraxinus latifolia</i>	E	Frax lati	Oq		BC	
Monterey pine		<i>Pinus radiata</i>	E	Pinu radi	Pm		BC	
Sugar pine		<i>Pinus lambertiana</i>	E	Pinu lamb	Ps		BC	
English oak		<i>Quercus robur</i>	E	Quer robu	Qe		BC	
Hybrid larch	Mélèze hybride	<i>Larix x marschlinii</i>	E	Lari x mar		Mh	QC	
European poplar	Peuplier européen	<i>Populus nigra</i>	E	Popu nigr		Po, PeU	QC	
Fir (any mix)	Sapin	<i>Abies spp.</i>	G	Abie spp	B, DF	Se	BC, QC	
Hemlock (any mix)	Les Pruches	<i>Tsuga spp.</i>	G	Tsuga spp	H		BC	
Larch (any mix)	Les Mélèzes	<i>Larix spp.</i>	G	Lari spp	L		BC	
Pine (any mix)	Les Pins	<i>Pinus spp.</i>	G	Pinu spp	P, PX, PI, PN	Pi	AB, ON, QC, NB, WBNP	
Alder (any mix)	Les Aulnes	<i>Alnus spp.</i>	G	Alnu spp	D, AL, AI	AL	BC, ON, QC, PE, NB, WBNP	
Willow (any mix)	Les Saules	<i>Salix spp.</i>	G	Sali spp	W, WI, WI, WW		BC, ON, PE, WBNP	
Hickory (any mix)	Les Caryers	<i>Carya spp.</i>	G	Cary spp	Hi		ON	
Poplar (any mix) (Aspen, Cottonwood or Poplar)	Les Peupliers	<i>Populus spp.</i>	G	Popu spp	A, Po, PO, TA, PT	Pe	AB, ON, QC, PE, NB, NS, WBNP, PANP	
Maple (any mix)	Les Érables	<i>Acer spp.</i>	G	Acer spp	Mx, M	Er	ON, QC	
Oak (any mix)	Les Chênes	<i>Quercus spp.</i>	G	Quer spp	OX	Ch	ON, QC	
Cherry (any mix)	Les Cerisiers	<i>Prunus spp.</i>	G	Prun spp	V, Ch	Ct	BC, ON, QC, NB, NS	
Elm (any mix)	Les Ormes	<i>Ulmus spp.</i>	G	Ulmu spp	Ex, EX, WE	Or	ON, QC	
Birch (any mix)	Les Bouleaux	<i>Betula spp.</i>	G	Betu spp	Bl	Bb	QC, NB	white and grey birch
Ash (black and white)	Les Frênes	<i>Fraxinus spp.</i>	G	Frax spp	AX, AS		ON, NS	
Spruce (any mix)	Les Épinettes	<i>Picea spp.</i>	G	Pice spp	SX, XS, DS, SP	Ep, E, En	BC, ON, QC, NB, NS	
Locust (honey or black)		<i>Robinia spp.</i>	G	Robi spp	Lo		ON	
Spruce-balsam fir or Balsam fir-spruce mix	Sapin/épinette rouge	<i>Abies picea</i>	G	Abie pice	SF, sF, FS	S	QC, PE, NB, NS	
Hardwoods other, unclassified hardwood	Feuillus indéterminés		G	Hard unkn	OH, Zh, UH, HW, Xh	Fx, Fz, F, FeL	ON, QC, NB, NS	(discontinued in 2002 in NS), plantation F=<7m ht and FeL>7m ht
Conifer other, unclassified softwood	Résineux indéterminés		G	Soft unkn	OC, Zc, US, Xc, OS	Rx, Rz, R, ReS	ON, QC, NB, NS	plantation R=<7m ht and ReS=>7m ht
Non commercial hardwoods	Feuillus non commerciaux		G	None hard	NC	Fu, Fnc	QC, NB	
Tolerant hardwood	Feuillus tolérants		G	Hard tole	TH	Ft	QC, PE, NB, NS	(discontinued in 2002 in NS)
Intolerant Hardwood	Feuillus intolérants		G	Hard into	IH	Fi	QC, PE, NB, NS	(discontinued in 2002 in NS)
Moist hardwoods	Feuillus sur station humide		G	Mois hard		Fh	QC	
Unclassified Species			G	Uncl spp	US, Z		BC, NS	

* French names are identified only for species listed in Quebec inventories

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11/12/2009

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APPENDIX 9

CAS GENERIC SPECIES GROUP LIST

Appendix 9

CAS GENERIC SPECIES GROUP LIST

Last Revision January 28, 2009

Several Canadian forest inventories use generic or grouped species codes in place of actual species codes when interpretation of similar species or species groups is difficult or not necessary. The purpose of this document is to identify which species are included within the generic species and group codes Refer to the CAS species list (Appendix 8) to translate common names into CAS species codes. Generic species groups are identified with a „G” in the Type column of the CAS species list.

This document is organized by inventory type or standard by province and territory. The generic species group name is identified on the left followed by the species included in that group. The code on the right is the generic code used by that province or territory. Non commercial tree species are generally not identified past the generic name for most inventories. The following list identifies those species that are identified:

Alders: *Alnus viridis*, *Alnus rugosa*

Willows: *Salix bebbiana*, *Salix lucida*, *Salix amygdaloides*, *Salix discolor*, *Salix scouleriana*, *Salix sitcensis*, *Salix nigra*

Cherries: *Prunus serotina*, *Prunus virginiana*, *Prunus avium*, *Prunus pensilvanica*

Mountain Ash: *Sorbus scopulina*, *Sorbus decora*, *Sorbus americana*

British Columbia

Forest Cover Inventory

Balsam Fir	Sub alpine fir, Amabilis fir, Grand fir	B
Hemlock	Western hemlock, mountain hemlock	H
Larch	Alpine larch, western larch, tamarack	L
Birch	Alaska paper birch, Common paper birch	E
Spruce	Sitka spruce, white spruce, Engelmann spruce, hybrids (Englemann x white, Sitka x white, Sitka x unknown)	S

VRI

Douglas-Fir	Douglas-fir, coastal Douglas-fir, interior Douglas-fir	F
Balsam Fir	sub alpine fir, amabilis fir, grand fir	B
Hemlock	western hemlock, mountain hemlock, hybrids (Mountain x western hemlock)	H
Larch	alpine larch, western larch, tamarack	L

Spruce	Sitka spruce, white spruce, Engelmann spruce, hybrids (Englemann x white, Sitka x white, Sitka x unknown)	S
Birch	Alaska paper birch, common paper birch, hybrids (Alaska x paper birch)	E
Unknown Conifer	Species unknown (any species)	Xc
Unknown Hardwood	Species unknown (any species)	Xh
Other conifer	Species not on BC species list	Zc
Other hardwood	Species not on BC species list	Zh

Alberta

Phase 3

Spruce	white spruce, Engelmann spruce	Sw
Balsam	balsam fir, sub alpine fir	Fb
Larch	alpine larch, tamarack	Lt
Pine	lodgepole pine, whitebark pine, limber pine, jack pine	P
Hardwood	trembling aspen, balsam poplar, white birch	A

Engelmann spruce and alpine firs are located in western upper foothills and Rocky Mountain areas. White spruce and balsam fir are in all other locations. Undifferentiated hardwood (A) used if species difficult to identify

AVI

Spruce	white spruce, Engelmann spruce	Sw
Pine	lodgepole pine, whitebark pine, limber pine, jack pine	P
Balsam fir	balsam fir, sub alpine fir	Fb
Larch	alpine larch, tamarack	Lt
Poplar	trembling aspen, balsam poplar, plains cottonwood, Narrow-leaf cottonwood	A

AVI recognizes separate species for spruce, pine, fir, larch, and poplar; however, generic codes were used if species separation or identification was difficult.

Saskatchewan

UTM

Generic species codes were not used.

SFVI

Generic species codes were not used.

Manitoba

Pre FLI

Generic species codes were not used.

FLI

Generic species codes were not used.

Ontario

FRI, FRI FIM, and FRI NBI

Other hardwood	beech, basswood, butternut, black cherry, cherry any (Prun sero, Prun virg, Prun pens, Prun avia) mix, white elm, hickory (Cary cord and Cary orav), ironwood, black or honey locust, black walnut, paw paw, sassafras, sycamore, tulip tree, black gum	OH
Pine, any mix	Austrian, jack, pitch, red, scots, eastern white	PX
Oak, any mix	red, black, bur, pin, shumard, swamp white, white	OX
Maple, any mix	black, hard (sugar), soft (red), Manitoba, mountain, Norway, silver, striped,	MX
Ash, any mix	black, blue, pumpkin, red (or green), white	AX
Elm, any mix	red (or slippery), rock, white (or American)	EX
Spruce, any mix	black, Colorado, koyama, Norway, red, white	SX

Quebec

TIE (Troisième Inventaire Écoforestier)

Fir/white spruce mix	balsam fir and white spruce (except for l'île d'Anticosti, les îles Mingan, and les îles de la Madeleine where white spruce is identified with a G)	S
Spruce	black spruce and red spruce	E
Conifer, any mix	spruce (black, white, red, or mix), fir, pine (white, red, jack), cedar, hemlock, larch, plantation softwood (<7m)	R
Conifer undetermined	any conifer	Rx
Plantation conifer (≥7m)	plantation with unidentified conifer with height ≥ 7	ReS

If R appears first and represents a pure softwood mix polygon (Résineux), then the second species listed after the R is the dominant species of the mix. If R appears as the first species in a softwood dominant mixedwood with intolerant hardwoods, then the conifer species will be larch, hemlock and cedar. If R appears first in a softwood dominated mixedwood with yellow birch or tolerant or moist hardwoods, then softwood can be any species. If R

appears as a second or third species in hardwood dominated mixedwood, then softwood can be any species.

Birch	white birch, grey birch	Bb
Moist hardwoods	elms, black ash, silver maple, yellow birch, red maple, balsam poplar	Fh
Tolerant hardwoods	American beech, red oak, white oak, hop-hornbeam, yellow birch, red maple, sugar maple, basswood, hickory (<i>Cary cord an Cary orav</i>), butternut	Ft
Intolerant hardwoods	white birch, poplars (<i>Popu trem</i> , <i>Popu delt</i> , <i>Popu gran</i> , <i>Popu balb</i> , <i>Popu delx</i>)	Fi
Noncommercial hardwood	cherries (<i>Prun virg</i> and <i>Prun pens</i>), alders (<i>Alnu viri</i> and <i>Alnu rugo</i> , mountain ash (<i>Sorbus americana</i> and <i>Sorbus decora</i>), willow, service berry (<i>Amelanchier arborea</i> and <i>Amelanchier laevis</i>), mountain maple	Fnc
Hardwoods undetermined	any hardwood, plantation hardwood (<7m ht)	Fx, F
Plantation hardwood (≥7m)	plantation with unidentified hardwood (≥ 7m ht)	FeL

Prince Edward Island

Spruce/fir	balsam fir, red spruce	SF
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New Brunswick

Spruce	black spruce, red spruce, white spruce occur but individually do not make up 10% of stand, to a maximum of 20% of stand volume.	SP
Spruce/fir	spruce is dominant (red spruce, white spruce, black spruce), mixed with balsam fir but do not individually make up 10% of stand, to a maximum of 20% of stand volume.	SF
Fir/spruce	balsam fir is dominant mixed with spruce species but individually do not make up 10% of stand, up to 20% of stand volume.	FS
Pine	pine mixed up to 20% of stand volume, jack, eastern white, red	PI
Other softwood	larch, cedar, and hemlock occur but individually do not make up 10% of stand, grouped to a maximum of 20% of stand.	OS
Softwood	any one or group of softwood species (PI, OS) occur but individually do not make up 10% of sand, to a maximum of 20%.	SW

Other hardwood	oak, ash, elm, basswood, ironwood, silver maple	OH
Tolerant hardwood	red maple, sugar maple, yellow birch, beech, and other hardwood (OH) occur but do not individually make up 10% of stand, to a maximum of 20%.	TH
Poplar	trembling aspen, largetooth aspen, balsam poplar	PO
Birch	white birch, grey birch	BI
Intolerant hardwood	poplar (PO) and birch (BI) and any hardwood not listed as TH or NC, individually do not make up 10% of stand, to a maximum of 20%	IH
Hardwood	any one or grouped hardwood species that individually does not make up 10% of stand, to a maximum of 20%	HW
Non commercial	hardwoods tree species, cherries, alders, willows, mountain maple, mountain ash, striped maple	NC

Nova Scotia

Spruce	red spruce and black spruce – discontinued in 2002	XS
Other softwood	larch, cedar, hemlock – discontinued in 2002	OS
Other hardwood	oak, ash, elm, basswood, ironwood, silver maple	OH
Unclassified softwood	treated stands where vegetation is too short to determine species.	US
Unclassified hardwood	treated stands where vegetation is too short to determine species.	UH
Unclassified species	for mixedwood stands too short to determine species	UC
Intolerant hardwood	poplars and birch- discontinued in 2002.	IH
Tolerant hardwood	red maple, sugar maple, yellow birch, beech, other hardwood- discontinued in 2002.	TH

Newfoundland and Labrador

Generic species codes were not used.

Yukon Territories

Generic species codes were not used.

Northwest Territories

Generic species codes were not used.

APPENDIX 10

**STAND ORIGIN (AGE) – SUMMARY OF CANADIAN
FOREST INVENTORIES**

(UNDER SEPARATE COVER - SEE EXCEL SPREADSHEET)

Appendix 10 Stand Origin (Age) - Summary of Canadian Forest Inventories

PROVINCE	STANDARD	TYPE	FIELD	Range	Common Inventory - Actual year or upper and lower bound for decade class or age classes
BC	Forest Cover Inventory	ACTUAL	AGE	Nearest year or nearest 10 years	e.g 160 or 166
	VRI	ACTUAL	AGE	Nearest year or decade	e.g. 166 or 1960
AB	Phase 3	ORIGIN	Origin	Class - 10 year less 1st and last digits of year	Decade e.g 87 = 1870 CLASS= 1870 - 1879 Actual e.g 1947
	AVI 2.1	ORIGIN	Origin	Class - 10 year or actual	Decade e.g. 87 = 1870 CLASS= 1870 - 1879 Actual e.g 1947
	AVI 2.1+	ORIGIN	Origin	Class - 10 year or actual	Decade e.g 87 = 1870 CLASS= 1870 - 1879 Actual e.g 1947
SK	UTM	ORIGIN	Origin	Class - 10 year less 1st and last digits of year	Decade e.g. 94 = 1940 CLASS= 1936-1945
	SFVI 4.0	ORIGIN	Origin	Nearest year or decade	e.g Nearest yr=a with 1957 e.g decade = d with 1950 with class 1946 to 1955
MB	PRE 1992	NONE	NO DATA FIELD	Age not recorded prior to 1992	
	1992 - 1997	ORIGIN	YEAR_ORG	Nearest Year	e.g. 1964
	FLI	ORIGIN	ORIGIN	Nearest year	e.g 1916 inventory yr = 2001 fmu 13, 2002 fmu 14
ON	FRI	ACTUAL	AGE	Nearest year	e.g 1925
	FRI FIM	ORIGIN	OAGE UAGE	Nearest year minus reference year	e.g 1910
	FRI NBI	ACTUAL OR ORIGIN	AGE	Nearest year	Whitefeather to nearest year, Taashekaywin and Kenogami use Origin, e.g 125 (whitefeather) all others use years of origin e.g 1910
QC	3rd	CLASS	CAG_CO Class of age	Equienne (Even Aged) - 20 year classes	10 0-20 30 21-40 50 41-60 70 61-80 90 81-100 120 101-INFINITY
				Inequienne (Uneven Aged)	JIN (Young < 80 yrs) Lower limit=1 and upper limit=79 VIN (Old) ≥80 yrs Lower limit=80 and upper limit=infinity
				Etagee (2-layered)	Two layered stand represented by two non consecutive age classes. A four or five digit number representing the overstory age and the understory age. For example; 12050 signifies that the dominant layer, in this case overstory, has a 120 yr age class and the understory a 50 year age class. If the code was 50120 it would indicate the dominant layer, the understory in this case, is 50 years old and the overstory 120 years old. Refer to the age class codes identified for even aged stands to determine the upper and lower limit for CAS conversion.
PE	2000	-	NO DATA FIELD		
NB	Pre 2003	-	NO DATA FIELD		
	2003	CLASS	AGE	bF and S only classes	bF 3 4 5 6 7 8
					S 21-30 31-40 41-50 51- 60 61-70 71 INFINITY
2006					
NS	Pre 2006				
	2006	ACTUAL	AGE	Nearest Year to a Maximum of 110	e.g. 98 - calculation based on ave. stand height and site
NL	2005	CLASS	AGE	20yr Classes	Insular Newfoundland 1 2 3 4 5 6 7
					Labrador 0-20 21-40 41-60 61-80 81-100 101-120 121-INFINITY
WBNP	1979	-	NO DATA FIELD	Age not recorded	
PANP	1968	CLASS	No Age Field. Can use CCOND and UCOND field	Variable classes	Can derive a general age class from Canopy and Understory Condition Class codes 1 to 5. Note: age as of 1968. 1 = 10 yrs 2 or 2A= 10 - 30 yrs 3 or 3A= 30 - 60 yrs 4 = 60 - 80 yrs 5 or 5A = ≥80 yrs
YT	2.1	ACTUAL	AGE	Nearest year or nearest 10 years	e.g. 115
NT	3.0	ORIGIN	ORIGIN MINORIGIN	Grouped in 10yr classes actual shown if known	e.g 1950 Class = 1945-1955 actual = 1953

APPENDIX 11

**SITE CLASS, AND SITE INDEX,
AND CAS CONVERSION**

(UNDER SEPARATE COVER - SEE EXCEL SPREADSHEET)

Appendix 11 Site Class and Site Index and CAS Conversion

PROVINCE	STANDARD	FIELD	SITE CLASS					SITE INDEX	COMMENT	CAS CONVERSION		
			UNPROD	POOR	MED	GOOD	HIGH			SITE CLASS		SITE INDEX
										SITE_CLASS	U P M G	
BC	Forest Cover Inventory	SITE_INDEX SITE	L	P	M	G		1-56		L and P = P M = M G = G	Null, Miss, SI number	
	VRI	SITE_INDEX SITE						1-56		SITE INDEX ONLY	Null, Miss, SI number	
AB	AVI 2.1	TPR	U	F	M	G				U=U F=P M=M G=G		
	AVI 2.1+	TPR	U	F	M	G				U=U F=P M=M G=G		
	Phase 3	SITE INDEX	U	F	M	G				U=U F=P M=M G=G		
SK	UTM	No Field								NO FIELD FOR SITE		
	SFVI 4.0	No Field								NO FIELD FOR SITE		
MB	PRE 1998	SITE		3	2	1				3=P 2= M 1=G		
	FLI	No Field								NO FIELD FOR SITE		
ON	FRI	SITE	4	3	2	1	X			4=P 3=P 2=M 1&X=G		
	FRI FIM	OSC OSI USC OSI	4	3	2	1	0	0.1 - 40.0		4&3=P 2=M 1&0=G	Null, Miss, SI number	
	FRI NBI	SITE	4	3	2	1	X			4&3=P 2=M 1&X=G		
QC	3rd	No Field								NO FIELD FOR SITE		
PE	2000	No Field								NO FIELD FOR SITE		
NB	Pre 2003	No Field								NO FIELD FOR SITE		
	2003	No Field								NO FIELD FOR SITE		
NS	Pre 2006	SITE (ST)								CLI Derived (Prior to 2001 for Sw only)		
	2006	SITE (STSw or STHw)								CLI Derived (For Sw and Hw) SW: 0,1,2,3,4=P, 5-9=M, 10-13=G 2,3=M 4,5=G Hw: 0,1=P,		
NL	2005	SITE		P	M	G	H			CLI Derived	P=P M=M G&H=G	
WBNP	1979	No Field								NO FIELD FOR SITE		
PANP	1968	No Field								NO FIELD FOR SITE		
YT	2.1	SITE_CLASS	L	P	M	G		0.1 - 30.0		L&P=P M=M G=G	Null, Miss, SI number	
NT	3.0	SITE CLASS si_50	5	4	3	2	1	1.0 - 99.0		5=U 4=P 3=M 2&1=G	Null, Miss, SI number	

APPENDIX 12

NON-FORESTED, NON-VEGETATED, AND UNPRODUCTIVE FOREST – SUMMARY OF CANADIAN FOREST INVENTORIES

CAS NON-FORESTED NON-VEGETATED, AND UNPRODUCTIVE FOREST CODES

CAS NON-FORESTED, NON-VEGETATED, CONVERSION TABLE

(UNDER SEPARATE COVER - SEE EXCEL SPREADSHEET)

Appendix 12 Non-Forested, Non-Vegetated, and Unproductive Forest - Summary of Canadian Forest Inventories

PROVINCE	STANDARD	TYPE	FIELD	CODES
BC	Forest Cover Inventory	Unproductive forest Lands Non commercial forest land	NPFOR_DESC NFOR_DESC	A For (Alpine forest), NPF(non-productive - linked to forest label), NC (Non comercial), NCBR (Non commercial Brush)
		Naturally Non Forested Vegetated	NPFOR_DESC	A (Alpine), R (Rock), CL(Clay Bank), Slide, G (Gravel Bar), L (Lake), RIV (River), S (Swamp), Muskeg, C (Cultivated), M (Meadow), GR (Gravel Pit) , ICE (Icefield), MUD, (Mud Flat) OR (Open Range), U (urban), NP Br (non productive brush), NPBU (non productive burn), NP (non productive miscellaneous), P (Hayfield), TIDE (Tidal Flat), SAND (Sand)
	VRI	Non Forested Vegetated	Several Options: LAND_CD_1, BCLCS_LV_4 and 5, HERB_TYP	ST (Shrub Tall), SL (Shrub Low), HE (Herbs), HF (Forbs), HG (Graminoids), BY (Bryoid), BM (Moss) BL (Lichen)
		Naturally and Anthropogenic Non Vegetated	Several Options: BCLCS_LV_5, NVEG_TYPE_1, LAND_CD_1	GL (Glacier), PN (Snow Cover), BR (Bedrock), TA (Talus), BI (Blockfield), MZ (Rubby Mines Spoils), LB (Lava Bed), BU (Recent Burn) RS (River Sediments), ES (Exposed Soil), LS (Pond or Lake Sediments), RM (Reservoir Margin), BE (Beach), LL (Landing), RZ (Road Surface), MU (Mud Flat), CB (Cut Bank) MN (Moraine), GP (Gravel Pit), TZ (Tailings), RN (Railway Surface), UR (Urban), AP (Airport), MI (Open Pit Mine), OT (Other) Can also derive from Land_cover_class_code (includes Ro (Rock), EL (Exposed Land, and SI (Snow/Ice) LA (Lake, RE (Reservoir), RI (River Stream), OC (Ocean), OP (Open)
AB	Phase 3	Unproductive Forest	S1, S2, S3, S4	TM (Treed Muskeg), CS (Scrub Coniferous), DS (Scrub Deciduous)
		Naturally and Anthropogenic Non Vegetated, Non Forested	S1, S2, S3, S4	W (Water), FL (Flooded), OM (Open Muskeg), SA (Sand), CB (Cut Bank), RB (Rock Barren), BS (Soil Barren), GR (Grassland), CL (Cleared Land), CU (Cultivated)
	AVI 2.1 AVI 2.1+	Vegetated Anthropogenic	ANTH_VEG, UANTH_NON	CIP (Rights-of-way), CIW (Geophysical), CA (Annual Crops), CP (Perennial Crops), CPR (Rough Pasture) CIU (Unknown)
		Non Vegetated Anthropogenic	ANTH_NON, UANTH_NON	ASC (Cities), ASR (Ribbon Development), All (Industrial), AIM (Mines), AIF (Farmstead), AIG (Pits), AIE (Peat Extraction), AIH (Permanent Rights-of-way) AIU (Unknown) AIW (Man-Made Water AVI 2.2 or Wellhead CVI) AIL (Logging) AIP (Pipeline)
		Naturally Non Vegetated	NAT_NON, UNAT_NON	NMB (Recent Burns), NMC (Cut Bank), NMR (Rock), NMS (Sand), NWI (Snow/ Ice), NWL (Lake), NWR (River), NWF (Flooded) ,NMM (Mineral) ,NMG (Gravel)
Non Forest Vegetated	NFL, UNFL	HG (Graminoid), BR (Byrophytes + Lichens), HF (Forbes), SO (Shrub Open), SC (Shrub Closed)		
SK	UTM	Unproductive Forest	NP	3100 Treed Muskeg, 3200 Treed Rock
		Naturally and Anthropogenic Non Vegetated	NP	3800 Sand, 5100 Flooded, 3700 Clearing, 3400 Clear Rock, 5210 Lake, 5220 Large Stream or River, 5200 Water Surface Unknown 4000 Pasture or Cropland
		Non Forested Vegetated	NP	3300 Clear Muskeg, 3500 Brushland, 3600 Meadow, 3900 Non productive Burnover, 9000 Not Typed GR (Grassland) In Field R1 or R2 SB (Scrub Brush) In Field R1 or R2
	SFVI 4.0	Non Forested Vegetated	Non Forested	TS (Tall Shrub), LS (Low Shrub), He (Herb), Fe (Fern), Gr (Grass), Mo (Moss), Li (Lichen), AV (Aquatic Vegetation)
		Naturally Non Vegetated	Non Vegetated	UK (Unknown), CB (Cutbank), RK (Rock), SA (Sand), MS (Mineral Soil), GR (Gravel), SB (Sandbar), WA (Water) LA (Lake), RI (River), FL (Flood), SL (Seasonal Flood), FP (Flooded Borrow Pit), ST (Stream)
		Non Vegetated Anthropogenic	Non Vegetated	ALA (Agriculture Pasture), POP (Cities), REC (Recreation Area), PEX (Peat Extraction), GPI (Gravel Pit), BPI (Borrow Pit), MIS (Mine), ASA (Active Sawmill Site), NSA (Nonactive Sawmill Site), OIS (Other Industrial Site), OUS (Other Unspecified Site), AFS (Air Facility Site), CEM (Cemetery), WEH (Well Head), TAR (Tower Site), RWC (Road), RRC (Railway), TIC (Transmission), PLC (Pipeline), MPC (Multi Purpose or Other Corridor)
MB	Pre 1998	Non Vegetated Vegetated Anthropogenic	Non Forested Land	800 Series 801 (Barren Tundra), 802, 803 (Barren rock), 804 (Open Sand dunes), 801-804 (Barren- Barren Rock) 811 (Hay land), 812 (Cropland), 813 (Pasture) 815 (Land Clearing In Progress), 816 (Abandoned Cultivated Land) 811-816 (Agriculture) 821 (Dry Upland Ridge Prairie) 822 (Moist Prairie) 823 (Wet Land) 824 (Sand Prairie) 821-824 (Meadows)
		Unproductive Forest	Non Productive Forested Land	700 Series 701-704 (Treed Muskeg), 711-713-(Treed Rock), 721-725 (Shrub) 731-734 (Other)
		Non Forested Vegetated	Non Forested Land	831-839 831 (Muskeg) 832 (String bogs), 835 (Marsh), 838(Mud/ Salt Flats) 839 (Sand Beaches)
		Non Vegetated Anthropogenic	Non Forested land	841-859 841 (Town), 842 (Air Strips), 843 (Roads, Railroads, Dykes, Dams) 844 (Transmission, Pipelines), 845 (Gravel Pits, Mines, Dumps) 846 (Community Pasture) 847 (Drainage Ditch) 848 (Beaver Floods), 849 (Dugout, Water Holes), 851 (Oil Fields, Wells)
		Naturally Non Vegetated Water	Water	901-995 901 (River) 991-995 (Lakes and Rivers), 900 (General water category)
	FLI	Non Forested Vegetated	NNF_ANTH Natural Non Forest and Anthropogenic	SO (Open Shrub), SC (Closed Shrub), HG (Grassland), HF (Forb), HU (Undifferentiated), BR (Bryophyte), CL (Lichen) AL (Alder), CC (Hazel) CS (Dogwood) AS (Mountain Maple), VI (High Bush Cranberry), RA(Rose), DL (Honeysuckle), AU (Bearberry), VA (Leather Leaf, Blueberry, Labrador Tea)
		Naturally Non Vegetated		NMB (Recent Burns), NMC (Cut Bank), NMF (Bluff), NMR (Rock), NMS (Dunes, Beaches, Sand), NMM (Mineral Soil), NMG (Gravel bars, Sand bars), NWL (Lakes), NWR (River), NWF (Flooded Uplands)
Non Vegetated Anthropogenic		CIP (Pipeline, Transmission, Tower Site), CIW (Well site, Geophysical), CIU (Land Cleared Unknown), ASC (Cities), ASP (Silv. Test Site), ASN (Recreation Note), AIN (Roads), AIR (Railway), AIG (Gravel Pits), All (Industrial, Dump), AIW (Lagoons, Reservoir, Flooded Pits), AIA (Air Strips), AIF (Farmstead), AIU (Unknown)		
ON	FRI	Naturally and Anthropogenic Non Vegetated	R - NON PROD MNR - CODE	315 DAL (Agriculture) 313 Rock or RK (Rock) 317, 302, 308 UCL (Unclassified) 62 I (Island <8 Ha) 64 L (Lake) 152 R (River)
		Unproductive Forest, Non Forested Vegetated	MNR CODE	310 TM (Treed Muskeg) 311 OM (Open Muskeg) 312 BA (Brush and Alder) 316 GR (Grass and Meadow)
	FRI FIM	Same as FRI	MNR CODE	Same as FRI
	FRI NBI	Same as FRI	MNR CODE	Same as FRI
QC	3rd	Categories de terrains: contains Unproductive Forest, Naturally Non Vegetated, Non Vegetated Anthropogenic, and Non Forested Vegetated	Eau Improductifs Vocation Non forestiere TER_CO	EAU (Lakes and Rivers) , INO (Flood), AL (Alder), DH (Denuded and Semi-Denuded Humid), DS (Denuded and Semi-Denuded Dry) AEP (Landing), AER (Airport), BHE (Dam) BAS (Lagoon) BLE (Blueberry), CFO (Forestry Camp), CAM (Campsite) CAR (Open Pit Mine), CEX (Research Centre) CHE (Hydro Centre), CU (Urban Centre), OBS (Towers), CV (RV Site), CF (Fire break) DEM (Mine Tailing), DEP (Dump), GOL (Golf), GR (Gravel Pit), HAB (Settlement), VRG (Orchard), ILE (Wooded Island < 1ha) CNE (Botanical Garden), LTE (Transmission, Pipeline), MI (Mine), INC (Unknown), PPN (Plantation), CS (Ski Hill), RO (Roads) SC (Sawmill Site), DEF (Clearing), A (Agriculture), US (Factory), VIL (Rec Site), CIM (Car Wreck Sites)
PE	Pre 2000	Naturally and Anthropogenic Non Vegetated, Non Forested Vegetated	CoverClass	bo (Bog), al (Alder), so (Swamps open) cl (Cleared), clu (Cleared Unproductive), ag (Agriculture), gp (Gravel Pit), re (Recreation), Sd (Dune) (Lake or Pond = symbol)

Appendix 12 Non-Forested, Non-Vegetated, and Unproductive Forest - Summary of Canadian Forest Inventories

PROVINCE	STANDARD	TYPE	FIELD	CODES
	2000	Non Vegetated Anthropogenic, Naturally Non Vegetated, Unproductive Forest, Non Forested Vegetated	CoverClass	Agriculture: BLB (Blueberries), CRN (Cranberries), GRN (Grain), HAY (Hay), PAS (Pasture), POT (Potatoes), OTH (Other) Agric., Non For., Non Wetland: BSB (Backshore Beach), BLD (Building), WWW (Coastal Inlet Water), GRS (Grass), PAV (Paved), SHR (Shrub), TREE (Tree), WAT (Water), (Bare Soil)
	Pre 2003	Non Forest		AC (Agriculture), OC (Occupied), RO (Rock), AF (Alder on Field), AC (Alder on Cut), GP (Pit), MI (Mine)
NB	2003	Non Vegetated Water Non Forest vegetated Wetland Freshwater Coastal	Water Wetland (VT) Wetland (F) Wetland (C)	LK (Lake), ON (Ocean), PN (Pond), RV (River), SL (Salt Lake) AL (Alder), SV (Shrub other than alder) AB (Aquatic bed), BC (Beach), BO (Bog), FE (Fen), FM (Marsh), FW (Flooded), SB (Shrub Wetland) BC (Beach), CM (Marsh), DU (Dune), RK (Rocky Shore), TF (Tidal Flat)
		Non Forested Land: Non Vegetated Anthropogenic, Naturally Non Vegetated (Wildland)	AGR (Agriculture) DND (Defence) IND (Industrial) INF (Infrastructure) REC (Recreation) SET (Settlement) WIL (Wildland)	CB (Cult. Berries), CN (Horticulture), CL (Cultivated), CO (Cultivated Orchards), CT (Xmas Trees), FO (Fundy Dykeland), FP (Fallow Pasture) BA (Base), EA (Exercise Area), IZ (Impact Zone) GP (Gravel Pit) IP (Industrial Plants), LF (Landfill Sites), MI (Mine), PB (Peat Bogs), QU (Quarry), SG (Sewage Lagoons) AI (Airstrips), CS (Communications), PP (Pipeline), RD (Roads), RR (Rail Roads), TM (Transmission Lines) CG (Campground), GC (Golf), LE (Leisure Area), PA (Parks), SK (Ski) RU (Rural), UR (Urban) BL (Barren Land), RF (River Flatlands), RO (Rock Outcrops)
NS	Pre 2006	Non Forested vegetated, non vegetated anthropogenic, naturally non vegetated, and unproductive forest		Alders, Barren, Blue Berry, Brush and Alders, Agriculture, Gravel Pit Marsh/ Swamp, Open bogs, Urban, Rock Barren, Dump, Treed Bog
	2006	Non Forested Vegetated, Non Vegetated Anthropogenic, Naturally Non Vegetated, and Unproductive Forest	FOR/ NON FOR 4-digit code, the first two digits (95-99), the second two digits (33,38,39,70-99)	Code 95-99 (Cover type) 70-99 (Non Forested) 95 (Coastal Offshore Non-Land), 96 (Lake Island), 97 (Off Shore Islands), 98 (Mainland Non Forested) 70 (Wetland General), 71 (Beaver Flow), 72 (Open Bog), 73 (Treed Bogs), 74 (Coast Wetlands), 75 (Wetland In Lake), 76 (Cliff, Dunes, Coastal Rocky) 77 (Inland Water), 78 (Ocean) 83, 33 (Brush), 84 (Rock Barren), 85 (Barren), 86 (Agriculture), 87 (Urban), 88, 38 (Alders< 75%), 89, 39 (Alders > 75%), 91 (Blueberries) 92 (Misc) 93 (Land Fill), 94 (Beach), 95 (Gravel Pit), 96 (Pipeline Corridor), 97 (Powerline), 98 (Road Corridor), 99 (Rail Lines)
NL	Pre 2005	Non Forested Vegetated, Naturally and Anthropogenic Non Vegetated Unproductive Forest		Rb(Rock Barren), Sb (Soil Barren), C (Cleared Land), A (Agriculture), Rw (Right-of-way) , Res (Residential), Bog , Treed bog (Symbol)
	2005	Non Forested Vegetated, Non Vegetated Anthropogenic, Naturally Non Vegetated	Non Forest Land	Rb(Rock Barren), Sb (Soil Barren), Treed bog (Symbol), Organic Bog (Symbol), Wet Bog (Symbol), C (Cleared Land), A (Agriculture), Rw (Right-of-way) , Res (Residential),
		Unproductive Forest	Non Productive Forest	S (≥50% softwood species) H (≥50% hardwood species). A non commercial height code (1 to 5) and crown closure code (1 to 4) are assigned. A biophysical class is assigned W (wet), D (dry), or R (bedrock).
WBNP	1979	Naturally Non Vegetated (Water)	shrln	Represents boundaries between land and water: Z(water), U(unclassified or water areas), 8(unclassified area)
		Non Forested Vegetated, Unproductive Forest	v#pcm	Identified in vegetation plant community field. 99(meadows), 1and 2(meadows seasonally submerged), 3(meadow seasonal short grass), 4(wet meadow), 5(semi-open prairie), 6(salt flats saline meadows), 98(ericaceous shrubland/thicket), 7(alder-willow thicket) 17(wet muskeg), 18(shrub muskeg), 13(disturbed after fire), 0(unclassified)
PANP	1968	Non Forest Cover Class: contains naturally and anthropogenic non vegetated, non forested vegetated	C#SPEC , U#SPEC G#SPEC	Identified in Overstory, Understory or Ground Vegetation field Overstory, Understory field: 0 (nonforest or no data available); WATER (water body); ISLAND (island with no vegetation data available) Ground Vegetation field: C (cleared land); FL (flooded land); M1 (lowland (wet site) herb and sedge cover); M2 (lowland (wet site) shrub cover); U1 (upland (dry site) herb and grass cover); U2 (upland (dry site) shrub cover)
YT	2.1	Non Forested Vegetated(NV) Non Vegetated Natural and Anthropogenic:Water (NW) Exposed (NE) Urban (NU)	CLASS CL_MOD	S (Shrub), TS (Tall Shrub), TSo Tall Shrub Open, LS (Low Shrub), LSo Low Shru Open, H (Herb), C (Cryptogram), M (Mixed) R (River) L (Lake), RS (River Sediment), E (Exposed Soil), S (Sand), B (Burned), RR (Bedrock or fragmented rock), Ro Rock , Ru Rubble, O (Other) RD (Road), G (Gravel Pit), T (Tailings)
NT	3.0	Naturally and Anthropogenic Non Vegetated	Type Class	LA (Lake), PO (Pond), RE (Reservoir), RI (River) SW (Salt Water) GL (Glacier), SC (Snow Cover), SI (Snow Ice), BR (Bedrock), LB (Lava Bed), RO (Rock Rubble), RT (Rubble Talus), MS (Mine Spoil) AP (Airport), BE (Beach), BP (Urban), BU (Burn), CB (Cutbank), ES (Exposed Soil), GP (Ground Pit), LL (Landing), MO (Moraine) MU (Mud Flat), PM (Open Pit Mine), LS (Pond Sediment), RR (Railway), RM (Reservoir Margin), RS (River Sediments), RD (Road Surface), TS (Tailings), EL (Other)
		Non Forested Vegetated	Type Class	ST (Tall Shrub), SL (Low Shrub), HG (Grass), HF (Forbs), HE (Herb), BM (Moss), BL (Lichen), BY (Bryoid)

Appendix 12 CAS Non-Forested, Non-Vegetated, and Unproductive Forest Conversion

PROVINCE	STANDARD	TYPE	FIELD	CAS Translation (Whenever a forest inventory includes crown closure for a non-forested attribute - then migrate into CROWN CLOSURE LYR field)																	
BC	Forest Cover Inventory (May be converted to VRI)	Unproductive Forest	NPFOR_DESC NFOR_DESC	A For = AL	NP=NP	NPL = NP															
		Non Forested Vegetated Naturally Non Vegetated	NPFOR_DESC	A=AP OR=HG	R=RK U=FA NCBR = ST	CL=Claybank = EX NP Br=ST NC = SD	Slide = SL NPBU=SD OR = HG	Gravel Bar=WS NP=NP	L=Lake = LA G =WS	RIV=RI NC =SD	S=Swamp=SL P=Hayfield= CL	Muskeg=OM MUD=EX	C=CL ICE=SI	M=HG GR = IN	TIDE = TF SAND = SA						
	VRI	Non Forested Vegetated	Several Options: LAND_CD_1, BCLCS_LV_4 and 5, HERB_TYP	ST=ST	SL=SL	HE=HE	HF=HF	HG=HG	BY=BR	BM=BR	BL=BR										
		Naturally and Anthropogenic Non Vegetated	Several Options: BCLCS_LV_5, NVEG_TYPE_1, LAND_CD_1	GL=SI RM=EX LA=LA	PN=SI BE=BE RE=LA	BR=RK LL=EX RI=RI	TA=RK RZ=FA OC=OC	BI=RK MU=WS	MZ=IN CB=EX	LB=RK MN=EX	GP=IN BU=EX	TZ=IN	RN=FA	RS=WS UR=SE	ES=EX AP=FA	LS=WS MI=IN	OT=OT				
	Land Cover Component (Can use to identify non vegetated as well)	Land_Cover_Class_Code, LAND_CD_1	GL=SI RM=EX LA=LA	PN=SI BE=BE RE=LA	BR=RK LL=EX RI=RI	TA=RK RZ=FA OC=OC	BI=RK MU=WS BU=EX	MZ=IN CB=EX OP=EX	LB=RK MN=EX	SI=SI GP=IN	RO=RK TZ=IN	EL=EX RN=FA	RS=WS UR=SE	ES=EX AP=FA	LS=WS MI=IN	OT=OT					
AB	Phase 3	Unproductive Forest	OG UG	Treed Muskeg= TM OG-6	Scrub Coniferous=SC OG-6	Scrub Deciduous=SD OG-6															
		Naturally and Anthropogenic Non Vegetated, Non Forested	OG UG	W=LA OG-8	FL=FL OG-8	Muskeg=OM OG-7	Sand=SA OG-7	Cut Bank=EX OG-7	Rock Barren=RK OG-7	Soil Barren=Ex OG-7	Grassland=HG OG-7	Clearedland=OT OG-7	Cultivated=CL OG-7								
	AVI 2.1 AVI 2.1+	Vegetated Anthropogenic	ANTH_VEG, UANTH_VEG	CIP=FA	CIW=FA	CA=CL	CP=CL	CPR=CL	CIU=OT												
		Non Vegetated Anthropogenic	ANTH_NON, UANTH_NON	ASC=SE	ASR=SE	AII=IN	AIM=IN	AIF=SE	AIG=IN	AIE=IN	AIH=FA	AIW=FA	AIU=OT	AII=HG	AIP=FA						
		Naturally Non Vegetated	NAT_NON, UNAT_NON	NMB=EX	NMC=EX	NMR=RK	NMS=SA	NWI=SI	NWL=LA	NWR=RI	NWF=FL	NMM=RK	NMG=SD								
Non Forested Vegetated	NFL, UNFL	HG=HG	BR=BR	HF=HF	SO=SL/ST	SC=ST/SL	NEED HEIGHT FIELD TO DETERMINE LOW SHRUB/TALL SHRUB				SL=<2m ST=>2m										
SK	UTM	Unproductive Forest	NP	3100 Treed Muskeg= TM	3200 Treed Rock=TR																
		Naturally Non-Vegetated	NP	3800 Sand=SD	5100 Flooded=FL	3700 Clearing =OT	3400 Clear Rock=RK	5210 Water Lake Surface=LA	5220 River Surface, Large Stream=RI	Water	5200 Unknown=FL	Water									
		Non Forested Vegetated and Non Vegetated Anthropogenic	NP	3300 Clear Muskeg=OM	3500 Brushland=ST	3600 Meadow=HG	3900 Productive Burn-Over=SD	Non	4000 Pasture or Cropland = CL	3700 Clearing=OT	3800 Sand=SA	9000 Not Typed OT	R1 or 2 GR=HG	R1 or 2 SB=ST							
	SFVI 4.0	Non Forested Vegetated	Non Forested	TS=TS	LS=L	NE=NE	FE=NF	GR=HG	MO=BR	LI=BR	AV=HF										
		Naturally Non Vegetated	Non Vegetated	UK=OT	CB=EX	RK=RK	SA=SA	MS=EX	GR=WS	SB=WS	WA=LA	LA=LA	RI=RI	FL=FL	SL=FL	FP=BP	ST=RI				
	Non-Vegetated Anthropogenic	Non Vegetated	ALA=CL AFS=FA	POP=SE CEM=SE	REC=FA WEN=FA	PEX=IN TAR=FA	GPI=IN RWC=FA	BPI=BP RRC=FA	MIS=IN TIC=FA	ASA=IN PLC=FA	NSA=IN MPC=FA	OIS=IN	OUS=IN								
MB	Pre 1998	Non Vegetated Natural and Anthropogenic	Non Forested Land	801=BT	802,803=RK	804=SA	811-813=CL	815, 816=CL													
		Unproductive Forest	Non Productive Forested Land	701-704=TM	711-713=TR	731-734=OT	821-824=HG														
		Non Forested Vegetated	Non Forested Land	831=OM	832=OM	835=HG	838=EX	839=BE	721-725=ST												
		Non Vegetated Anthropogenic	Non Forested Land	841=SE	842=FA	843=FA	844=FA	845=IN	846=CL	847=FA	848=FL	849=BP	851=FA								
		Naturally Non Vegetated Water	Water	901=RI	991=LA	992=LA	993=LA	994=RI	995=RI	900=LA											
	FLI	Non Forested Vegetated	NNF_ANTH Natural Non Forest and Anthropogenic	SO=SL AL=ST	SC=ST CC=ST	HG=HG CS=ST	HF=HF AS=ST	HU=HF VI=ST	BR=BR RA=SL	CL=BR DL=SL	AU=SL	NOTE: shrub crown closure is included with the shrub code, e.g. SC (closed shrub with 61% - 70% crown closure)									
		Naturally Non Vegetated		NMB=EX	NMC=EX	NMF=RK	NMR=RK	NMS=SA	NMM=EX	NMG=WS	NWL=LA	NWR=RI	NWF=FL								
Non Vegetated Anthropogenic	CIP=FA	CIW=FA		CIU=OT	ASC=SE ASR=SE	ASP=FA	ASN=FA	AIH=FA	AIR=FA	AIG=IN	AII=IN	AIW=LG	AIA=FA	AIF=SE	AIU=OT						
ON	FRI	Naturally and Anthropogenic Non Vegetated	R - NON PROD MNR - CODE	315 DAL=CL	316 GR=HG	317 UCL=OT	62 or 266 ISL or I=IS	64 or 265 or 303 or 305 L=LA	152 or 304 R=RI	101 or 102 =LK (Reservoir)	308, 309 =FA	314, 318, 320, 333 = OT	94 Railway=FA	666=OT	6 Airstrip=FA	313 ROCK or RK=RK					
		Unproductive Forest and Non Forested Vegetated	MNR CODE	310 TM=TM	311 OM=OM	312 BA=ST															
	FRI FIM	Same as FRI	MNR CODE	Same as FRI																	
	FRI NBI	Same as FRI	MNR CODE	Same as FRI and	SC=SL	HG=HG	HF=HF	BR=BR	SA=SA												

Appendix 12 CAS Non-Forested, Non-Vegetated, and Unproductive Forest Conversion

PROVINCE	STANDARD	TYPE	FIELD	CAS Translation (Whenever a forest inventory includes crown closure for a non-forested attribute - then migrate into CROWN CLOSURE LYR field)													
QC	3rd	Categories de terrains: contains Unproductive Forest, Naturally Non Vegetated, Non Vegetated Anthropogenic, and Non Forested Vegetated	Eau Improductifs Vocation Non forestiere TER_CO	EAU=LA CAR=IN HAB=SE SC=IN	INO=FL CEX=FA VRG=CL DEF=OT	AEP=OT CHE=IN ILE=IS A=CL	AER=FA CU=SE CNE=FA US=IN	BHE=IN OBS=FA LTE=FA VIL=FA	BAS=LG CV=FA MI=IN CIM=OT	BLE=CL CF=OT INC=OT AL=ST	CFO=FA DEM=IN PPN=OT DH=EX	CAM=FA DEP=IN CS=SE DS=EX	GOL=FA RO=FA	GR=IN			
PE	Pre 2000	Naturally and Anthropogenic Non Vegetated, Non Forested Vegetated	CoverClass	bo=TM	al=ST	so=SL	cl=OT	cln=OT	ag=CL	gp=IN	rc=FA	sd=SD	Lake=LA	Pond=LA			
	2000	Non Vegetated Anthropogenic, Naturally Non Vegetated, Unproductive Forest, Non Forested Vegetated	CoverClass	BAR=EX	BSB=BE	BLD=OT	WWW=OC	GRS=HG	PAV=FA	SHR=SL	TRE=OT	WAT=LA					
NB	Pre 2003	Non Forest		AC=CL	OC=SE	RO=RK	AF=ST	AC=ST	GP=IN	MI=IN							
	2003	Non Vegetated Water Non Forest vegetated Wetland Freshwater Coastal	Water Wetland (VT) Wetland (F) Wetland (C)	LK=LA AL=ST	ON=OC SV=ST	PN=LA AB=WS	RV=RI BC=BE	SL=LA BO=OM	CM=HG FE=OM	DU=SD FM=HG	RK=RK FW=FL	TF=TF SB=SL					
NS	Pre 2006	Non Forested vegetated, non vegetated anthropogenic, naturally non vegetated, and unproductive forest	FOR/ NON FOR	Alders=ST Marsh/ Swamp=HG	Barren=EX Open Bog=OM	Blueberry=CL Urban=SE	Brush & Alders=ST Rock=RK	Agriculture=CL Dump=IN	Gravel Pit=IN Treed Bog=TM								
	2006	Non Forested Vegetated, Non Vegetated Anthropogenic, Naturally Non Vegetated, and Unproductive Forest	FOR/ NON FOR	95=FA 70=OM 83=ST	96=IS 71=FL 84,85=EX	97=IS 72=OM 86=CL	98=EX 73=TM 87=SE	74=OM 88=ST	75=OM 89=ST	76=RK 91=CL	77=LA 92=OT	78=OC 93=IN	94=BE	95=IN	96=FA	97=FA	98=FA
NL	Pre 2005	Non Forested Vegetated, Naturally and Anthropogenic Non Vegetated Unproductive Forest	Non Forested Land	940 Rb=RK	950 Sb=EX	960 C=OT	970 A=CL	961,962 Rw=FA	980 Res=SE	920 Bog=BR	930 Treed bog=TM	951 Sand=SA	990 Lake=LA	991 River=RI	992 Saltwater=OC	915=NULL	
	2005	Non Forested Vegetated, Non Vegetated Anthropogenic, Naturally Non Vegetated	Non Commercial Forest Forested Land	900,905,907 S = SC 940 Rb = RK	910 H = SD 950 Sb = EX	(Also assign height code and crown closure code) Organic Bog (symbol) = BR	920 906 HF with CO Mod.	930 Treed Bog (Symbol) = TM	925 Bog (Symbol) = OM	Wet A = CL	970 Res = SE	980 RW = FA	961,962 C = OT	960 991=RI	992=OC	990=LA	951=SA
WBNP	1979	Non Forested Vegetated, Naturally Non Vegetated (Water) Unproductive Forest	v#pcm, shrIn	Identified within vegetation plant community field	1=HG 2=HG	3=HG 4=HG	5=HG 99=HG	98=SL 7=ST	13=HE 17=HG	18=SL 0=EX	6=HG	Z=LA U=LA 8=LA					
PANP	1968	Non Forest Cover Class: contains Naturally and Anthropogenic Non Vegetated, Non Forested Vegetated	C#SPEC , U#SPEC G#SPEC	Non Vegetated (C#SPEC, U#SPEC): OT; WATER = LA; ISLAND = IS	0 = Non Vegetated Anthropogenic (G#SPEC): C = OT	Non Forested Vegetated (G#SPEC): = HG; M2 = SL; U1 = HG, U2 = SL	M1 Non Vegetated (G#SPEC): FL = FL										
YT	2.1	Non Forested Vegetated(NV)	TYPE	VN=Vegetated, non forested; NW=Non vegetated water; NU=Non Vegetated, Urban/Industrial; NE=Non vegetated, Exposed land; NS=Non Vegetated, Snow/Ice										Anthropogenic vegetated = NU			
		Non Vegetated Natural and Anthropogenic:Water (NW) Exposed (NE) Urban (NU)	CLASS CL_MOD	S=ST R=RI	TS=ST L=LA	LS=SL RS=WS	H=HE E=EX	C=BR S=SD	M=HE B=EX	Ro,Ru=RK RR=RK	O=OT	Tso,TS=ST RD=FA	G=IN	T=IN	Anthropogenic non vegetated = NU Naturally non vegetated = NE, NS, NW Nonforest vegetated = VN		
NT	3.0	Naturally and Anthropogenic Non Vegetated	Type Class	LA=LA GL=SI ES=EX	PO=LA SC=SI GP=IN	RE=LA SI=SI LL=EX	RI=RI BR=RK MU=EX	SW=OC LB=RK MU=EX	RO=RK PM=IN	RT=RK LS=WS	MS=IN RR=FA	AP=FA RM=EX	BE=BE AS=WS	BP=SE RP=FA	BU=EX TS=IN	CB=EX EL=OT	
		Non Forested Vegetated	Type Class	ST=TS	SL=LS	HG=HG	HF=HF	HE=HE	BM=BR	BL=BR	BY=BR						

Appendix 12 CAS Non-Forested, Non-Vegetated, and Unproductive Forest Codes

NON FORESTED VEGETATED	UNPRODUCTIVE FOREST	NON VEGETATED	
		ANTHROPOGENIC	NATURAL
Tall Shrub (≥2m) ST	Treed Muskeg TM	Industrial IN	Alpine AP
Low Shrub (<2m) SL	Treed Rock TR	Facility/ Infrastructure FA	Lake LA
Forbs HF	Alpine Forest AL	Cultivated CL	River RI
Herbs HE	Scrub Deciduous SD	Settlement SE	Ocean, Salt Water OC
Graminoids HG	Scrub Coniferous SC	Lagoon LG	Rock RK
Bryoid BR	Non Productive Forest NP	Borrowpit BP	Sand SA
Open Muskeg OM		Other OT	Snow/Ice SI
Barren Tundra BT			Slide SL
			Exposed Land EX
			Beach BE
			Water Sediments WS
			Flood FL
			Island IS
			Tidal Flats TF

APPENDIX 13

DISTURBANCE HISTORY – SUMMARY OF CANADIAN FOREST INVENTORIES

CAS DISTURBANCE HISTORY CODES

DISTURBANCE HISTORY CAS CONVERSION

(UNDER SEPARATE COVER - SEE EXCEL SPREADSHEET)

Appendix 13 Disturbance History - Summary of Canadian Forest Inventories

PROVINCE	STANDARD	FIELD	YEAR	EXTENT	EXTENT CODES	Bound					Codes												
BC	For. Cov. Inv.	Activity_cd	ACTIVITY_YEAR	Activity_Sub_cd	1-9 INSECT DISEASE= 1-4	1 2 10% 20%	3 4 30% 40%	5 50%	6 7 60% 70%	8 9 80% 90%	L	B	W	D	K	S	F	I			EIGHT OR MORE EVENTS		
	VRI	Disturbance_Type_Code	ACTIVITY_START_DATE ACTIVITY_END_DATE	Disturbance percentage	1-9 INSECT DISEASE= 1-4	1 2 10% 20%	3 4 30% 40%	5 50%	6 7 60% 70%	8 9 80% 90%	L	B	W	D	K	S	F	I			SIXTEEN OR MORE EVENTS		
AB	Phase 3	Disturbance	YEAR	Severity	1,2,3,4	1-25	26-50	51-75	76-100		V	W	X	Y		A	B	C	D		TWO EVENTS		
	AVI 2.1	MODIFIER	YEAR	EXTENT	1,2,3,4,5	1-25	26-50	51-75	76-95	96-100	CC BU	WF CL	DI IK	UK WE	DT BT	SI SC	PL TH				TWO EVENTS		
	AVI 2.1+	MODIFIER	YEAR	EXTENT	1,2,3,4,5	1-25	26-50	51-75	76-95	96-100	CC BU	WF CL	DI IK	UK WE	DT BT	SI SC	PL TH				THREE EVENTS		
SK	UTM	Disturbance	YEAR	NONE	NONE						CO BO	SCO	WCO	OP							THREE EVENTS		
	SFVI 4.0	Disturbance	YEAR	EXTENT	1,2,3,4,5	1-25	26-50	51-75	76-95	96-100	CO BO	WI HA	IN DI	AK SL		SI					THREE EVENTS		
MB	Pre 1998	No Field	-	-	-	possibly use cutting class																	
	FLI	MOD1	ORIGIN1	EXT 1	1,2,3,4,5	1-25	26-50	51-75	76-95	96-100	CC BU	WF CL	DI IK	IK 1B	UK WE	BF SF	DT BT					TWO EVENTS	
ON	FRI	No Field	-	-	-	Barren and scattered (BS) = disturbed, stocking unknown																	
	FRI FIM	DEV STAGE	No Values	No Values	No Values	LOW MGMT, DEPHARV=(HARV NSR) LOW NAT, DEP NAT=(NAT NSR) NEW PLANT NEW SEED=(HARV.SR) FTG PLANT, FTG SEED=(HARV SR)					FTGNAT=(NAT SR)		(STRIP CUT, FRSTPASS, SEED TREE, IMPROVE, PRECUT, SEEDCUT FIRSTCUT LASTCUT SELECT) = (Partial Cut)									ONE EVENT Productive land only	
	NBI	Disturbance	YEAR	EXTENT	1,2,3,4,5	1-25	26-50	51-75	76-95	96-100	BU	AK	FL	WF	IK	Silv codes						FIVE EVENTS	
QC	3rd	Major Disturbance PER_CO_ORI	PER_AN_ORI	Major natural and anthropogenic disturbances		Intervention d'origine (Anthropogenic): if > 75% of area distributed					cpr etr ens	crs enm p	cbt pln plr	cpe plb rea	ct ria rps	crb cba cef cpt cph prr crr						ONE EVENT	
		Partial Disturbance PER_CO_MOY	PER_AN_MOY	Partial natural and anthropogenic disturbances		Perturbation d'origine (Natural): if > 75% of area distributed					cht	dt	es	br	fr	ver						ONE EVENT	
	3rd	Major Disturbance PER_CO_ORI	PER_AN_ORI	Major natural and anthropogenic disturbances		Intervention partielles: if 25% to 75% of area distributed					con cdl cjl dld cam cps	ca cd cj cjp cjt cea cb	ctr cp ce cpl cpm	cpc drm drc dr ec ece	epc enr fer rbv ecl	crr rb rn rrr rr rg rrp	deg esi cjl epr cpl						ONE EVENT
				Perturbation moyenne: if 25% to 75% of area distributed					brp	chp	dp	el	vep										
PE	Pre 2000										br	pc	pp	cc	di	wf	pl	of			TWO EVENTS		
	2000	History1 History 2	No Field	No Field							BR WF	CC XS	HR	IT	PC	PN	SE	TH			TWO EVENTS		
NB	Pre 2003	Disturbance									C	B	W	H	V						ONE EVENT		
	2003	L1 ORIGIN	No Field	No Field							W (Windthrow)												
		L1 TRT	Year of Treatment	No Field							BB CC	CL CT	PA PB	PC	FW RC	SA SC	SH SR	ST TP				ONE EVENT	
NS	PRE 2006																						
	2006	FOR/NON (Last two digits)	No Field	No Field		Extent built into disturbance code					02=burn 06=windthrow 07=dead (<25%live) 08=dead 1(25-50%live) 09=dead2(51-70% live) 13= dead 3(25-50% dead) 14= dead 4(51-75%) 15 = dead 5(>75%) 60 = clearcut 61,62 = Partial cut									ONE EVENT			
NL	Pre 2005	Disturbance	Disturbance Year	No Field							X	F	Z	W	M						ONE EVENT		
	2005	TYPE_DISTURB TYPE_SILV	YEAR_DISTURB YEAR_SILV	No Field							X Logging	Y Fire	Z Insect	W Wind	M Misc	Silviculture Treatments: PB, P, DS, SP, PCT, CT, CAR, CNR, MAR, PM, RC, GP, H, IS, DLT, AS, CTD					TWO EVENTS		
WBNP	1979	v#pcm erob#	v#str eros#	NO FIELD	v#ptc	This inventory has not been updated. There is no disturbance field. Disturbance identified at the time of inventory is limited to geological erosion and severe burns. Erosion (eros#): A, F, G, K, M, S, W, KA, MG, F, MF. Severe burn (v#pcm) = 13 with v#pct (percentage cover). Vegetation structure field (v#str) = D (Disturbed areas (fire)).																	
PANP	1968	No Field	No Field	No Field																			
YT	2.1	DIST_CODE1 DIST_CODE2	YEAR	No Field	-						DB	DW	DD	DF	DL	DI	DS				TWO EVENTS		
NT	3.0	DIS1CODE DIS2CODE DIS3CODE	DIS1YEAR DIS2YEAR DIS3YEAR	DIS1EXT DIS2EXT DIS3EXT	1,2,3,4,5	1-25	26-50	51-75	75-95	96-100	AV BT	BU CC	CR DT	DI FL	IK SC	UK WE	WI				THREE EVENTS		

Appendix 13 Disturbance History CAS Conversion

PROVINCE	STANDARD	TYPE	FIELD	Translation to CAS CO = CUT PC = PARTIAL CUT BU = BURN WF = WINDFALL DI = DISEASE IK = INSECT FL = FLOOD WE = WEATHER SL = SLIDE OT = OTHER DEAD TOPS or TREES = DT SILVICULTURE TREATMENTS = SI														
BC	For. Cov. Inv.		Activity_cd	L=CO B=BU	W=W D=D	K=OT S=SL	F=FL I = IK											ALL TREATMENTS=SI
	VRI		Disturbance	L=CO B=BU	W=W D=D	K=OT S=SL	F=FL I = IK											
AB	Phase 3		Disturbance	V = OT W=WF X=CO Y=BU														
	AVI 2.1		Modifier	CC=CO	BU=BU	WF=WF	DI=DI	IK=IK	UK=OT	WE=WE	DT=DT	BT=OT	CL=OT					ALL TREATMENTS=SI
	AVI 2.1+		Modiier															
SK	UTM		Disturbance	CO=CO	BO=BU	SCO=CO	WCO=CO											
	SFVI 4.0		Disturbance	CO=CO	BO=BU	WI=WF	HA=WE	IN=IK	DI=DI	AK=OT	SL=SL							ALL TREATMENTS = SI
MB	Pre 1998		NO FIELD															
	FLI		MOD1 MOD2	CC=CO	BU=BU	WF=WF	CL=OT	DI=DI	DM=DI	IK=IK	IB=IK	UK=OT	BF=NT	SF=FL				
ON	FRI		NO FIELD	Polygons with a Barren and Scattered code are disturbed; however cannot tell the type of disturbance														
	FRI FIM		DEVSTAGE	LOWMGMT, DEPHARV, NEWPLANT, NEWSEED, FTGPLANT, TTGSEED=CO LOWNAT, DEPNAT, FTGNAT=BU, STRIPCUT, FRSTPASS, SEEDTREE, PRECUT, SEEDCUT, FIRSTCUT, LASTCUT, IMPROVE, SELECT=PC														
	FRI NBI		Disturbance	BU=BU	WF=WF	AK=OT	IK=IK	FL=FL	CC=CO									ALL TREATEMENTS = SI
QC	3rd		PER_CO_ORI	cpr, cph, crs, cbt, cba, cef, cpe, cpt, crt, crb, etr, crr = CO				cht=WF	dt=OT	es=IK	br=BU	ver=WE	fr=OT	ens, enm, p, pln, plr, plb, rea, ria, rps, drn, drc, dr, enr, fer, rrb, rm, rrr, prr= SI				
			PER_CO_MOY	con, cdl, dld, cam, ca, cd, cj, cig, cjp, cjt, cca, cb, cba, ctr, cp, cph, cpi, cps, ce, cea, cef, cpf, cpm, cpc, rbv, ecl, crr, epc, ece, ec, deg, esi, epr = PC				vep = WE	brp=BU	chp = WF	dp = DI	el = IK	drm, drc, dr, deg, enr, fer, rrb, rm, rrr, prr, rrp, rrg, rr = SI					
PE	Pre 2000		Disturbance	BR=BU	WF=WF	PC=PC	PL=PC	PP=PC	CC=CO	DI=DI								
	2000		History1 History 2	BR=BU	WF=WF	CC=CO	PL=PC	HR=OT	IT=OT									PN, SE, TH, XS = SI
NB	Pre 2003			C=CO	B=BU	W=WF	H=PC	V=PC										
	2003		Treatment	CT=PC GS=PC	PC=PC PA=PC	SC=PC ST=PC	ST=PC CV=PC	TP=PC RC=PC	SH=PC FW=PC	SR=PC SA=PC	PA=PC	PB=BU BB=BU	Can identify blowdown from origin=W				A, H, L, P, T, S, FP, PL, TI, CL = SI	
NS	Pre 2006																	
	2006		FOR/NON (last two digits)	02 = BU 60 = CO	06 = WF 61 = PC	07 = OT extent 5 08 = OT extent 3 09 = OT extent 2			13 = OT extent 2 14 = OT extent 3	15 = OT extent 4								
NL	Pre 2006			X=CO	Y=BU	Z=IK	W=WF	M=OT										
	2006		TYPE_DISTURB TYPE_SILV	X=CO	Y=BU	Z=IK	W=WF	M=OT							Silviculture: PB, P, DS, SP, PCT, CT, CAR, CNR, MAR, PM, RC, GP, H, IS, DLT, AS, CTD=SI			
WBNP	1979		See fields eros#, v#pcm, or v#str	Need to access more than one field. Erosion (eros#): A, F, G, K, S, W, KA, FG = OT; M, MG, MF = SL. Severe fire use v#pcm code 13 = BU or v#str code D = BU														
PANP	1968		No Field	No data recorded														
YT	2.1		DIST_CODE1 DIST_CODE2	DB=BU	DL=CO	DW=WF	DI=IK	DD=DI	DS=SL	DF=FL								
NT	3.0		DIS1CODE DIS2CODE DIS3CODE	AV=SL	BT=OT	BU=BU	CC=CO	CR=OT	DT=OT	DI=DI	IK=IK	FL=FL	UK=OT	WE=WE	WI=WF			ALL TREATMENTS = SI

Appendix 13 CAS Disturbance History Codes

DISTURBANCE TYPE		DISTURBANCE YEAR	EXTENT	EVENTS PER POLYGON
CUT	CO	e.g 1998	Lower Bound Upper Bound	3
PARTIAL CUT	PC			
BURN	BU			
WINDFALL	WF			
DISEASE	DI			
INSECT	IK			
FLOOD	FL			
WEATHER	WE			
SLIDE	SL			
OTHER	OT			
DEAD TOPS OR TREES	DT			
SILVICULTURE TREATMENTS	SI			

APPENDIX 14

**WETLAND – SUMMARY OF CANADIAN
FOREST INVENTORIES**

CAS WETLAND CONVERSION

CAS WETLAND CODES

(UNDER SEPARATE COVER - SEE EXCEL SPREADSHEET)

Appendix 14 Wetland - Summary of Canadian Forest Inventories

PROVINCE	STANDARD	FIELD	CODES			
BC	Forest Cover Inventory	NO FIELD	NONE	Can partially derive very broad wetland classes		
	VRI	NO FIELD	Broad wetland category or can derive most wetlands from other attributes			
AB	PHASE 3	NO FIELD	NONE	Can derive very broad wetland classes		
	AVI 2.1	NO FIELD	NONE	Can derive from other attributes		
	AVI2.1+	WETLAND	USE ALBERTA WETLAND INVENTORY (AWI)	WETLAND CLASS B, F, S, M, W, Z	VEGETATION MODIFIER (% Tree Cover) Forest(>70%) Trees(6-70%) Open(<6%)	LANDFORM MODIFIER X (permafrost) P(patterning) N (not present)
SK	UTM	NO FIELD	NONE	Can derive very broad wetland classes using drainage and texture classes		
	SFVI	NO FIELD	NONE, can derive from other attributes or from ecosite			
	SFVI+	WETLAND	USE AWI See AVI 2.1 + above			
MB	Pre 1998	Non Productive Forestland	701 - 704 + 721 - 725 823 831	701 (Black Spruce Treed Muskeg) 702 (Larch Treed Muskeg) 703 (Eastern Cedar Treed Muskeg) 704 Taiga (Northern Transition Forest) 721 (Willow) 722 (Alder) 723 (Dwarf Birch) 724 (Shrub) 725 (Shrub Prairie) 823 (Wet Meadow) 831 (Muskeg) 832 (String Bogs) 835 (Marsh) 838 (Mud salt flats) 848 (Beaver floods)		
	FLI	WETECO1 WETECO2	CODES 1-10	1 (Open bog-low shrub), 2 (Open poor fen- low shrub), 3 (Open rich fen), 4 (Thicket swamp), 5 (Shore fen), 6 (Meadow marsh), 7 (Sheltered marsh), 8 (Exposed marsh), 9 (Open water marsh- floating leaves/ peat substrate), 10 (Open water marsh - submerged mineral substrate)		
			* DOES NOT INCLUDE TREED WETLANDS - CAN DERIVE BROAD TREED WETLAND CLASSES USING OTHER ATTRIBUTES OR ECOSITE			
ON	FRI	NO FIELD	NONE, CAN DERIVE 90% from Ecosite (does not differentiate productive forest wetland)			
	FRI FIM	NO FIELD	NONE OR CAN DERIVE FROM ORIGINAL OR HARMONIZED ECOSITE * NOTE: Different from FRI which used old (Original)Ecosite System.			
	FRI NBI	WETLAND	Includes modified Alberta Wetland Inventory, See AVI 2.1 + above			
QC	3rd (TIE)	NO FIELD	CAN IDENTIFY WET AREAS FROM DRAINAGE CODES, OR ECOSITE OR DERIVE FROM OTHER ATTRIBUTES CAN IDENTIFY Organic deposits from TYPE DE DEPOT			
PE	2000	CoverClass	BOW (Bog) BKW (Brackish Water) DMW (Deep Marsh) MDW (Meadow) OWW (Open Water) SAW (Salt Marsh) SMW (Shallow Marsh) SDW (Sand Dune) SSW (Shrub Swamp) SFW (Seasonally Flooded Flat) WSW (Wooded Swamp)			
NB	OLD					
	2005	WL	Freshwater: BO, FE, AB (Aquatic Bed) FM (Marsh) FW (Forested Wetland) SB (Shrub Wetland) AP (in FOREST layer, alder on poor sites) BP (Beaver Pond) Coastal: CM (Coastal Marsh) TF (Tidal Flat)			
NS	OLD					
	2006	FOR/NON (Last two digits of four digit number)	89 (Alders > 75%, See FOREST layer code 39 from 2001 onward) 88 (Alders < 75%, See FOREST layer code 38 from 2001 onward) 83 (Brush - being replaced by FOREST layer code 33) 70 (Wetland excluding open and treed bogs) 71 (Beaver flood) 73 (Treed Bogs) 72 (Open Bogs) 74 (Coast wetlands) 75 (Wetland in lake)			
NL	2005	Non Commercial Forest Forested Land	Organic Bog (Symbol), Treed Bog (Symbol), Wet Bog (Symbol), and Biophysical Class = W (Wet) assigned to S (Scrub softwood) and H (Scrub Hardwood)			
WBNP	1979	v#pcm and v#str	CAN IDENTIFY FROM v#pcm and v#str in concert with v#moi	v#pcm:7(willow-alder thicket); 98(ericaceous shrubland); 99 (meadows); 1,2,3,4,5,6(meadows);17(wet muskeg); 18(shrub muskeg); 20,21(b-spruce)	v#str:ST(shrubland thicket);M(graminoid/sedge prairie);N(fen);P(treed peatbog);PG(wet graminoid muskeg);PGC(wet graminoid-herb muskeg);PST(shrub muskeg);MST(gr & shr)	
PANP	1968	No Field	Can identify wetland grass or herb from wetland shrub using G#SPEC field: M1 (sedge and herb) and M2 (shrub) No moisture field, treed wetlands can be identified from species or species mix; e.g. Larch and black spruce most likely wetland.			
YT	2001	FOR TYPE	CAN DERIVE FOR MOST PART FROM moisture and veg cover type. Can use wetland code W (does not identify wetland type)			
NT	3.0	WETLAND	Can start with LANDPOS wetland code (W) then derive from moisture and TYPE CLASS or forest cover attributes.			
			ALSO OPTIONAL WETLAND FIELD : WE (Wetland no distinction), MA (Marsh), SW (Swamp), FE (Fen), BO (Bog), SO (Shallow Open Water)			

Appendix 14 CAS Wetland Conversion

PROVINCE	STANDARD	TRANSLATION TO COMMON (1)
BC	Forest Cover Inventory	NONE, NEED TO DERIVE FROM OTHER ATTRIBUTES
	VRI	NONE, NEED TO DERIVE FROM OTHER ATTRIBUTES
AB	PHASE 3	NONE, NEED TO DERIVE FROM OTHER ATTRIBUTES
	AVI 2.1	NONE, NEED TO DERIVE FROM OTHER ATTRIBUTES
	AVI 2.1+	Use wetland field B=B F=F S=S M=M W=W Z=Z or derive as per AVI 2.1
SK	UTM	NONE, NEED TO DERIVE FROM OTHER ATTRIBUTES
	SFVI	NONE, NEED TO DERIVE FROM OTHER ATTRIBUTES or Ecosite
	SFVI+	Includes AWI same as AVI 2.1+ otherwise derive as per SFVI
MB	Pre 1998	701 = Btnn 702 = Ftnn 703 = Stnn 704 = Ftnn 721 = Sons 722 = Sons 723 = Sons 724 = Sons 725 = Sons 823 = Mong 831 = Fons 832 = Ftpp 835 = Mong 838 = Tmnn 848 = Oonn
	FLI	1 = Bons 2 = Fons 3 = Fong 4 = Sons 5 = Fons 6 = Mong 7 = Mong 8 = Mong 9 = Mong 10 = Mong
ON	FRI	If ecosite present then ES 34 = Btnn ES 35 = Ftnn ES 36 = Stnn ES 37 = Stnn ES 38 = Stnn ES 39 = Bons ES 40 = Ftnn ES 41 = Fong ES 42 = Fong ES 43 = Fopn (Ftpp) ES 44 = Sons ES 45 = Fong ES 46 = Mong ES47 = Mong ES 48 = Mong
	FRI FIM	Use harmonized ecosite or previous ecosite system to derive wetland from other attributes
	FRI NBI	Use wetland field (Same as AVI 2.1+)
QC	TIE	NONE, NEED TO DERIVE FROM OTHER ATTRIBUTES or Ecosite
PE	2002	BOW=Btnn BKW=Eonn DMW=Mong MDW=Mong SAW=Mong SFW=Tmnn SMW=Mong SSW=Sons WSW=Stnn
NB	OLD	
	2005	BO + veg type FS = Btnn BO + veg type SV = Bons FE + veg type FH or FS = Ftnn FE + veg type AW or SV = Fons AB = Oonn FM = Mong = FW = Stnn FW + Impoundment Modifier BP = Oonn SB = Sons CM = Mcng TF = Tmnn
NS	OLD	
	2006	70 = W 71 = Mong 72 = Bonn 73 = Btnn 74 = Ecnn 75 = Mong
NL	2005	Organic Bog - Bons Treed Bog = Btnn Wet Bog = Mong Softwood Scrub (S) or Hardwood scrub (H) with W (Wet) Biophysical Class = Stnn
WBNP	1979	v#str: ST=Sons, M=Mong, MST=Sons, N=Ftnn, P=Btnn, PG=Fong, PGC=Mong, v#pcm: 1,2,3,4=Mong, 99=Mong, 98=Sons, 7=Sons, 17=Fong, 18=Fons, 19=Stnn 20=Btnn. Can use in concert with PST=Fons v#str and v#sp# (species) for further refinement.
PANP	1968	M1 = Fons; M2 = Sons
YT	2001	NONE
NT	3.0	WE = Stnn SO = Oonn MA = Mong SW = Stnn (Sons) FE = Ftnn, Fong, Fons BO = Btnn

Appendix 14 CAS Wetland Codes

WETLAND TYPE		VEGETATION MODIFIER		LANDFORM MODIFIER		LOCAL MODIFIER	
Bog	B	Forestland	F	Permafrost present	X	Collapse scars	C
Fen	F	Treed	T	Patterning present	P	Internal lawn with Islands of forested peat platea	R
Swamp	S	Not treed, freshwater, vegetated	O	No permafrost or patterning	N	Internal lawns	I
Marsh	M	Not treed, coastal, vegetated	C	Saline, alkaline	S	Lawns not present	N
Shallow open water	O	Mud, non vegetated	M	Null		Shrub covers \geq 25%	S
Tidal flats	T	Null				Graminoids with shrub cover < 25%	G
Estuary	E					Null	
Wetland (No distinction)	W						

APPENDIX 15

**PROCEDURES FOR
CAS WETLAND DERIVATION**

Appendix 15

PROCEDURES FOR CAS WETLAND DERIVATION

(Last Revision September 14, 2010)

Introduction

The Boreal Avian Habitat Modeling project has produced a common attribute structure (CAS) to accommodate the various forest inventories across Canada. One attribute of interest is wetland; however, wetland is not identified for many forest inventories or not complete in others. This document identifies a means to derive a four-character CAS wetland code using existing forest attributes for each province or territory. A complete four-character identification or derivation of wetland is not always possible depending on the type of attributes recorded. Only a single generic (W) wetland code is possible to derive for some inventories and a complete four-character CAS wetland code may not be possible to derive for other inventories (usually two-character).

The classification scheme used for CAS follows the classes developed by the National Wetlands Working Group⁵ and modified by Vitt/Halsey⁶. The scheme was further modified to take into account coastal wetlands and alkaline or saline habitats. This model identifies five major wetland classes based on wetland development from hydrologic, chemical, and biotic gradients that commonly have strong cross-correlations. Two of the classes: fen and bog are peat forming with greater than 40 cm of accumulated organics. The non-peat forming wetlands are subdivided as shallow open water, marsh (fresh and salt water), and swamp. The CAS wetland classes and codes are identified in Appendix 1 of the wetland document.

British Columbia Forest Cover Inventory

The Forest Cover Inventory does not lend itself to a very complete derivation of wetland because there is no moisture regime or other related classes to key on. A few non productive forest and non forest categories can be identified. The only source that would provide a more complete picture of wetland would be via the biogeoclimatic classification.

The inventory has been or is being converted to VRI. If this conversion has been done then follow the VRI instructions.

⁵ National Wetlands Working Group 1988. Wetlands of Canada. Ecological Land Classification Series No. 24.

⁶ Alberta Wetland Inventory Standards. Version 1.0. June 1977. L. Halsey and D. Vitt.

1.0 Non Productive Forest

Key on NP designation associated with a forest description where Species 1 = Sb or Cw or Yc.

NP Lowland Forest	Stnn
NP Swamp	Stnn

Although lowland and swamp forests are identified as separate categories in the manual, there is no differentiation identified in the attribute fields; therefore an NP forest can range from rocky to wetland. Treed bogs cannot be differentiated from treed swamps. Pine (PI) swamps can be identified if they are Species 1 or 2 and have Sb as Species 1 or 2 or Cw or Yc as Species 2.

2.0 Non Forest

Key on non forest attributes.

NP Br can include upland and wetland; therefore, it is only reliable regionally (Stnn).

Swamp (Symbol)	Sons
Muskeg (Symbol)	Stnn

3.0 Ecosite

Derivation of wetland from a biogeoclimatic ecosite classification is possible via the PEM (Predictive Ecosite Mapping) or TEM (Terrain) mapping programs; however it is beyond the scope of this project.

British Columbia Vegetation Resource Inventory (VRI)

A general wetland class can be assigned as outlined in Section 1.0 below. A more detailed wetland can be derived as per Section 2.0 and 3.0.

1.0 General Wetland (W)

The general wetland code identifies a broad wetland category with no distinction between wetland classes. Key on Landscape Position W (Wetland). Assign CAS wetland code „W“.

2.0 Treed Polygons

Key on soil moisture regime 7 and 8, species composition, crown closure, and height:

If species 1 = Sb and species 1 percent = 100 and crown closure (CC), 50% and height, 12m	Btnn
If species 1 = Sb or Lt and species 1 % = 100 and CC \geq 50% and height \geq 12m	Stnn
If species 1 = Sb or Lt and species 2 = Lt or Sb and CC \geq 50% and height \geq 12m	Stnn
If species 1 = Ep or Ea or Cw or Yc or PI	Stnn
If species 1 = Sb or Lt and species 2 = Lt or Sb and CC <50%	Ftnn
If species 1 = Lt and species 1 percent = 100 and CC = any and height < 12m	Ftnn

3.0 Vegetated Non-treed

Key on moisture regime 7 and 8 and land cover components for vegetated and non vegetated categories:

ST	Shrub Tall ($\geq 2\text{m}$)	Sons
SL	Shrub Low ($< 2\text{m}$)	Sons
HE	Herb	Mong
HF	Herb Forb	Mong
HG	Herb Graminoid	Mong
BY	Bryoid	Fonn
BM	Bryoid Moss	Fonn
BL	Bryoid Lichen	Bonn
MU	Mudflat	Tmnn

4.0 Ecosite

Derivation of wetland from a biogeoclimatic ecosite classification is possible via the PEM (Predictive Ecosite Mapping) or TEM (Terrain) mapping programs; however it is beyond the scope of this project.

Alberta Phase 3

Wetland classes must be derived from several fields because moisture regime does not exist. Focus must rely on non productive forest land and non-forest land. It is not possible to differentiate between fens, bogs, or marshes. Productive Sb and Lt polygons can also be wetland types but are not possible to differentiate.

1.0 Open muskeg, Bog, or Marsh

File name S1 = OM (Open Muskeg), then =	Wo
File name S1 = TM (Treed Muskeg), then =	Wt
File name S1 = DS (Deciduous shrub), then =	Sons
File name S1 = FL (Flooded Land), then =	Mong

Note: DS could include some upland areas in foothill, mountain, and shield areas.

2.0 Forest Land

Need to include Sb and Lt stands that are classified as productive land. Suggest key on species Sb and Lt, and commercialism U (low uncommercial). This will include transitional stands that are probably moist upland types. It may include upland Sb types in foothill, mountain, and shield areas.

File name S1 = Sb or Lt or Bw and it is 100% and commercialism = U, then = Stnn

File name S1 = Sb or Lt or Bw and S2 = Lt, Sb, or Bw and commercialism = U Stnn

Alberta Vegetation Inventory (AVI)

Includes all versions of AVI 2.1, 2.1+ (enhanced), and 2.2 inventories. The soil moisture regime, tree species, non-forested, and crown closure fields will be required to derive wetlands. Wet anthropogenic cultivated (e.g. CA, CP and CPR) and seeded industrial (e.g. CIP and CIW) are not considered. Patterning in fens and permafrost features cannot be derived from AVI data. Multi-layered (stand structure = M) polygons will require a query of both layers to identify wetland classes. Some of the enhanced versions of AVI may contain an Alberta Wetland Inventory field.

1.0 Alberta Wetland Inventory

The CAS wetland coding is based on the Alberta Wetland Inventory; therefore, if this field is available then it will translate directly into CAS wetland.

2.0 Non-Forested Land

Key on soil moisture regime (SMR) = W (wet):

If Non-forested = SO or SC, and crown closure ≥ 3 (30%), then =	Sons
If Non-forested = HG and/or SC or SO and crown closure is < 3 , then =	Mong
If Non-forested = HF, then =	Mong
If Non-forested = BR, then =	Fong
If Naturally non-vegetated = NMB	Sons

Note: For multi-layered polygons (stand structure = M) with shrub over topping HG, HF, or BR, then polygon is a Sons if shrub layer has crown closure of ≥ 3 (30%), otherwise will be Mong or Fong as indicated above.

3.0 Forest Land

Key on soil moisture regime (SMR) = W (wet)

If Forested and crown closure = A or B and Species 1 or 2 = Lt, then	Ft
If Forested and crown closure = C and Species 1 or 2 = Lt, then	Stnn
If Forested and crown closure = D and Species 1 or 2 = Lt, then	Sfnn
If Forested and crown closure = A or B and Species 1 = Sb and Species 1 % =100, then	Btnn
If Forested and crown closure = C and Species 1 = Sb and Species 1 % =100, then	Stnn
If Forested and crown closure = D and Species 1 = Sb and Species 1 % =100, then	Sfnn
If Forested and crown closure = A, B, or C and Spp 1 = Sb or Fb and Spp 2 not = to Lt	Stnn
If Forested and crown closure = D and Spp 1 = Sb or Fb and Spp 2 not = to Lt	Sfnn
If Forested and crown closure = A, B, or C and Species 1 = Sw, then	Stnn
If Forested and crown closure = D and Species 1 = Sw, then	Sfnn
If Forested and crown closure = A, B, or C and Species 1 = Bw or Pb, then	Stnn
If Forested and crown closure = D and Species 1 = Bw or Pb, then	Sfnn

Note: For multi-layered polygons (stand structure = M) with two tree layers, a query of both layers will be required to derive wetland classes.

Saskatchewan UTM Inventory

The UTM inventory does not have a moisture regime field; therefore wetland must be derived from several attributes including drainage class, species, height class, crown closure class, and non productive lands. Non productive polygons are identified with symbols.

1.0 Productive Forest Land

If Drainage Code = PVP and or soil texture = O (Organic); or If Drainage Code = PD and texture = O, then:

If species 1 = bS and bS = 100%, and crown closure = C or D, then	Stnn
If species 1 = bS and bS = 100%, and crown closure = A or B, then	Bttn
If species 1 = bS or tL or wB or mM and species 2 = tL or bS or wB or mM, then	Stnn

Note: some Stnn polygons will be fens or bogs and some Bttn polygons will be fens.

2.0 Non Productive Lands

Drainage and texture codes are not applied to non productive lands.

Code 3100	Treed Muskeg	Wt
Code 3300	Clear Muskeg	Wo
Code 3500	Brushland	Sons
Code 3600	Meadow	Mong
Code 5100	Flooded	Mong

Note: some meadow and Brushland could be upland moist and very moist sites.

Saskatchewan SFVI

SFVI is very similar to AVI with key attributes being soil moisture regime, species, crown closure, height, and non forest land. Patterning in fens and permafrost features cannot be derived from SFVI data. Multi-layered polygons will require a query of all layers to identify wetland classes.

1.0 Forested Land

Moisture class code = MW (moderately wet):

If species 1 = bS and species 1 % =100, and crown closure \leq 50%, and height <12m	Bttn
If species 1 = any and crown closure >50%	Stnn

If species 1 = bS and species 1 % =100, and crown closure \leq 50%, and height \geq 12m	Stnn
If species 1 = any and crown closure \geq 70%	Sfnn

Moisture class code = W (wet):

If species 1 = bS and species 1 % =100, and crown closure \leq 50%, and height <12m	Btnn
If species 1 = bS and species 1 % =100, and crown closure \leq 50%, and height \geq 12m	Stnn
If species 1 = bS and species 1 % =100, and CC >50% and <70%, and height \geq 12m	Stnn
If species 1 = bS and species 1 % =100, and CC \geq 70%, and height \geq 12m	Sfnn

Moisture class code = W or VW (very wet):

If species 1 = bS or tL or wB or bP or mM and species 2 = tL or bS or wB or bP or mM And crown closure \geq 50% and <70% and height \geq 12m	Stnn
If species 1 = bS or tL or wB or bP or mM and species 2 = tL or bS or wB or bP or mM and crown closure \geq 70%	Sfnn
If species 1 = bS or tL and species 2 = bS or tL and CC < 50% and height < 12m	Ftnn
If species 1 = tL and species 1 % =100, and CC >50% and <70%, and height \geq 12m	Stnn
If species 1 = tL and species 1 % =100, and CC \geq 70%	Sfnn
If species 1 = tL and species 1 % =100, and CC \leq 50% and height = any	Ftnn
If species 1 = wB or mM or gA or wE and species 1 % = 100 and CC < 70%	Stnn
If species 1 = wB or mM or gA or wE and species 1 % = 100 and CC \geq 70%	Sfnn

Note: For multi-layered polygons with more than one tree layer, a query of all layers will be required to derive wetland classes.

2.0 Non Forest Land

If moisture class code = MW or W or VW: and non forested = HE or GR, then	Mong
and non forested = MO, then	Fonn
and non forested = Av, then	Oonn
and TS (includes all TS shrub species) or LS (includes all LS shrub species) and Sons crown closure is > 25%.	

Note: For multi-layered polygons with shrub over topping GR, HE, or MO, then polygon is a Sons if shrub layer has crown closure of > 25%, otherwise will be Mong or Fong as indicated above.

3.0 Ecosite

Ecosite is relatively new; the following codes are in draft form. Note that there is no ecosite identified for shrubby swamp for all three ecoregions or marshes for Taiga Shield and Boreal Shield.

Taiga Shield	Boreal Shield	Boreal Plain
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TS 12	BS 20	BP 20	Bonn
TS 11	BS 19	BP 19	Bong
TS 10	BS 18	BP 18	Bons
TS 9	BS 17	BP 17	Btnn
TS 13	BS 23, 22	BP 21	Ftnn
TS 14	BS 23, 22	BP 23, 22	Fons
TS 15	BS 24	BP 24	Fong
TS 16	BS 25	BP 25	Fonn
TS 8	BS 16	BP 16	Stnn
TS NA	BS NA	BP NA	Sons
TS NA	BS NA	BP 26	Mong

Manitoba Prior to 1998

For FRI 1.0, 1.1 and 1.2, a good estimation of wetland, both treed and non-treed, can be derived from the productive forest land, non productive forest, and non forested land codes. Taiga and tundra cannot identify wetland areas. A moisture code and landform code were added for FRI 1.3 (1996-1997). Key on the same attributes as described for FRI 1.0, 1.1. or 1.2 or key on moisture code 4 (wet) to derive a generic wetland. Landform code 8 (depressions, poorly drained) can also be used to derive a generic wetland.

1.0 Non Productive

Key on non productive forested land and non forested land:

Black spruce treed muskeg (701) = Btnn, Tamarack larch treed muskeg (702) = Ftnn, Eastern cedar treed muskeg (703) = Stnn, Willow (721) = Sons, Alder (722) = Sons, Dwarf birch (723) = Sons,
Shrub (724) = Sons,
Wet meadow (823) = Mong

Taiga (704) and Barrens-Tundra (801) will contain wetland; however it cannot be separated from upland.

2.0 Productive

Key on species cover type and sub type.

Tamarack	30, 31, 32, 70, 71, 72	Stnn
Cedar	36, 37, 76, 77	Stnn
Black spruce	16, 17, 56, 57	Stnn
Willow	9E	Sons

Pure black spruce cover type 13 can be wetland (Stnn). The only way to identify which stands are wetlands is if ecosite is identified. The ecosite codes that represent Stnn will be V30, V31, V32, and V33. Some black ash sites will be Stnn, particularly if dominant to black ash.

3.0 Ecosite

Ecosite (vegetation type) is available for forested areas only. If this attribute is provided, then key on this attribute for forested areas as an alternative to 2.0 above or use ecosite as an enhancement using other available attributes as well.

V2	Black ash (White elm) hardwood (if have local knowledge)	Stnn
V19	Cedar conifer and mixedwood	Stnn
V20	Tamarack/Labrador tea	Stnn
V30	Black spruce/Labrador tea/Feather moss (Sphagnum)	Stnn
V31	Black spruce/Herb rich/Sphagnum (Feather moss)	Stnn
V32	Black spruce/Herb poor/Sphagnum (Feather moss)	Ftnn
V33	Black spruce/Sphagnum	Btnn

Note: V20 can also be Ftnn (treed fens).

A soils type is also coded for FRI 1.2. Key on soil types for deep organic; S12F (feather moss) and S12S (Sphagnum) to identify locations of generic wetlands.

Manitoba Forest Land Inventory (FLI)

A wetland classification is included in FLI; however, it only identifies non-treed wetlands. There are some options for deriving treed wetlands. One is to key on ecosite and the other is to key on the regular forest attributes. Both options are provided below. A general wetland assignment (W) is also possible.

1.0 General Wetland (W)

Key on soil landscape model (LANDMOD) code O (organic) and W (wet channel sloughs). Assign these polygons with CAS code „W“. This will identify most wetlands (treed and non-treed) at a general level.

2.0 Non-Treed Wetland

Non-treed wetlands are identified in FLI. They are identified with the field WETECO1 and WETECO2. WETECO1 is the predominant wetland type and is the field that should be used to derive the CAS wetland. To derive CAS wetland codes from non-treed FLI wetland codes do the following:

WE1	Open bog-lowland shrub =	Bons
WE2	Open poor fen-lowland =	Fons

WE3 Open rich fen =	Fong
We4 Thicket swamp =	Sons
WE5 Shore fen =	Fons
WE6 Meadow marsh =	Mong
WE7 Exposed marsh =	Mong
WE8 Exposed marsh =	Mong
WE9 Open water marsh =	Mong
WE10 Open water marsh =	Mong

3.0 Treed Wetland Using Ecosite

Treed wetland ecosite codes and descriptions are found in *Forest Ecosystem Classification for Manitoba*. If they are provided in the ecosite field, then to derive treed CAS wetland codes see below:

V2 Black ash (White Elm) hardwood =	Stnn
V19 Cedar conifer and mixedwood =	Stnn
V20 Tamarack/Labrador tea =	Ftnn
V30 Black spruce/Labrador tea/feather moss (Sphagnum) =	Stnn
V31 Black spruce/Herb-rich/Sphagnum (feather moss) =	Stnn
V32 Black spruce/Herb-poor/Sphagnum (feather moss) =	Ftnn
V33 Black spruce/Sphagnum =	Btnn

4.0 Wetland Derivation Using FLI Polygon Attributes When Ecosite or Wetland Fields Are Empty

4.1 Treed Wetlands

If ecosite is not available or a more detailed derivation of forested wetland codes is preferred then key on the FLI forested attributes. To keep the wetland derivation simple, only refer to Layer 1 except when Layer 1 is a veteran layer (CANLAY with code V), then use Layer 2 (SEQ 2) instead to derive the wetland class.

First step is to key on moisture regime (MR) code W (wet). This will identify all wetland areas. Then key on species composition (SP1, SP2 and SP1PER, etc) for likely wetland tree species such as black spruce and tamarack:

If SP1 = BS and SP1PER = 100 And CC (crown closure) <50% and HT (height) <12m	Btnn
If SP1 = BS or TL and SP1PER = 100 And CC \geq 50% and HT \geq 12m	Stnn
If SP1 = BS or TL and SP2 = TL or BS And CC \geq 50% and HT \geq 12m	Stnn
If SP1 = WB or MM or EC or BA	Stnn

If SP1 = BS or TL and SP2 = TL or BS And CC <50%	Ftnn
If SP1 = TL and SP1PER = 100 And CC = any and HT <12m	Ftnn

4.2 Non-Treed Wetlands

First, always check to see if there are non-treed wetland codes in the WETECO1 field. If there are then see Section 2.0 for translation rules. If there are not any codes then key on Layer 1 for moisture regime (MR) code wet (W) and NNF_ANTH (natural non-forested and anthropogenic attributes). If there is a veteran layer (CANLAY with code V), then go to Layer 2 (SEQ 2) and follow the same steps. There are three categories for NNF_ANTH: Natural Non-Treed, Natural Non-Vegetated, and Anthropogenic. No wetland translation is necessary for Anthropogenic.

4.2.1 Natural Non-Vegetated

NWF (Flooded Uplands)	Mong
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4.2.2 Natural Non-Treed

First key moisture regime MR = W, then:

SO, SC and crown closure \geq 3	Sons
HG, HF, HU, and SO, SC with crown closure <3	Mong
BR	Fonn
CL	Bonn

Ontario FRI and FRI FIM

The Ontario NBI (Whitefeather and Mishkeegogamang/Eabametoong) is not included because those inventories already have a wetland field that is based on the Alberta Wetland Inventory system on which the CAS wetland scheme is based. The FRI may or may not have an assigned ecosite for each polygon. If there is not an ecosite, then only a partial picture of wetland can be derived because FRI does not have a moisture regime field and productive forested wetlands cannot be determined from FRI attributes alone. Also, bogs and marshes cannot be separated from fens.

1.0 Non Productive Forest Land

Bogs cannot be separated from fens. If there is no ecosite then key on MNRCODE. This field will identify the non productive treed and non treed polygons.

MNRCODE 310 Treed Muskeg	Ftnn
MNRCODE 311 Open Muskeg	Fons
MNRCODE 312 Brush and Alder	Sons

2.0 Productive Forest Land

Some productive forest wetlands can be generalized and identified using species.

If SPC is mixed SbL or LSb or LSbCe or SbLCE	Stnn
If SPC is mixed CeL or LCE or CeLSb or CeSbL	Stnn
If SPC is L and SPC% is 100	Stnn
If SPC is Ab and SPC% is 100	Stnn
If SPC is mixed BwL or LBw or BwCe or CeBw	Stnn

Short comings include:

- Pure Sb wetlands are not identified
- Many Bw wetlands are not identified
- Some SbL are upland

3.0 Ecosite

FRI FIM inventories after 2007 will use the new harmonized ecosites for Ontario (224 ecosites).
FRI prior to 2008 will use the regional ecosite codes.

3.1 NW Ontario

Es 34	Bttn
Es 35, 36, 37, 38	Stnn
Es 38	Stnn
Es 40	Ftnn
Es 41, 42	Fons
Es 43, 45	Fong
Es 44	Sons
Es 46, 47, 48, 49, 50	Mong
Es 51, 52, 53, 54, 55, 56	Oonn

Short comings: Es 35 and 36 can be fens (Ftnn) or a complex of bogs and fens.

3.2 NE Ontario

Es 11	Bttn
Es 12, 13r	Stnn
Es 13p	Ftnn
Es 14	Bttn

NE Ontario does not identify non treed wetland; therefore, will need to key on FRI codes OM (Open Muskeg – Fons) and BA (Brush and Alder – Sons). Marsh and bogs are included within OM and cannot be identified.

3.3 Central Ontario

Es 31	Ftnn
Es 32, 33, and 34	Stnn

Central Ontario does not identify non treed wetlands; therefore, will need to key on FRI codes OM (Open Muskeg – Fons) and BA (Brush and Alder – Sons). Marsh and bogs are included within OM and cannot be identified.

3.4 Ecosites of Ontario (Harmonized ecosites)

Ecosite number is preceded by a geographic range (Single letter code): A=Sub-arctic, B=Boreal, G=Great Lakes – St. Lawrence, and S=Southern; a vegetation cover modifier follows the ecosite code (Single or double letter code): Tt=Tall Treed, TI=Low treed, S=Shrub, N=Non Woody, and X=Non Vegetated; e.g. B126TI.

126	Btnn
127 to 133	Stnn
222 to 224	Stnn
134 and 135	Sons
136	Fons
137 and 138	Bonn
139 to 141	Ftnn
142 to 145	Mong
146	Fong
145	Fons
148 to 153	Mong

Quebec Troisième Inventaire Écoforestier

Wetlands must be determined from a number of sources to get as complete a wetland picture as possible. General or more detailed wetland types can be derived depending on data available. Two methods are possible; one uses the moisture regime or drainage type without or with combination of other cover type or forest attributes; the other method uses ecosite. More than one method or combination of attributes may be required. For example, polygons with a moisture regime and those identified as unproductive should be combined, or ecosite provides data for forested areas only.

1.0 General Wetland (W)

A general CAS wetland code „W“ can be assigned to all polygons that have a moisture regime assigned to them. All polygons with RHY_CO of 5 can be assigned CAS code „W“. These will most likely be forested polygons. See Section 2.0 for unproductive forests wetland derivation.

A general CAS wetland code „W“ can be assigned to all polygons that have a drainage class assigned to them. If code classe de drainage (CDR_CO) is code 6, then a general CAS wetland code „W“ can be assigned.

2.0 Unproductive Terrain

Unproductive forest lands are identified in Code de Terrain. If TER_CO is AL and moisture is wet then wetland = Sons or W if a general code is preferred. If TER_CO is DH then wetland = W. DH includes open and semi open polygons, further differentiation is not possible.

3.0 Forested Wetlands

Forested wetlands can be assigned a more descriptive wetland code other than W. Key on moisture regime and species.

If régimes hydriques (RHY_CO) is code 5 (Hydrique – wet), then:

If GES_CO is EE and class de densité (CDE_CO) = D and class de hauteur (CHA_CO) = 4, 5, or 6 Bttn

If GES_CO is EC, EPu, EMe, RMe, SE, ES, RE, MeE, MeC and classe de densité is C, B, or A and classe de hauteur is 3, 2, or 1, then wetland is Stnn

If GES_CO is EE or MeMe and classe de densité is C, B, or A and classe de hauteur is any, then Stnn

If GES_CO is CC, CPu, CE, CMe, RC, SC, CS, PuC, BbBb, Ebb, BbBbE, BbE, Bb1E, then Stnn

If GES_CO is EMe or MeE and classe de densité is D then Fttn

If GES_CO is MeMe and classe de densité is any and classe de hauteur is 4, 5, or 6: Fttn

Any hardwoods (Fnc, Bj, Fh, Ft, Bb, Bb1, Pe, Pe1, Fi) or hardwood mix with wet moisture: Stnn

4.0 Ecosite

If have ecosite (TEC_CO_TEC) code type écologique, then wetland can be derived for forested ecosites only. Other sources will be required to include non forest ecosites or polygons (also see Terrains Improductifs for non forest wetlands).

RS 37	Black spruce-fir sphagnum on mineral	Stnn
RS38	Black spruce-fir sphagnum on organic	Fttn
RS39	Black spruce-fir sphagnum on organic	Stnn
RS18	Cedar-fir on mineral	Stnn
RE37	Black spruce sphagnum on mineral	Stnn
RE38	Black spruce sphagnum on organic minerotrophe	Fttn

RE39	Black spruce sphagnum on organic ombrotrophe	Btnn
RC38	Cedar fir	Stnn
MJ18	Yellow birch fir sugar maple on organic soil	Stnn
MF18	Black ash fir on organic or mineral	Stnn

A number of ecosites have a range from xeric to hydric. The hydric polygons cannot be differentiated from the upland polygons without other sources such as moisture regime. If have a moisture regime of code 5 then the following ecosites will be Stnn: FF 10, 20, 30, 50, 60; FC 10, MJ 10, MS 10, 20, 40, 60, 70; RB 50; RP 10; RS 10, 20, 20s, 40, 50, 70; RT 10; RE 20, 40, 70

Prince Edward Island

Wetland can be derived from two sources; the land use code or the wetland cover class.

1.0 Land Use Code

A general CAS wetland code can be assigned if a sub code is identified as part of the land use code. If Land Use Code is FOR (Forestry) and Sub Code is WET (Wetland), then assign a CAS wetland code W. If Land Use Code is WET (Wetland) and Sub Code is FOR (Forest), then assign a CAS wetland code W.

2.0 Wetland Cover Class

Key on Cover Class with wetland codes:

BOW	Bog	Btnn
BKW	Brackish Marsh	Eonn
DMW	Deep Marsh	Mong
MDW	Meadow	Mong
SAW	Salt Marsh	Mcng
SFW	Seasonally Flooded Flat	Tmnn
SMW	Shallow Marsh	Mong
SSW	Shrub Swamp	Sons
WSW	Wooded Swamp	Stnn

New Brunswick

The New Brunswick Forest Inventory Classification System identifies a wetland category. Use fresh water (F) and Coastal (C) wetland identifiers. First locate wetland classes and vegetation cover types. Key on Freshwater (F) and Coastal (C) Wetland/Feature Type, then:

If wetland Class is:

AB	Aquatic Bed	Oonn
BO	Bog and vegetation cover type= FS	Btnn
BO	Bog and vegetation cover type= SV	Bons
FE	Fen and vegetation cover type= FH	Ftnn
FE	Fen and vegetation cover type= FS	Ftnn
FE	Fen and vegetation cover type= AW	Fons
FE	Fen and vegetation cover type= SV	Fons
FM	Freshwater Marsh	Mong
FW	Forested Wetland	Stnn
FW	Forested Wetland with Impoundment Modifier (IM)	Oonn
SB	Shrub Wetland (includes alders on poor sites (AP) in FOREST	Sons
CM	Coastal Marsh and vegetation cover type= FV	Mcng
TF	Tidal Flat and vegetation cover type= FV or FU	Tmnn

Nova Scotia

The Nova Scotia Spatially Referenced Forest Resources (SRFR) data base recognizes wetland within the non-forest categories. Forested wetlands are not identified and there is no moisture regime attribute to help derive forested wetlands; therefore, focus is placed on typical wetland tree species.

1.0 Non-Forest

Key on the FOR/NON 4-digit code, the last two digits identifies forest and non-forest categories in which wetlands are included.

Non-forest code:

70	Wetland General (any wet area other than open and treed bog)	W
71	Beaver Flowage	Mong
72	Open Bog	Bons
73	Treed Bog	Btnn
74	Ocean Wetland	Ecnn
75	Wetland in Lake	Mong

The treed bog category includes treed fens and treed swamps. The tree species are not identified; therefore, no additional differentiation is possible.

2.0 Forest

Brush and alders are identified in this category, moisture cannot be identified; therefore, upland versus wetland categories cannot be determined. Key on FOREST codes followed by tree species and tree attributes. Typical wetland tree species and mixes have been chosen to

identify possible wetland forested polygons. The short comings are that brush and alder types could include upland moist polygons. Pure black spruce stands are not included because they can also be upland polygons.

33	Brush and Species= BS, TL, EC, WB, YB, and AS	Sons
38, 39	Alders and species= BS, TL, EC, WB, YB, and AS	Sons
00	Natural Stand and Species= TL(100%) or TLBS or TLWB, crown closure \leq 50% and height \leq 12 m	Ftnn
00	Natural Stand and Species= TL (100%) or TLBS or TLWB, crown closure > 50%	Stnn
00	Natural Stand and Species=EC or ECTL Or ECBS or ECWB	Stnn
00	Natural Stand and Species=AS or ASBS or ASTL	Stnn
00	Natural Stand and Species=BSLT	Stnn

Newfoundland and Labrador

A complete picture of wetlands cannot be derived because there is not an attribute for soil moisture regime; therefore, forested wetlands must be determined using wetland tree species. Non commercial forest and non-forested land have wetland classes assigned. Polygons with tree species that can occur in either upland or wetland situations (bS, tL, wB) could be assigned a wetland class.

1.0 Non Commercial Forest

Key on Biophysical Class = wet (W):

If Non Commercial Forest code = S (softwood scrub)	Stnn
If Non Commercial Forest code = H (hardwood scrub)	Stnn

2.0 Non-Forested Land

Organic Bog (symbol or code)	Bons
Treed Bog (symbol or code)	Btnn
Wet Bog (symbol or code)	Mong

3.0 Forest Land

If species is bStL or bStLbF or bStLwB	Stnn
If species is tL or tLbF or tLwB or tLbS or tLbSbF or tLbSwB	Stnn
If species is wBtL or wBtLbS or wBbStL	Stnn

4.0 Ecosite

Forested wetland ecosite data may be available based on the Forest Site Classification Manual – Damman Forest Types of Newfoundland. Non forested wetland ecosites are not included (Except some shrub types). Transition to bog types (Sks 23 and Skn 22) and seepage sites (Bt 32 and Mg 30) are not included.

Ss 12	Sphagnum – Black Spruce	Btnn
Sc 18	Carex – Black Spruce	Ftnn
So 19	Osmunda – Black Spruce	Ftnn
Al 31	Lycopodium – Alder Swamp	Stnn
K 33	Kalmia Heath – Sphagnum – Kalmia or Sphagnum – Empetrum	Sons

Yukon Territories

Yukon Vegetation Inventory Version 2.1

Key on soil moisture regime, then use forested and non-forested categories. Two options are possible: one identifies a general wetland assignment that only identifies whether a polygon is wetland or not; the other option provides more detail within wetland types.

1.0 General Wetland

If soil moisture regime (SMR) = W or A, then assign CAS wetland code W. All forested and non-forested wetland types can be identified with a general wetland category.

2.0 Non-Forested Land

Soil Moisture Regime = W (wet) and:

If cover type class (CLASS) = S	Sons
If cover type class (CLASS) =H	Mong
If cover type class (CLASS) =M	Sons
If cover type class (CLASS) =C	Fons
Soil Moisture Regime = A (aquatic)	Mong

3.0 Forest Land

Soil Moisture Regime (SMR) = W:

If species 1 (SP1) = SB and SP1PER = 100	
And crown closure (CC) < 50% and height (AVG_HT) < 12 m	Btnn
If species 1 (SP1) = SB and SP1PER = 100	
And crown closure (CC) ≥ 50% and <70% and height (AVG_HT) ≥ 12 m	Stnn

If species 1 (SP1) = SB and SP1PER = 100 And crown closure (CC) \geq 70% and height (AVG_HT) \geq 12 m	Sfnn
If SP1 = SB or L and SP2 = L or SB And crown closure (CC) \leq 50% and height (AVG_HT) < 12 m	Ftnn
If SP1 = SB or L or W and SP2 = L or SB or W And crown closure (CC) > 50% and height (AVG_HT) > 12 m	Stnn
If species 1 (SP1) = L and SP1PER = 100 And crown closure (CC) \leq 50%	Ftnn
If species 1 (SP1) = L or W and SP1PER = 100 And crown closure (CC) > 50% and < 70%	Stnn
If species 1 (SP1) = L or W and SP1PER = 100 And crown closure (CC) > 70%	Sfnn

Northwest Territories

Forest Vegetation Inventory Versions 2.1 and 3.0

Three options are possible depending on level of detail required and whether the attributes are recorded. The first option provides a general level that identifies the polygon as being a wetland or not. The second option looks at the forest and non-forest attributes to derive wetland and the third option looks at whether the optional wetland class has been recorded.

1.0 General Wetland

If LANDPOS = W (wetland), then assign CAS wetland code W.

2.0 Wetland From Forest Attributes

2.1 Non-Forested Polygons

Stand Structure (STRUCTURE) = S

Soil Moisture Regime (Moisture) = sd (subhydryc - wet) or hd (hydryc – very wet):

Type Class (TYPECLAS) = ST or SL Sons

Type Class (TYPECLAS) =HG or HF or HE Mong

Type Class (TYPECLAS) =BM Fong

Type Class (TYPECLAS) =BL or BY Boxc

Stand Structure (STRUCTURE) = H (Horizontal)

Soil Moisture Regime (Moisture) = sd (subhydryc - wet):

TYPECLAS or MINTYPCLS = SL or HG Boxc

Stand Structure (STRUCTURE) = H (Horizontal)

Soil Moisture Regime (Moisture) = hd (hydryc -very wet):

TYPECLAS or MINTYPCLS = HG Mong

Stand Structure (STRUCTURE) = M (Multi-layered)

Soil Moisture Regime (Moisture) = sd or hd:
TYPECLAS = SL or ST

Fons

2.2 Forest Land

If Stand Structure (STRUCTURE) = M or C or H, and
MINTYPCLS = SL, and

Soil Moisture Regime (SMR) = sd, and
Species 1 (SP1) = Sb or Pj and SP1PER = 100% or
SP1 = Sb or Pj and SP2 = Pj or Sb
and Crown Closure (CC) < 50% and HEIGHT < 8 m

Btxc

If Stand Structure (STRUCTURE) = S, and
Soil Moisture Regime (SMR) = sd or hd, and
Species 1 (SP1) = Sb or Lt, and SP1PER = 100%, and
Crown Closure (CC) > 50% and < 70%

Stnn

If Soil Moisture Regime (SMR) = sd or hd, and
Species 1 (SP1) = Sb or Lt, and
Crown Closure (CC) > 70%

Sfnn

If Soil Moisture Regime (SMR) = sd or hd, and
Species 1 (SP1) = Sb or Lt and SP2 = Lt or Sb, and
HEIGHT < 12 m

Ftnn

If Soil Moisture Regime (SMR) = sd or hd, and
Species 1 (SP1) = Sb or Lt and SP2 = Lt or Sb, and
HEIGHT ≥ 12 m

Stnn

If Soil Moisture Regime (SMR) = hd, and
Species 1 (SP1) = Sb or Lt, and SP1PER = 100%, and
Crown Closure (CC) < 50%

Ftnn

If Soil Moisture Regime (SMR) = sd or hd, and
Species 1 (SP1) = Sb or Lt or Bw or Sw
and SP2 = Lt or Sb or Bw or Sw and CC > 50%

Ftnn

If Soil Moisture Regime (SMR) = sd or hd, and
Species 1 (SP1) = Bw or Po

Stnn

3.0 Wetland Class

The NWT Forest Vegetation Inventory has wetland class as an option. If a wetland class attribute has been recorded, then:

Key on WETLAND:

We	Wetland, no distinction	W
So	Shallow Open Water	Oonn
Ma	Marsh	Mong
Sw	Swamp and SP1 is populated	Stnn
Sw	Swamp and TYPECLAS + SL or ST	Sons
Fe	Fen and SP1 is populated	Ftnn
Fe	Fen and TYPECLAS = HG	Fong
Fe	Fen and TYPECLAS = SL or ST	Fons
Bo	Bog and SP1 is populated	Btxc
Bo	Bog and TYPECLAS = BY or BL or BM	Boxc

Wood Buffalo National Park

Wood Buffalo National Park is a biophysical inventory completed in the 70's based on a mapping scale of 1:100,000. This mapping scale will dictate that polygons will more than likely be heterogeneous rather than homogeneous; therefore, a single polygon can include more than one vegetation cover type or wetland vegetation cover type. Up to nine biophysical vegetation types and up to seven vegetation plant communities can be described for each polygon. The biophysical vegetation and vegetation plant community codes are identical. The position of each vegetation type within a heterogeneous polygon cannot be determined (except when a polygon is identified with only one wetland type or types); however, a percentage cover of each vegetation plant community is provided. Also note that this inventory has not been updated since the original was completed. Fire history records will need to be accessed for a more current view of the vegetation cover.

There are a few options that can be used to identify polygons that contain wetland types based on assessing different fields. A wetland code will need to be derived for each of the wetland vegetation plant communities identified for each polygon. More than one wetland type may be identified within a polygon. The best option is to key on the vegetation plant community field (v#pcm) and associated vegetation structure field (v#str). Each polygon can have up to seven vegetation plant communities described (along with descriptions of moisture (v#moi), species (v#sp1-4), percent cover (v#pct) and height (v#htc)) of which any number can be wetland types.

The bveg# field (biophysical vegetation), identifies up to nine fields but does not identify the percentage cover of each type; therefore, it is recommended that this field not be used to derive wetland. The v#pcm fields (vegetation plant community) should be used instead. The v#str and v#moi (moisture) fields can be used as a confirmation of wetland status or used to further refine the classification such as between treed fen and treed bog. The v#str# field contains several codes that identify wetland type; however, they are redundant to the v#pcm field and if not identified below, they are not necessary. Vegetation community types 21 and 22 are black spruce types but it is uncertain if they are wetland or moist upland so they have not been included. The v#pct field identifies the percent cover of each vegetation plant community in 10 percent classes.

If v#pcm = 99	Mong
If v#pcm = 98	Sons
If v#pcm = 1 or 2 or 3 or 4	Mong
If v#pcm = 7	Sons
If v#pcm = 17	Fong
If v#pcm = 18	Sons
If v#pcm = 19 and v#str = N then Fttn and if v#str = P then	Bttn
If v#pcm = 20	Stnn

Prince Albert National Park

Prince Albert National Park is a biophysical inventory based on 1968 photographs and a mapping scale of 1:50,000. This mapping scale will dictate that polygons will more than likely be heterogeneous rather than homogeneous; therefore, a single polygon can include more than one vegetation type or wetland vegetation type. Up to three biophysical vegetation types (including two-layered stands) and up to three ground vegetation types can be described for each polygon. The position of each vegetation type within a heterogeneous polygon cannot be determined (except when a polygon is identified with only one wetland type or types); however, a percentage cover of each vegetation plant community is provided. Also note that this inventory has not been updated since the original was completed. Fire history records will need to be accessed for a more current view of the current vegetation cover.

Three cover types (including two-layered stands) and up to three ground vegetation types (non forest) can be described for each polygon. A wetland code will need to be derived for each of the wetland types identified for each polygon. More than one wetland type may be identified within a polygon. The best option is to key on the overstory (C#SPEC), understory (U#SPEC) and ground vegetation (G#SPEC) fields.

There is no moisture regime field identified; therefore, wetlands will need to be derived or identified from other fields. Non treed wetlands are identified in G#SPEC fields:

M1 [lowland (wet site) herb and sedge cover]	Fong or Mong or Wo
M2 [lowland (wet site) shrub cover]	Sons or Fong
FL (flooded lands)	Mong

Open fen and marsh types cannot be differentiated. A choice will need to be made for M1 or M2 as to which cover type is most prevalent or a generic wetland code (Wo) can be assigned.

Treed wetlands will need to be derived. Key on overstory C#SPEC or understory U#SPEC fields with support from C#HT (height), C#DENS (crown closure) and U#HT, U#DENS fields:

If C#SPEC and U#SPEC contain only PM and C#DENS is code 1 or 2 and C#HT is code 1 then Btnn

If C#SPEC and U#SPEC contain only PM and C#DENS is code 3 and C#HT is code 1, 2 or 3 then Stnn

If C#SPEC and U#SPEC contain only LL or PM and LL occur in either one of the layers (i.e. must have PM and LL in one of the layers) or PM and LL occur as mixed in either layer and C#HT code is 1 or 3 and C#DENS is code 1, 3, 5 or 7 then Ftnn

If C#SPEC and U#SPEC contain only LL or PM and LL occur in either one of the layers (i.e. must have PM and LL in one of the layers) or PM and LL occur as mixed in either layer and C#HT code is 5 or 7 and C#DENS is code 3 then Stnn

Note that overstory and understory may need to be combined to meet density totals. Also, some moist or very moist upland black spruce and larch types will be included.

APPENDIX 1
CAS Wetland Classification Scheme

WETLAND CLASS	
Bog	B
Fen	F
Swamp	S
Marsh	M
Shallow Open Water	O
Tidal Flats	T
Estuary	E
Wetland, no Distinction	W
Not Wetland	Z
Blank	
VEGETATION MODIFIER	
Forested closed canopy >70% tree cover	F
Wooded open canopy >6% - 70% tree cover	T
Open Non-Treed Freshwater <6% tree c	O
Open Non-Treed Coastal < 6% tree cover	C
Mud	M
Blank	
WETLAND LANDFORM MODIFIER	
Permafrost present	X
Patterning present	P
No permafrost or patterning	N
Saline or alkaline present	A
Blank	

LOCAL LANDFORM MODIFIER	
Collapse scar present in permafrost area	C
Internal lawn with islands of forested peat plateau	R
Internal lawns (permafrost once present)	I
Internal lawns not present	N
Shrub cover \geq 25%	S
Graminoids with shrub cover < 25%	G
Blank	

Examples:

- 1) W Wetland no distinction, polygon only recognized as being a wetland with no further detail.
- 2) Btnn treed bog (forest cover 6 %– 70%), no permafrost and no lawns present.
- 3) Mcng Coastal marsh, vegetated with graminoids.
- 4) Tmnn Tidal mud flats.
- 5) B Bog, no other information available.
- 6) Btxc Treed bog with peat plateau permafrost and collapse scars.
- 7) Ftps Patterned treed fen with dominant shrub
- 8) Moag Alkaline marsh.

APPENDIX 1
CAS Wetland Classification Scheme

WETLAND CLASS	
Bog	B
Fen	F
Swamp	S
Marsh	M
Shallow Open Water	O
Tidal Flats	T
Estuary	E
Wetland, no Distinction	W
Not Wetland	Z
Blank	
VEGETATION MODIFIER	
Forested closed canopy >70% tree cover	F
Wooded open canopy >6% - 70% tree cover	T
Open Non-Treed Freshwater <6% tree c	O
Open Non-Treed Coastal < 6% tree cover	C
Mud	M
Blank	
WETLAND LANDFORM MODIFIER	
Permafrost present	X
Patterning present	P
No permafrost or patterning	N
Saline or alkaline present	A
Blank	

LOCAL LANDFORM MODIFIER	
Collapse scar present in permafrost area	C
Internal lawn with islands of forested peat plateau	R
Internal lawns (permafrost once present)	I
Internal lawns not present	N
Shrub cover \geq 25%	S
Graminoids with shrub cover < 25%	G
Blank	

Examples:

- 1) W Wetland no distinction, polygon only recognized as being a wetland with no further detail.
- 2) Btnn treed bog (forest cover 6 %– 70%), no permafrost and no lawns present.
- 3) Mcng Coastal marsh, vegetated with graminoids.
- 4) Tmnn Tidal mud flats.
- 5) B Bog, no other information available.
- 6) Btxc Treed bog with peat plateau permafrost and collapse scars.
- 7) Ftps Patterned treed fen with dominant shrub
- 8) Moag Alkaline marsh.

APPENDIX 16

**ECOSITE – SUMMARY OF CANADIAN
FOREST INVENTORIES**

(UNDER SEPARATE COVER - SEE EXCEL SPREADSHEET)

APPENDIX 17

SAMPLE OF EXPORT PROCEDURE

Appendix 17 Sample of Export Procedure

Alberta-Pacific Industries Conversion Procedure (FMU A2)

Section I – Header Identification Information

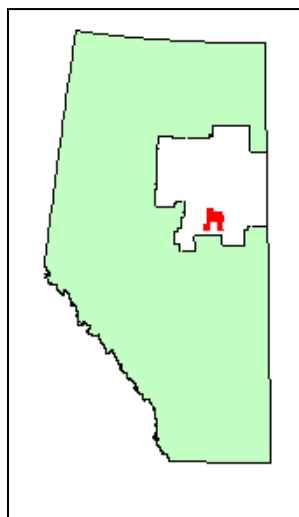
Header ID	0001 (FMU A2)
Jurisdiction	Alberta (AB)
Coordinate system	UTM
Projection	UTM
Datum	North American Datum 1983
Inventory owner	Private (Alberta Pacific Industries, Inc.)
Land owner	Crown (Province of Alberta)
Permission	Restriction (Permission from Al-Pac cleared for CAS use)
Tenure type	Forest Management Area
Inventory version	2.1+, AVI standard plus Enhanced attribute file
Inventory start year	Original inventory started in 1999
Inventory finish year	Original inventory completed in 2000
Inventory acquisition ID	1 (This is an internal ID for CAS)
Inventory acquisition year	2008 (Date data are included in CAS)
Inventory update year	Inventory has not been updated since

Contact Information

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Thumbnail



Section 2 – Source Data

Alberta-Pacific's forest inventory data comply with Alberta's Vegetation Inventory (AVI) standard, and have also been enhanced to meet Alberta Pacific's specific requirements (Enhanced table). Both the spatial and attribute data are stored in either an ESRI ArcGIS/Oracle or an ArcInfo software environment.

Spatial

The spatial data are stored by township with a single attribute field – the stand identifier, called the POLY_NUM. They implicitly also store the spatial properties, AREA and PERIMETER.

AREA	8	18	F	5
PERIMETER	8	18	F	5
POLY_NUM	10	10	I	

Projection Information

```
GEOGCS["GCS_North_American_1983_CSRS98",  
DATUM["D_North_American_1983_CSRS98",  
SPHEROID["GRS_1980",6378137.0,298.257222101]],  
PRIMEM["Greenwich",0.0],  
UNIT["Degree",0.0174532925199433]]
```

Alberta Vegetation Inventory (AVI)

MER	1	1	I
RNG	2	2	I
TWP	3	3	I
GID	4	4	I
MOIST_REG		1	1 C
DENSITY		1	1 C
HEIGHT		2	2 I
SP1	2	2	C
SP1_PER		2	2 I
SP2	2	2	C
SP2_PER		1	1 I
SP3	2	2	C
SP3_PER		1	1 I
SP4	2	2	C
SP4_PER		1	1 I
SP5	2	2	C
SP5_PER		1	1 I
STRUC		1	1 C
STRUC_VAL		1	1 I
ORIGIN		4	4 I
TPR		1	1 C
INITIALS		2	2 C
NFL	2	2	C
NFL_PER		2	2 I
NAT_NON		3	3 C
ANTH_VEG		3	3 C
ANTH_NON		3	3 C
MOD1	2	2	C
MOD1_EXT		1	1 I
MOD1_YR		4	4 I
MOD2	2	2	C
MOD2_EXT		1	1 I
MOD2_YR		4	4 I
DATA	1	1	C
DATA_YR		4	4 I
UMOIST_REG		1	1 C
UDENSITY		1	1 C
UHEIGHT		2	2 I
USP1	2	2	C
USP1_PER		2	2 I

USP2	2	2	C
USP2_PER	1	1	I
USP3	2	2	C
USP3_PER	1	1	I
USP4	2	2	C
USP4_PER	1	1	I
USP5	2	2	C
USP5_PER	1	1	I
USTRUC	1	1	C
USTRUC_VAL	1	1	I
UORIGIN	4	4	I
UTPR	1	1	C
UINITIALS	2	2	C
UNFL	2	2	C
UNFL_PER	2	2	I
UNAT_NON	3	3	C
UANTH_VEG	3	3	C
UANTH_NON	3	3	C
UMOD1	2	2	C
UMOD1_EXT	1	1	I
UMOD1_YR	4	4	I
UMOD2	2	2	C
UMOD2_EXT	1	1	I
UMOD2_YR	4	4	I
UDATA	1	1	C
UDATA_YR	4	4	I
POLY_NUM	10	10	I

Enhanced Inventory (Enhanced)

MER	1	1	I
RNG	2	2	I
TWP	3	3	I
GID	4	4	I
DENSITY_PER	3	3	I
DECIMAL_HT	1	1	I
STEMS_HA	5	5	I
MOIST_CODE	1	1	I
MOD3	2	2	C
MOD3_EXT	1	1	I
MOD3_YR	4	4	I
INT_TPR	1	1	C
UDENSITY_PER	3	3	I
UDECIMAL_HT	1	1	I
USTEMS_HA	5	5	I
UMOIST_CODE	1	1	I
UMOD3	2	2	C
UMOD3_EXT	1	1	I
UMOD3_YR	4	4	I
UINT_TPR	1	1	C
TLG_ID	25	25	C
POLY_NUM	10	10	I

Section 3 – Conversion

Three main steps need to be considered when converting Alberta-Pacific's forest inventory data to CAS files:

- Request FOREST cover from Alberta-Pacific Industries
- Run the attached AML code to create
- Creating the CAS_ID
- Creating a single table comprised of the spatial information (AREA and PERIMETER), the AVI data and the enhanced data
- Creating *Source ASCII File* by inventory unit
- Creating *Source Shape File* by inventory unit

After requesting the ArcInfo cover from AI-Pac, Arc Macro Language (AML) programs can be applied to manipulate the input data. The part of this section lists a sample AML code that creates the *Source ASCII File* and *Source Shape File*.

The **CAS_ID** for Alberta-Pacific FMU L8 is composed of the following elements: Acronym for the Province of Alberta (**AB**), the header identifier (**0001**), the respective township name in the following format **TxxxRyyMz** where xxx is the township number, yy is the range and z is the meridian number, and the stand number as a "0"-padded 4-digit value. The four elements shall be separated by underscore characters ("_"), for example: **AB_0001_T086R14M4_0123**. The CAS_ID is used in the output shape file and the Source ASCII File.

Create a table or a view that combines the following three pieces of information: JOIN FOREST.PAT, FOREST.AVI and FOREST.ENHANCED tables (see last part of section for sample AML code).

Create the *Source ASCII File* exporting the joined table. Name the ASCII file using the first three elements of the CAS_ID, for example **AB_0001_T086R14M4.TXT**. The ASCII file shall only include the records for the corresponding inventory unit that is the township.

Create the shape file corresponding to the respective township, for example **AB_0001_T086R14M4.SHP**. Confirm that the shape file includes the necessary files including the projection file: SHP, SHX, DBF and PRJ.

```

/*****
/* Set the correct root CAS_ID number identifying the
/* correct FMU and update year and the map sheet
/* number.
/*****
&set CAS_root = [response 'Enter CAS root' 0001]
&set MapSheet = [response 'Enter map sheet number' T086R14M4]
&set MapSheet = [upcase %MapSheet%]
&set Twp = [substr %MapSheet% 1 1]
&set Rng = [substr %MapSheet% 5 1]
&set Mer = [substr %MapSheet% 8 1]
&if [quote %Twp%] <> 'T' or ~
    [quote %Rng%] <> 'R' or ~
    [quote %Mer%] <> 'M' &then
    &return Error: Map sheet name must conform to f.e.: T086R14M4

&if ^ [exists forest -cover] &then
    &return Error: FOREST cover missing!

&if [exists forest.dat -info] &then
    killinfo forest.dat

/*****
/* Join the two attribute files and the polygon
/* attribute file into a new attribute data file
/* from which the Source ASCII File can be created
/*****
joinitem forest.pat forest.avi forest.dat poly_num
joinitem forest.dat forest.enhanced forest.dat poly_num

/*****
/* Create CAS_ID, map sheet, header_id fields and
/* re-arrange fields others
/*****
additem forest.dat forest.dat cas_id 30 30 C 0 poly_num
additem forest.dat forest.dat map_sheet 20 20 C 0 cas_id
additem forest.dat forest.dat header_id 5 5 i 0 map_sheet
additem forest.dat forest.dat area2 8 18 f 5 header_id
additem forest.dat forest.dat perimeter2 8 18 f 5 area2

/*****
/* Derive all appropriate field values
/*****
&data ARC INFO
ARC
SELECT FOREST.DAT
CONCATENATE CAS_ID FROM 'AB_', [quote %CAS_root%], '_', [quote %MapSheet%], '_', POLY_NUM
MOVE [quote %MapSheet%] TO MAP_SHEET
CALCULATE HEADER_ID = %CAS_root%
CALCULATE AREA2 = AREA
CALCULATE PERIMETER2 = PERIMETER
q STOP
&end

/*****
/* Remove any redundant fields
/*****
dropitem forest.dat forest.dat forest# forest-id area perimeter

/*****
/* Create the preliminary Source ASCII File

```

```

/*****
tables
sel forest.dat
change cas_id c/ /0/g
-----
alter;area2;area;;;;;
alter;perimeter2;perimeter;;;;;
[unquote ' ]
resel $recno = 1
purge
yes
unload %MapSheet%.cas delimited init
quit

/*****
/* Creating Source Shape File
/*****
additem forest.pat forest.pat cas_id 30 30 c

&data ARC INFO
ARC
SELECT FOREST.PAT
CONCATENATE CAS_ID FROM 'AB_', [quote %CAS_root%], '_', [quote %MapSheet%], '_', POLY_NUM
q STOP
&end

tables
sel forest.pat
change cas_id c/ /0/g
quit

dropitem forest.pat forest.pat forest# forest-id area perimeter poly_num
&if [exists %MapSheet%.shp -file] &then
&sys del %MapSheet%.shp
&if [exists %MapSheet%.shx -file] &then
&sys del %MapSheet%.shx
&if [exists %MapSheet%.dbf -file] &then
&sys del %MapSheet%.dbf
arcshape forest poly %MapSheet%.shp

/*****
/* Introduce field names to the Source ASCII File
/* and remove any single quotation marks (')
/*****
&type =====
&type Finished: Include field names and remove
&type single quotes from Source ASCII File.
&type =====

```

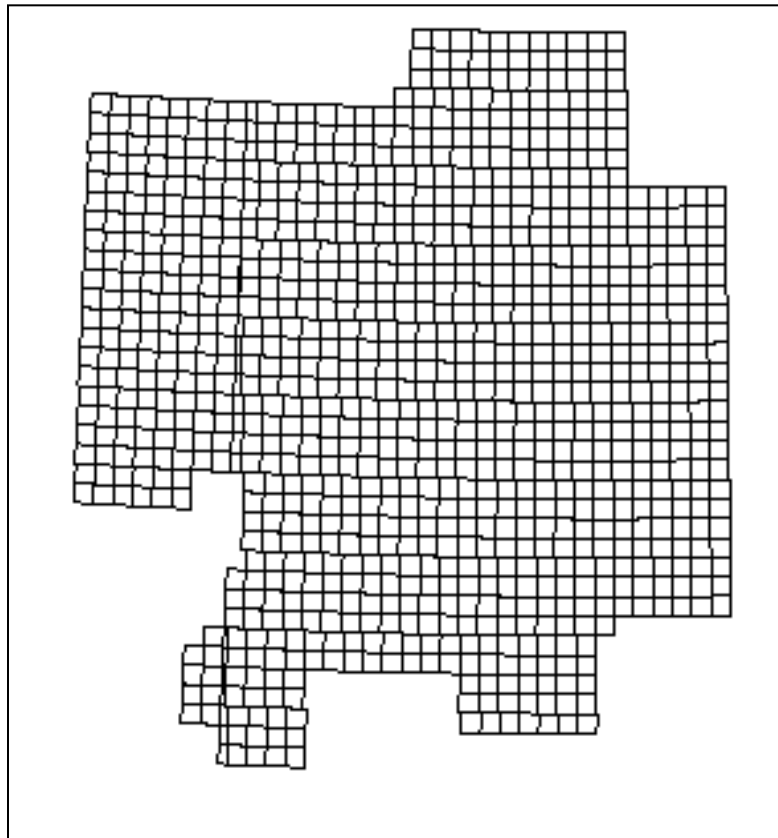
Section 4 – Output Format

The output *AI-Pac Source ASCII File* is essentially a Comma Separated Value (CSV) file that includes the fields listed below; data types and their definition are irrelevant for the subsequent Perl processing. However, the sequence of fields is crucial. All fields present in AI-Pac's database should be present in the *AI-Pac Source ASCII File*.

CAS_ID,MAP_SHEET,HEADER_ID,AREA,PERIMETER,POLYNUM,MER,RNG,TWP,GID,MOIST_REG,DENSITY,HEIGHT,SP1,SP1_PER,SP2,SP2_PER,SP3,SP3_PER,SP4,SP4_PER,SP5,SP5_PER,STRUC,STRUC_VAL,ORIGIN,TPR,INITIALS,NFL,NFL_PER,NAT_NON,ANTH_VEG,ANTH_NON,MOD1,MOD1_EXT,MOD1_YR,MOD2,MOD2_EXT,MOD2_YR,DATA,DATA_YR,UMOIST_REG,UDENSITY,UHEIGHT,USP1,USP1_PER,USP2,USP2_PER,USP3,USP3_PER,USP4,USP4_PER,USP5,USP5_PER,USTRUC,USTRUC_VAL,UORIGIN,UTPR,INITIALS,UNFL,UNFL_PER,UNAT_NON,UANTH_VEG,UANTH_NON,UMOD1,UMOD1_EXT,UMOD1_YR,UMOD2,UMOD2_EXT,UMOD2_YR,UDATA,UDATA_YR,DENSITY_PER,DECIMAL_HT,STEMS_HA,MOIST_CODE,MOD3,MOD3_EXT,MOD3_YR,INT_TPR,UDENSITY_PER,UDECIMAL_HT,USTEMS_HA,UMOIST_CODE,UMOD3,UMOD3_EXT,UMOD3_YR,UINT_TPR,TLG_ID

Section 5 – Inventory Unit

The AI-Pac inventory unit is referenced by the Alberta township grid.



Section 6 – Quality Control

Forest inventory databases will always have some errors; these are usually of two types: The first type of error reflects data entry errors including data omissions of updated inventory information; the second stems from misinterpretation of source aerial photography/imagery. Both errors have been accounted for in Alberta-Pacific's inventory database because rigorous quality control was applied during the creation process. Thus, we assume that Alberta-Pacific's inventory data are error-free, and may be exported directly to the *Source ASCII File* and the corresponding *Source Shape File* without further quality control. This assumption will not hold for most inventory data sets.