Unclassified

Land Information Ontario
Data Description

Forest Cover

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LIO Class Catalogue

Forest Cover

Class Short Name: FORCOVER

Version Number: 4

Class Description:

Identifies and describes the forested area in the province of Ontario. Forested areas may either be currently forested or managed as future-forests. These areas may be described with various measurement values, observations, and development-stage data. The level of detail in which a forest is described will vary according to local need. Relevant *legislation associated and identified by the Forest Information Manual (FIM) dictates minimum content and vintage of data within the Area of the Undertaking and the Northern Boreal Initiative. There are no inventories planned for Southern Ontario. Water is delineated but not described. Non-forested areas such as rock, muskeg, developed agricultural land, etc. are identified but are only described with ecosite codes Note: For the purposes of brevity, references to the FIM Forest Resources Inventory Technical Specifications have been shortened in field descriptions to "FRI Tech Spec". * Includes the Crown Forest Sustainability Act (1995), Class Environmental Assessment for Timber Management on Crown Land (Timber EA)

Abstract Class Name: SPSNTPOLY

Abstract Class Description:

Abstract Spatial Single-Non-Tessellating-Polygon User Object. One and only one polygon forms a single object. Polygons may NOT overlap. However, holes, gaps and islands are allowed. Examples of this are sub classes that may fall under this class are lakes wetlands, ANSIs, etc.

Tables in LIO Class:

Forest Cover

FOREST_COVER_UNIT_FT

Identifies and describes the forested area in the province of Ontario. Forested areas may either be currently forested or managed as future-forests. These areas may be described with various measurement values, observations, and development-stage data. The level of detail in which a forest is described will vary according to local need. Relevant *legisl ation associated and identified by the Forest Information Manual (FIM) dictates minimum content and vintage of data within the Area of the Undertaking and the Northern Boreal Initiative. There are no inventories planned for Southern Ontario. Water is delineated but not described. Non-forested areas such as rock, muskeg, developed agricultural land, etc. are identified but are only described with ecosite codes Note: For the purposes of brevity, references to the FIM Forest Resources Inventory Technical Specifications have been shortened in field descriptions to "FRI Tech Spec". * Includes the Crown Forest Sustainability Act (1995), Class Environmental Assessment for Timber Management on Crown Land (Timber EA)

Column Name	Column Type	Mandatory	Short Name	Valid Values
OGF_ID	NUMBER(13,0)	Yes	OGF_ID	
A unique numeric provincial identifier assigned to each object.				
CLASS_SUBTYPE	VARCHAR2(75)	Yes	SUBTYPE	
The data class subtype - Original GEOG_UNIT_TYPE_NAME.				
CLASS_SUBTYPE_NUM	NUMBER(7,0)	Yes	STYPE_NUM	
The data class subtype number - Original GEOG_UNIT_TYPE_NUM.				
FOREST_INVENTORY_IDENT	VARCHAR2(75)	Yes	FRI_IDENT	
A reference name, number or alpha-number assigned to a collection of forest cover units considered to make up an inventory. For example, "Romeo Mallete Forest (930)".				
FOREST_COVER_UNIT_IDENT	VARCHAR2(25)	Yes	FCU_IDENT	
An identifier that is unique to each Forest Cover Unit (FCU) found within an inventory area such as a Forest Management Unit. Examples: "156105340-0394", "5753526", etc. Note: Although the identifier is unique within a Forest Resource Inventory, the numbering scheme may be duplicated in other inventory areas in the province (e.g. Both Ogoki Forest AND Hearst Forest may use FCU Identifiers 1, 2, 3 etc. to identify their forest stands). As such, only the FMF Object ID can provide FCU uniqueness at the provincial database level. FRI Tech Spec: POLYID				
FOREST_COVER_UNIT_TYPE	VARCHAR2(3)	Yes	FCU_TYPE	BSH, DAL, FOR, GRS, ISL, NIL, ... (See FCU_TYPE_LIST table)
Indicates the classification of the area within its boundaries into one of several generalized water and land types. FRI Tech-Spec: POLYTYPE Permissible values found in lookup table: FCU Type List				
SOURCE_DATA_CODE	VARCHAR2(8)	Yes	SOURCE_C	BASECOVR, DIGITALA, DIGITALP, ESTIMATE, FOC, FRICNVRT, ... (See FCU_SOURCE_DATA_LIST table
Identifies the methodology used to describe the stand. FRI Tech Spec: SOURCE Permissible values found in Lookup Table: FCU Source List				
YEAR_OF_SOURCE	NUMBER(4,0)	Yes	YR_SOURCE	
The year in which the source item was created, or the best estimate of that year. Example: "1987" or "1925" for a creation date of "Pre-1930s". FRI Tech Spec: YRSOURCE				
FOREST_MODIFIER_FLG	VARCHAR2(2)	No	MOD_FLG	RP, PF
Classification (sub-division) of productive forest areas based on the presence or absence of physical or biological factors which may influence the ability to practice forest management. Permissible values are: RP: Production Forest - Areas at				

various stages of growth and development, including areas that have been recently depleted (by harvest or natural causes) or renewed (by artificial or natural means), that are capable of producing adequate growth of timber to support harvesting on a sustained yield basis. These areas have no significant physical or biological limitations on the ability to practice forest management, but may include areas which pose an operational challenge in terms of harvest, access, protection, silviculture or renewal (areas formerly called production forest reserves). The "RP" designation does not have to be placed in the stand description as it will be the default when no other modifier is present. PF: Protection Forest - Areas that may have adequate timber growth, but which contain features that pose a significant operational challenge or risk in terms of forest manageme and site protection. These areas have been designated as a reserve for the purpose of protecting a specific site or ecosystem and are excluded from forest operations. FRI Tech Spec: FORMOD

VERTICAL_STRUCTURE_CODE	VARCHAR2(3)	No	VERT_STR	CX, MO, MU, SI, SV, TO, ... (See FCU_VERTICAL_STRUCTURE_LIST table)

The number of distinct layers (storeys) that can be identified in the stand canopy. A stand canopy is considered to have mor than one storey when at least two distinct layers are present of at least 3m in height difference or 20 years of age difference, and each distinct layer must occupy at least 10% of the total canopy crown cl osure for the stand. When more than one distinct layer/storey is identified, a full description is required for each storey (e.g., species composition, height, site class, etc.). A veteran component (super canopy) that occupies less than 10% of the total canopy crown closure is not considered to be a distinct layer/storey, but the presence of these trees is acknowledged by selecting a vertical structure code containing the letter V, such as SV. In this case, a separate full description of the veteran component is not recorded, but the species and associate proportion must be included in the species composition string for the storey nearest in height. FRI Tech Spec: VERT. Permissible values in lookup table: FCU Vertical Structure List

HORIZONTAL_STRUCTURE_CODE	VARCHAR2(2)	No	HORIZ_STR	FP, MP, OC, OU, SP, SS (See FCU_HORIZONTAL_STRUCTURE_LIS table)

A description of stand structure, from an assessment viewed from above, of tree species distribution and the presence of openings of any shape that are 16 square meters in size or greater. For technical details please refer to p.6 of the Photo Interpretation Specifications (March 21, 2009). FRI Tech Spec: HORIZ. Permissible values in lookup table: FCU Horizontal Structure List

STAGE_OF_DEVELOPMENT_CODE	VARCHAR2(8)	No	STG_DEV_C	DEPHARV, DEPNAT, FIRSTCUT, FRSTPASS, FTGNAT, FTGPLANT, ... (See FCU_STAGE_OF_DEVELOPMENT_LI table)

Indicates the current state of growth and development for a productive forest stand. Note that some states are best described based on the last major silvicultural treatment that was applied to a stand, if the stand is being managed for timber production. FRI Tech Spec: DEVSTAGE. Permissible values in lookup table: FCU Stage of Dev List

YEAR_OF_LAST_DEPLETION	NUMBER(4,0)	No	YR_DEPLET	

Identifies the most recent (latest) FISCAL year that a productive forest area was disturbed, completely or partially, by harvest or by natural causes. This includes mid-rotation or stand improvement operations where merchantable timber is removed. Example: any depletions occurring during the time period of April 1, 2006 through Ma rch 31, 2007 would be recorded as 2006. FRI Tech Spec: YRDEP

DEPLETION_TYPE	VARCHAR2(8)	No	DEPLET_T	Blowdown, Disease, Drought, Fire, Flood, Ice, Insects, Snow, Harvest

Where applicable, identifies the type of depletion or disturbance that has affected a forest cover unit (stand). For example, blowdown, fire and insect damage, harvesting operations etc. FRI Tech Spec: DEPTYPE

INCIDENTAL_TREE_SPECIES_CODE	VARCHAR2(3)	No	INCID_SP	AL, AM, AX, Ab, Ag, Ap, ... (See FCU_TREE_SPECIES_LIST table

The code used to document a tree species not found in the species composition string, but may be important to for wildlife assessment or because of a market or ecological value. For example, a scattering of small pockets of Hemlock (Code="He") or Cedar (Code="Cw") within a dominant Sugar Maple stand, or the presence of Buttern ut (Code="Bn") in a White Ash stand. Note: As this field has been identified as being mandatory in the FRI Technical Specs, a value of "NON" has been added to the FCU Tree Species List lookup table in order to legitimize this value during database validation. Default: NON (n incidental species documented) Business Rule: "NON" is to be used as a default ONLY where the Forest Cover Unit Type is "FOR" (Production Forest) and for which no incidental species has been documented. FRI Tech Spec: INCIDSPC Permissible values in lookup table: FCU Tree Species List

VERIFICATION_STATUS_DATE	DATE	Yes	VERIF_DATE
Date that the geographic unit was verified or validated. FRI Tech Spec: VERDATE			
AREA	NUMBER(18,5)	Yes	AREA
The area of the Source Protection Area (in Lambert Conformal Projection) measured in square meters with precision up to 5 places after the decimal (e.g., 8003.34923 meters squared). FRI Tech Spec: AREA			
PERIMETER	NUMBER(18,5)	Yes	PERIMETER
The distance along the outside of an area (perimeter) measured in meters, with a precision of up to 5 places after the decimal point (e.g., 1763.25407 meters). FRI Tech Spec: PERIMETER			
BUSINESS_EFFECTIVE_DATE	DATE	Yes	BUS_DATE
Date that the record becomes effective in relation to the business i.e. the date MNR became aware of its existence. FRI Tech Spec: BED			
GEOMETRY_UPDATE_DATETIME	DATE	No	GEO_UPD_DT
Date/time the geometry was created or last modified in the source database.			
EFFECTIVE_DATETIME	DATE	No	EFF_DATE
Date/time the record was created or last modified in the source database.			
SHAPE	SDO_GEOMETRY	No	SHAPE
Geometry attribute.			

FCU_ACCESSIBILITY_RESTRICTION

Specifies whether or not there are any restrictions to accessing a productive forest stand. These restrictions may be legal (i.e., ownership), political or land use policy (i.e., land use designation, road closures), and / or a natural barrier. The focus of this field is identification of Crown productive forest stands that are inaccessible and therefore are not considered as part of the managed landbase for forest management planning purposes, but this principle may be applied to any area.

Column Name	Column Type	Mandatory	Short Name	Valid Values
FOREST_COVER_UNIT_ID	NUMBER(13,0)	Yes	FCU_ID	
System generated identifier, unique at the application level.				
ACCESSIBILITY_RESTRICTION_CODE	VARCHAR2(3)	Yes	ACC_RES_C	GEO, LUD, NON, OWN, PRC, STO (See FCU_ACCESS_RESTRICTION_LIST table)
Specifies whether or not there are any restrictions to accessing a productive forest stand. These restrictions may be legal (i.e., ownership), political or land use policy (i.e. land use designation, road closures), and/or a natural barrier. The focus of this field is identification of Crown productive forest stan ds that are inaccessible and therefore are not considered as part of the managed landbase for forest management planning purposes, but the principle may be applied to any area. FRI Tech Spec: ACCESS1 and ACCESS2 Permissible Values in lookup table: FCU Access Restrict List.				
EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	
Date/time the record was created or last modified in the source database.				

FCU_ACCESS_RESTRICTION_LIST

Lookup Table of permissible Accessibility Restriction Codes.

Column Name	Column Type	Mandatory	Short Name	Valid Values
ACCESSIBILITY_RESTRICTION_CODE	VARCHAR2(3)	Yes	ACC_RES_C	

Specifies whether or not there are any restrictions to accessing a productive forest stand. These restrictions may be legal (i.e., ownership), political or land use policy (i.e., land use designation, road closures) and, or a natural barrier. The focus of this field is identification of Crown productive forest stand s that are inaccessible and therefore are not considered as part of the managed landbase for forest management planning purposes, but the principle may be applied to any area. FRI Tech Spec: ACCESS1 and ACCESS2

ACCESSIBILITY_RESTRICTION_DESC	VARCHAR2(40)	No	ACC_RES_D

The corresponding description for an accessibility restriction code value. For example, the description for code "PRC" is "Road Closure".

ACCESSIBILITY_RESTRICTION_DEF	VARCHAR2(2000)	No	ACC_RES_DF

The definition and context of an access restriction.

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE

Date/time the record was created or last modified in the source database.

EXPIRY_DATETIME	DATE	No	EXP_DATE

Date/time that the record was expired from use.

FCU_CANOPY_LAYER

Canopy refers to the trees in a forest which form the canopy. The uneven layers of the canopy is formed by both dominant and co-dominant trees. The canopy is described with one or if existing, two layers.

Column Name	Column Type	Mandatory	Short Name	Valid Values
FOREST_COVER_UNIT_ID	NUMBER(13,0)	Yes	FCU_ID	

System generated identifier, unique at the application level.

CANOPY_STOREY_FLG	VARCHAR2(11)	Yes	STOREY_FLG	Overstorey, Understorey

The kind of canopy or storey the description applies to in the forest stand. The understorey is a distinct lower layer in the canopy, which may occur. The overstorey is either the distinct upper layer in the canopy or the entire canopy where an understorey does not occur.

LEADING_TREE_SPECIES_CODE	VARCHAR2(3)	Yes	LEADING_SP	AL, AM, AX, Ab, Ag, Ap, ... (See FCU_TREE_SPECIES_LIST table)

Identifies the most prevalent species in the stand or layer based on the percentage of crown closure. FRI Tech Spec: OLEADSPC (Vertical Layer Flag = Overstorey or Complex) and ULEADSPC (Vertical Layer Flag = Understorey) Permissible Values in lookup table: FCU Tree Species List

FRI_SPECIES_COMPOSITION	VARCHAR2(60)	Yes	SP_COMP

Indicates the tree species that are present in the stand/layer canopy and the relative proportion of the canopy that each species occupies. When two or more species have the same proportion, then the species that appears to be more prevalent is listed first. Format: SSSPPP (repeating pattern) whereas... SSS - represents the 3 character species code with trailing spaces (left-justified) e.g. "Bw " (White Birch), "Chb" (Black Cherry) PPP - proportion represented as an integer between 1 and 100 with leading spaces (right justified) e.g. " 20", "100" The species composition is stored in this format in a repeating pattern e.g. SSSPPPSSSPPPSSSPPP... with the following business rules: - The total species proportion values must add up to 100 percent (100 pct) for each tier. - For a multi-tiered stand, a complete composition description for each layer is required. - A maximum of 10 species and proportion pairs can be stored in the string. - No duplicate species codes are permitted in the same string. Examples: "Sb 100" - A 100 percent Black Spruce stand "PO 75Bw 25" - A 75 percent Mixed Poplar and 25 percent White Birch stand. "Osw 20Pj 20Sb 20Bf 10Pw 10Mr 10Po 10" - Full properly formatted species composition. FRI Tech Spec: OSPCOMP and USPCOMP

FRI_YEAR_OF_ORIGIN	NUMBER(4,0)	Yes	YR_ORIGIN

Year designating when the leading species of the dominant and co-dominant trees in the forest stand or specific canopy layer started growing. FRI Tech Spec: OYRORG and UYRORG.

FRI_AGE_AT_INVENTORY	NUMBER(3,0)	Yes	AGE_AT_INV

The average age of the leading species of the dominant and co-dominant trees, determined at the time of inventory. FRI Tech Spec: OAGE and UAGE

FRI_HEIGHT	NUMBER(3,1)	Yes	FRI_HEIGHT

The average height in meters of the leading species of the dominant and co-dominant trees in the forest stand or specific canopy-layer. FRI Tech Spec: OHT and UHT.

FRI_PERCENT_OF_CROWN_CLOSURE	NUMBER(3,0)	Yes	PCT_CLOSUR

The percentage of ground area (up to 100%) covered by the vertical projection of the tree crowns onto the ground. FRI Tech Spec: OCCLO and UCCLO

FRI_SITE_CLASS	NUMBER(1,0)	Yes	SITE_CLASS	0, 1, 2, 3,

A calculated expression of the age height relationship based upon the Plonski Normal Yield Tables and is expressed as 0, 1, 2, 3 or 4. FRI Tech Spec: OSC and USC

FRI_STOCKING	NUMBER(3,0)	No	STOCKING

A representation of the density of forest stems per hectare based on average age, height, and the dominant tree species (the species which has the most basal area) in a forest stand. 2007 methodologies are populating "Percent of Crown Closure" instead of "Stocking".

FRI_SITE_INDEX	NUMBER(4,2)	No	SITE_INDEX

Site Index is defined as an expression of a productive forest stand¿s productivity for a given species. It is a derived attribute from the interpreted age and height of a stand or layer. The OMNR will be responsible for the derivation of this attribute from the interpreted age and height. FRI Tech Spec: OSI (Overstorey Site Index), USI (Understorey Site Index).

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE

Date/time the record was created or last modified in the source database.

FCU_CANOPY_LAYER_TREE_SPECIES

The tree species that occur in a forest stand canopy layer. The information stored in this table is the individually sequentially parsed values of the concatenated FRI Species Composition field value from the FCU Canopy Layer table. For example, an overstorey FRI Species Composition value of "Sb 7Bw 2Po 1" would be sequentially parsed out and stored as individual records in this table (1 record for Overstorey FRI Species Composition Sequence 1: species code = Sb, percent = 70, 1 record for Sequence 2: species code = Bw, percent = 20 and finally 1 record for Sequence 3: species code = Po, percent = 10).

Column Name	Column Type	Mandatory	Short Name	Valid Values
FOREST_COVER_UNIT_ID	NUMBER(13,0)	Yes	FCU_ID	

System generated identifier, unique at the application level.

CANOPY_STOREY_FLG	VARCHAR2(11)	Yes	STOREY_FLG	Overstorey, Understorey

The kind of canopy or storey the description applies to in the forest stand. The understorey is a distinct lower layer in the canopy, which may occur. The overstorey is either the distinct upper layer in the canopy or the entire canopy where an understorey does not occur.

COMPOSITION_SEQUENCE	NUMBER(2,0)	Yes	COMP_SEQ	

A number that is unique to the canopy layer used to flag the order each species appears in the species composition.

TREE_SPECIES_CODE	VARCHAR2(3)	Yes	SP_CODE	AL, AM, AX, Ab, Ag, Ap, ... (See FCU_TREE_SPECIES_LIST table)

A standard code that represents the tree species. Permissible Values in FCU Tree Species List

PERCENT_OF_SPECIES	NUMBER(3,0)	Yes	PCT_OF_SP

The amount of one species in a forest stand or storey, expressed as a percentage of cover the species occupies within the canopy. The value stored is a number between 1 and 100.

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE

Date/time the record was created or last modified in the source database.

FCU_ECOSITE

Stores the vegetation description related to major vegetative attributes influencing site productivity and biological legacy, and should be relatively stable over moderate periods (20-40 years). Known as an "ecosite description", it is a series of case-sensitive codes and a number concatenated in a specific order. There are up to seven components (parts) to each ecosite description and each component has its own coding rules. The minimum ecosite description is a combination of three of the components in the following order: 1) a geographic range 2) a number 3) a vegetative modifier Other components include substrate depth, substrate moisture,substrate chemistry, and vegetative cover class modifiers. Imagery interpretation can usually only determine the minimum ecosite description. The full ecosite description containing all components can only be defined and determined from fieldwork. All forest cover units (polygons) have either a simple or complex ecosite description. A simple ecosite description means that only one ecosite description is used to represent the polygon. It is assumed that up to 20% of the polygon area could have acceptable inclusions (as per the Ecological Land Classification Guide) or have eco-elements that are not consistent with the primary ecosite description. A complex ecosite description means that two ecosite descriptions are used to represent the polygon - one ranked as primary and the other ranked as secondary. The primary ranking indicates the ecosite description is applicable to more than 50% of the forest cover unit. The secondary ranking indicates the description is applicable to more than 20% of the total area but in pockets that are smaller than one hectare in size for forest cover units in Northern Ontario or 0.5 hectares in size in Southern Ontario. For additional information about ecosites, including a Fact Sheet for each ecosite description, refer to the Ecological Land Classification Guide (Barton, Lee, Racey, Uhlig, Wester), May 2008, Ontario Ministry of Natural Resources. For more information about ecosites, including a Fact Sheet for each ecosite description, refer to the "Ecosystems of Ontario: Provincial Ecosites", May 21st, 2008, Ecological Land Classifications Working Group. FRI Tech Spec: PRI_ECO and SEC_ECO.

Column Name	Column Type	Mandatory	Short Name	Valid Values
FOREST_COVER_UNIT_ID	NUMBER(13,0)	Yes	FCU_ID	

System generated identifier, unique at the application level.

ECOSITE_RANK_FLG	VARCHAR2(1)	Yes	RANK_FLG	P, S

Indicates the hierarchy of ecosite description components. A simple ecosite description will only have a primary description. primary description is applicable to more than 50% of the area. A complex-ecosite description has either primary or second components. A secondary component description is applicable to more 20% of the area but sma ller-then one hectare in size for forest cover units in Northern Ontario and 0.5 hectare in size, in Southern Ontario. The value is stored as a single uppe case character using the first letter of the word it represents: P = Primary S = Secondary.

ECOSITE_DESCR	VARCHAR2(13)	Yes	DESCR	

Stores the full ordered concatenated value of the parsed components that make up an ecosite. At the minimum, the first 3 o the parsed components: geographic range, code number and vegetative modifier will be present, as this is all that can usua be determined with aerial imagery during a forest resources inventory e.g. B137Tl . The remainder of t he ecosite descriptio for a forest cover unit can only be determined during on-site fieldwork. An example of a full ecosite description would be B055TtMfkcTt (Boreal, 055, tall treed, moderate, fresh, calcareous, closed tall tree) where 055 represents an aspen-birch hardwood. Business Rule: For any given Forest Cover Unit, the ecosite description must not be duplicated between primary secondary ecosites. Examples: B137Tl n (Primary Ecosite) and B065TtM n (Secondary Ecosite) FRI Tech Spec: PRI_ECO, SEC_ECO

ECOSITE_CODE_GEOGRAPHIC_RANGE	VARCHAR2(1)	Yes	ECOSITE_GR	A, B, G, S, U

Identifies which of the four Ecosite Geographic Ranges of Ontario apply to a Forest Cover Unit. It prefixes the ecosite numb as part of the Ecosite Code. Simple ecosites are all primary. Complex ecosites have different values in the two descriptions. is case-sensitive and stored as a single, upper-case character as follows: A = Sub Arctic B = Boreal G = Great Lakes St.

Lawrence S = Southern U = Unclassified

ECOSITE_CODE_NUMBER	VARCHAR2(3)	Yes	ECOSITE_C	001, 002, 003, 004, 005, 006, .. (See FCU_ECOSITE_CODE_NUMBER_L table)

An assigned alphanumeric code that is unique to a set of documented ecological conditions. It forms the middle component the ecosite code. The value is stored as three character-digits with a value range between 1 and 999. Leading zeros are inserted where the value is numerically less than one hundred (099). For example, code "075" represe nts a "Moist, Coarse Maple Hardwood" ecological condition. Permissible Values in lookup table: FCU Ecosite Code Num List

ECOSITE_CODE_VEGETATIVE_MOD	VARCHAR2(2)	No	VEG_MOD	Tt, Tl, S, N, X

Identifies which of the five site conditions exists in a Forest Cover Unit. It suffixes the ecosite number as part of the Ecosite Code. The value is case-sensitive and stored as variable-length one or two characters as follows: Tt = Tall Treed Tl = Low Tr S = Shrub N = Not Woody X = Not Vegetated. The first character is upper case and if the second character exists, it is lowe case.

ECOSITE_SUBSTRATE_DEPTH_MOD	VARCHAR2(2)	No	DEPTH_MOD	R, VS, S, M, MD, D

Indicates how deep the material above bedrock is. Information collected from field sampling has this value as part of the ecosite description without grouping values. Imagery interpretation cannot precisely determine this value with better resolution than "R or VS","S, M or MD" and "D". It is case-sensitive and stored as an upper-cas e variable-length (1 or 2 characters) as follows: R = Rock VS = Very Shallow S = Shallow M = Moderate MD = Moderately Deep D = Deep.

ECOSITE_SUBSTRATE_MOISTURE_MOD	VARCHAR2(1)	No	MOIST_MOD	d, f, h, m, s, v, w, x

Indicates the amount of water the material above bedrock is capable of holding. Information collected from field sampling ha this value as part of the ecosite description. Imagery interpretation cannot determine this value. It is case-sensitive and sto as a lower-case single character as follows: d = dry f = fresh h = humid m = moist s = saturated v = very moist w = wet x xeric.

ECOSITE_SUBSTRATE_CHEM_MOD	VARCHAR2(1)	No	CHEM_MOD	a, b, k, n, z

Indicates a general chemical characteristic of the material above bedrock. Field sampling or other mapped data-sources are only methods of collecting this information. Imagery interpretation cannot determine this value. It is case-sensitive and sto as a lower-case single character as follows: a = acidic b = basic k = calcareous n = non-calcareous z = saline.

ECOSITE_VEG_COVER_CLASS_MOD	VARCHAR2(3)	No	VEG_CL_MOD	cTt, oTt, sTt, Tt, Tl, STl, St, sSt, S sSl, H, sH, Nv, X

A general indication of site productivity, percent cover and vegetation type. Imagery interpretation cannot determine this value. It is case-sensitive and stored as mixed-case variable-length, one to three characters as follows: cTt = closed tall tre oTt = open tall treed sTt = sparse tall treed Tt = GT25% tall treed Tl = GT25% low treed sTl = sparse low treed St = tall sh sSt = sparse tall shrub Sl = low shrub sSl = sparse low shrub H = herbaceous sH = sparse herbaceous Nv = non vascular X not vegetated

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE

Date/time the record was created or last modified in the source database.

FCU_ECOSITE_CODE_NUMBER_LIST

Lookup Table of permissible Ecosite codes.

Column Name	Column Type	Mandatory	Short Name	Valid Values
ECOSITE_CODE_NUMBER	VARCHAR2(3)	Yes	ECOSITE_C	

An assigned alphanumeric code that is unique to a set of documented ecological conditions. It forms the middle component of the ecosite code. The value is stored as three character-digits with a value range between 1 and 999. Leading zeros are inserted where the value is numerically less than one hundred (099). For example, c ode "075" represents a "Moist, Coarse: Maple Hardwood" ecological condition.

ECOSITE_CODE_DESCR	VARCHAR2(100)	No	ECOSITE_D	

The corresponding description for an ecosite code number value. For example, the description for code number "038" is "Dry Sandy: Conifer".

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	

Date/time the record was created or last modified in the source database.

EXPIRY_DATETIME	DATE	No	EXP_DATE

Date/time that the record was expired from use.

FCU_HORIZONTAL_STRUCTURE_LIST

Lookup Table of permissible values for the Forest Cover Unit (FCU) Horizontal Structure Code field.

Column Name	Column Type	Mandatory	Short Name	Valid Values
HORIZONTAL_STRUCTURE_CODE	VARCHAR2(2)	Yes	HORIZ_STR	

A description of stand structure, from an assessment viewed from above, of tree species distribution and the presence of openings of any shape that are 16 square meters in size or greater. For technical details please refer to p.6 of the Photo Interpretation Specifications (March 21, 2009). FRI Tech Spec: HORIZ. Permissible values in Lookup Table: FCU Horizontal Structure List

HORIZONTAL_STRUCTURE_DESCR	VARCHAR2(60)	No	HORIZ_D	

The corresponding description of the horizontal structure code. For example, the description for code "SS" is "Single Stem" (mainly single stem canopy structure).

HORIZONTAL_STRUCTURE_DEF	VARCHAR2(2000)	No	HORIZ_DEF	

The definition and context for s forest cover unit horizontal structure code.

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	

Date/time the record was created or last modified in the source database.

EXPIRY_DATETIME	DATE	No	EXP_DATE	

Date/time that the record was expired from use.

FCU_MANAGEMENT_CONSIDERATION

Indicates whether or not ecological/landscape features or site conditions are present in a productive forest stand which require special consideration during forest management planning. Rule: NONE is not permissible for Protection forests (Forest Modifier Flg = PF).

Column Name	Column Type	Mandatory	Short Name	Valid Values
FOREST_COVER_UNIT_ID	NUMBER(13,0)	Yes	FCU_ID	

System generated identifier, unique at the application level, for a Forest Cover Unit.

MANAGEMENT_CONSIDERATION_CODE	VARCHAR2(4)	Yes	MGMT_C	COLD, DAMG, ISLD, NATB, NONE, PENA, ... (See FCU_MGMT_CONSIDERATION_LIST table)

Indicates whether or not ecological/landscape features or site conditions are present in a productive forest stand which require special consideration during forest management planning. "NONE" is not permissible for Protection Forests (Forest Modifier Flg = PF). FRI Tech Spec: MGMTCON1, MGMTCON2 and MGMTCON3 Permissible values in lookup table: FCU Mgmt Consider List.

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	

Date/time the record was created or last modified in the source database.

FCU_MGMT_CONSIDERATION_LIST

Lookup Table of permissible Forest Cover Unit (FCU) Management Consideration Codes.

Column Name	Column Type	Mandatory	Short Name	Valid Values
MANAGEMENT_CONSIDERATION_CODE	VARCHAR2(4)	Yes	MGMT_C	
Indicates whether or not ecological/landscape features or site conditions are present in a productive forest stand which require special consideration during forest management planning. "NONE" is not permissible for Protection Forests (Forest Modifier Flg = PF). FRI Tech Spec: MGMTCON1, MGMTCON2 and MGMTCON3 Permissible values in lookup table: FCU Mgmt Consider List.				
MANAGEMENT_CONSIDERATION_DESCR	VARCHAR2(80)	No	MGMT_D	
The corresponding description of a management consideration code value. For example, the description for code "DAMG" is "Natural Disturbance or Damage".				
MANAGEMENT_CONSIDERATION_DEF	VARCHAR2(2000)	No	MGMT_DEF	
The definition and context of a management consideration.				
EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	
Date/time the record was created or last modified in the source database.				
EXPIRY_DATETIME	DATE	No	EXP_DATE	
Date/time that the record was expired from use.				

FCU_SOURCE_DATA_LIST

Lookup Table of permissible sources for forest cover data.

Column Name	Column Type	Mandatory	Short Name	Valid Values
SOURCE_DATA_CODE	VARCHAR2(8)	Yes	SOURCE_C	
Identifies the methodology used to describe the stand. FRI Tech Spec: SOURCE				
FOREST_SOURCE_DESCR	VARCHAR2(60)	No	SOURCE_D	
The corresponding description of a source data code. For example, the forest source description for source data code "FOC" is "Forest Operations Compliance Inspection".				
FOREST_SOURCE_DEF	VARCHAR2(2000)	No	SOURCE_DEF	
The definition and context for forest source data.				
EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	
Date/time the record was created or last modified in the source database.				
EXPIRY_DATETIME	DATE	No	EXP_DATE	
Date/time that the record was expired from use.				

FCU_STAGE_OF_DEVELOPMENT_LIST

Lookup Table of permissible values for Forest Cover Unit (FCU) Stage of Development Code.

Column Name	Column Type	Mandatory	Short Name	Valid Values
STAGE_OF_DEVELOPMENT_CODE	VARCHAR2(8)	Yes	STG_DEV_C	
Indicates the current state of growth and development for a productive forest stand. Note that some states are best described based on the last major silvicultural treatment that was applied to a stand, if the stand is being managed for timber production. FRI Tech Spec: DEVSTAGE				
STAGE_OF_DEVELOPMENT_DESCR	VARCHAR2(60)	No	STG_DEV_D	
The corresponding description for a stage of development code. For example, the description for code: "FRSTPASS" is "Modified Cut: First Pass".				
STAGE_OF_DEVELOPMENT_DEF	VARCHAR2(2000)	No	STG_DEF	

The definition and context for a forest cover stage of development value.

STAGE_OF_DEVELOPMENT_CODE_TYPE	VARCHAR2(75)	No	STG_DEV_T

The type or category that a stage of development code value is classified under. For example, code values "FTGNAT", "FTGPLANT", "FTGSEED" are classified with a stage of development type of "Free to Grow".

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE

Date/time the record was created or last modified in the source database.

EXPIRY_DATETIME	DATE	No	EXP_DATE

Date/time that the record was expired from use.

FCU_TREE_SPECIES_LIST

The list of standard tree species codes used in describing forest stands in Ontario.

Column Name	Column Type	Mandatory	Short Name	Valid Values
TREE_SPECIES_CODE	VARCHAR2(3)	Yes	SP_CODE	

A standard code that represents the tree species. For example, the code for Jack Pine is "Pj".

TREE_SPECIES_NAME	VARCHAR2(60)	No	SP_NAME	

The common name of a standard tree species used in describing forest stands in Ontario. For example, White Birch.

SCIENTIFIC_NAME	VARCHAR2(100)	No	SCI_NAME	

The scientific name (Genus and Species) of the tree species (e.g., Populus tremuloides for Trembling Aspen). In some cases, only the scientific genus will be identified for a generic grouping of tree species (e.g., Populus spp).

FRI_COLLECTION_IND	VARCHAR2(3)	No	COLL_IND	Yes, No

A yes or no indicator whether a species identified in this collection is called for, or positively identified during interpretation, and is applicable to the Forest Resources Inventory (FRI).

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	

Date/time the record was created or last modified in the source database.

EXPIRY_DATETIME	DATE	No	EXP_DATE	

Date/time that the record was expired from use.

FCU_TYPE_LIST

Lookup Table of permissible Forest Cover Unit Types.

Column Name	Column Type	Mandatory	Short Name	Valid Values
FOREST_COVER_UNIT_TYPE	VARCHAR2(3)	Yes	FCU_TYPE	

Indicates the classification of the area within its boundaries into one of several generalized water and land types. FRI Tech-Spec: POLYTYPE

FOREST_COVER_UNIT_TYPE_DESCR	VARCHAR2(60)	Yes	TYPE_DESCR	

Forest Cover Unit Type code description. Example: For code "BSH", the description is "Brush and Alder".

FRI_AREA_CLASSIFICATION	VARCHAR2(60)	No	AREA_CLASS	

The Forest Resource Inventory (FRI) area classification of the Forest Cover Unit Type. For example, the FRI area classification for "Brush and Alder" is "Non-Productive Forest".

FOREST_COVER_UNIT_TYPE_DEF	VARCHAR2(2000)	No	TYPE_DEF	

Defines and describes the context for a Forest Cover Unit Type.

EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE
Date/time the record was created or last modified in the source database.			
EXPIRY_DATETIME	DATE	No	EXP_DATE
Date/time that the record was expired from use.			

FCU_VERTICAL_STRUCTURE_LIST

Lookup Table of permissible values for the Forest Cover Unit (FCU) Vertical Structure field.

Column Name	Column Type	Mandatory	Short Name	Valid Values
VERTICAL_STRUCTURE_CODE	VARCHAR2(2)	Yes	VERT_STR	
The number of distinct layers (stories) that can be identified in the stand canopy. A stand canopy is considered to have more than one story when at least two distinct layers are present of at least 3m in height difference or 20 years of age difference, and each distinct layer must occupy at least 10% of the total canopy cr own closure for the stand. When more than one distinct layer or storey is identified, a full description is required for each storey (e.g., species composition, height, site class, etc.). A veteran component (super canopy) that occupies less than 10% of the total canopy crown closure is not considered to be a distinct layer/storey, but the presence of these trees is acknowledged by selecting a vertical structure code containing the letter V, such as SV. In this case, a separate full description of the veteran component is not recorded, but the species and associate proportion must be included in the species composition string for the storey nearest in height. FRI Tech Spec: VERT.				
VERTICAL_STRUCTURE_DESCR	VARCHAR2(60)	No	VERT_D	
The corresponding description of the vertical structure code. For example, the description for code "SV" is "Single, with veterans".				
VERTICAL_STRUCTURE_DEF	VARCHAR2(2000)	No	VERT_DEF	
The definition and context for a forest cover unit vertical structure code.				
EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	
Date/time the record was created or last modified in the source database.				
EXPIRY_DATETIME	DATE	No	EXP_DATE	
Date/time that the record was expired from use.				

FOREST_RESOURCES_INVENTORY

A collection of forest cover units (FCU) which have been inventoried for a specific year and geographic area within the province of Ontario. An example of a defined Forest Resources Inventory is "Romeo Malette Forest (930)". The inventory was created from information interpreted from 2007 vintage aerial photography.

Column Name	Column Type	Mandatory	Short Name	Valid Values
FOREST_INVENTORY_IDENT	VARCHAR2(75)	Yes	FRI_IDENT	
A reference name, number or alpha-number assigned to a collection of forest cover units considered to make up an inventory. For example, "Romeo Mallete Forest (930)".				
EFFECTIVE_DATETIME	DATE	Yes	EFF_DATE	
Date/time the record was created or last modified in the source database.				

LIO Lookup Table Values:

FCU_ACCESS_RESTRICTION_LIST

ACCESSIBILITY RESTRICTION CODE	ACCESSIBILITY RESTRICTION DESC	ACCESSIBILITY RESTRICTION DEF	EXPIRY DATETIME
GEO	Geography	Area is not accessible due to geographic reasons. Business Rule: If the Access Consideration Code is set to GEO, then a Management Consideration Code must be entered (MGMTCON <> NONE)	
LUD	Land Use Designation	An area is not accessible for forest management purposes due to land use designation (e.g., a provincial or federal park, agreement forest, mining claim, native lands, federal lands).	
NON	No Accessibility Considerations	The area is accessible/reachable.	
OWN	Surrounding Ownership	An area of Crown land that is unreachable because it is surrounded by lands owned by an other party/parties (e.g., an area of Crown productive forest land that is not accessible for forest management because it is surrounded by private land).	
PRC	Road Closure	An area that is no longer accessible due to the permanent closure of the only road leading into the area.	
STO	Subject to Ownership	An area of land that is owned by a party/parties other than the Crown (e.g., a parcel of private land) and where the access conditions are applied by the land owner. Note that ownership and access conditions can change over time.	

LIO Lookup Table Values:

FCU_ECOSITE_CODE_NUMBER_LIST

ECOSITE CODE NUMBER	ECOSITE CODE DESCR	EXPIRY DATETIME
001	Excavated Bluff	
002	Active Bluff	
003	Open Bluff	
004	Bluff	
005	Active Mineral Shoreline	
006	Active Sand Dune	
007	Active Mineral Barren	
008	Very Shallow, Dry to Fresh: Meadow	
009	Very Shallow, Dry to Fresh: Sparse Shrub	
010	Very Shallow, Dry to Fresh: Shrub	
011	Very Shallow, Dry to Fresh: Red Pine - White Pine Conifer	
012	Very Shallow, Dry to Fresh: Pine - Black Spruce Conifer	
013	Very Shallow, Dry to Fresh: Hemlock - White Cedar Conifer	
014	Very Shallow, Dry to Fresh: Conifer	
015	Very Shallow, Dry to Fresh: Red Pine - White Pine Mixedwood	
016	Very Shallow, Dry to Fresh: Aspen - Birch Hardwood	
017	Very Shallow, Dry to Fresh: Oak Hardwood	
018	Very Shallow, Dry to Fresh: Maple Hardwood	
019	Very Shallow, Dry to Fresh: Mixedwood	
020	Very Shallow, Moist: Meadow	
021	Very Shallow, Moist: Sparse Shrub	
022	Very Shallow, Moist: Shrub	
023	Very Shallow, Moist: Red Pine - White Pine Conifer	
024	Very Shallow, Moist: Black Spruce - Pine Conifer	
025	Very Shallow, Moist: Hemlock- Cedar Conifer	
026	Very Shallow, Moist: Conifer	

027	Very Shallow, Moist: Red Pine - White Pine Mixedwood	
028	Very Shallow, Moist: Mixedwood	
029	Dry, Sandy: Field	
030	Dry, Sandy: Meadow	
031	Dry, Sandy: Sparse Shrub	
032	Dry, Sandy: Shrub	
033	Dry, Sandy: Red Pine- White Pine Conifer	
034	Dry, Sandy: Jack Pine - Black Spruce Dominated	
035	Dry, Sandy: Pine - Black Spruce Conifer	
036	Dry, Sandy: Hemlock - Cedar Conifer	
037	Dry, Sandy: Spruce - Fir Conifer	
038	Dry, Sandy: Conifer	
039	Dry, Sandy: Red Pine - White Pine Mixedwood	
040	Dry, Sandy: Aspen - Birch Hardwood	
041	Dry, Sandy: Oak Hardwood	
042	Dry, Sandy: Maple Hardwood	
043	Dry, Sandy: Mixedwood	
044	Dry to Fresh, Coarse: Field	
045	Dry to Fresh, Coarse: Meadow	
046	Dry to Fresh, Coarse: Sparse Shrub	
047	Dry to Fresh, Coarse: Shrub	
048	Dry to Fresh, Coarse: Red Pine - White Pine Conifer	
049	Dry to Fresh, Coarse: Jack Pine - Black Spruce Dominated	
050	Dry to Fresh, Coarse: Pine - Black Spruce Conifer	
051	Dry to Fresh, Coarse: Hemlock - Cedar Conifer	
052	Dry to Fresh, Coarse: Spruce - Fir Conifer	
053	Dry to Fresh, Coarse: Conifer	
054	Dry to Fresh, Coarse: Red Pine - White Pine Mixedwood	
055	Dry to Fresh, Coarse: Aspen - Birch Hardwood	
056	Dry to Fresh, Coarse: Elm - Ash Hardwood	
057	Dry to Fresh, Coarse: Oak Hardwood	
058	Dry to Fresh, Coarse: Maple Hardwood	

059	Dry to Fresh, Coarse: Mixedwood	
060	Moist, Coarse: Field	
061	Moist, Coarse: Meadow	
062	Moist, Coarse: Sparse Shrub	
063	Moist, Coarse: Shrub	
064	Moist, Coarse: Red Pine - White Pine Conifer	
065	Moist, Coarse: Pine - Black Spruce Conifer	
066	Moist, Coarse: Hemlock - Cedar Conifer	
067	Moist, Coarse: Spruce - Fir Conifer	
068	Moist, Coarse: Conifer	
069	Moist, Coarse: Red Pine - White Pine Mixedwood	
070	Moist, Coarse: Aspen - Birch Hardwood	
071	Moist, Coarse: Elm - Ash Hardwood	
072	Moist, Coarse: Oak Hardwood	
073	Moist, Coarse: Sugar Maple Hardwood	
074	Moist, Coarse: Red Maple Hardwood	
075	Moist, Coarse: Maple Hardwood	
076	Moist, Coarse: Mixedwood	
077	Fresh, Clayey: Field	
078	Fresh, Clayey: Meadow	
079	Fresh, Clayey: Sparse Shrub	
080	Fresh, Clayey: Shrub	
081	Fresh, Clayey: Red Pine - White Pine Conifer	
082	Fresh, Clayey: Jack Pine - Black Spruce Dominated	
083	Fresh, Clayey: Pine - Black Spruce Conifer	
084	Fresh, Clayey: Hemlock - Cedar Conifer	
085	Fresh, Clayey: Spruce - Fir Conifer	
086	Fresh, Clayey: Conifer	
087	Fresh, Clayey: Red Pine - White Pine Mixedwood	
088	Fresh, Clayey: Aspen - Birch Hardwood	
089	Fresh, Clayey: Elm - Ash Hardwood	
090	Fresh, Clayey: Oak Hardwood	
091	Fresh, Clayey: Maple Hardwood	
092	Fresh, Clayey: Mixedwood	

093	Fresh, Silty to Fine Loamy: Field	
094	Fresh, Silty to Fine Loamy: Meadow	
095	Fresh, Silty to Fine Loamy: Sparse Shrub	
096	Fresh, Silty to Fine Loamy: Shrub	
097	Fresh, Silty to Fine Loamy: Red Pine - White Pine Conifer	
098	Fresh, Silty to Fine Loamy: Jack Pine - Black Spruce Dominated	
099	Fresh, Silty to Fine Loamy: Pine - Black Spruce Conifer	
100	Fresh, Silty to Fine Loamy: Hemlock - Cedar Conifer	

* Not a complete list.

LIO Lookup Table Values:

FCU_HORIZONTAL_STRUCTURE_LIST

HORIZONTAL STRUCTURE CODE	HORIZONTAL STRUCTURE DESCR	HORIZONTAL STRUCTURE DEF	EXPIRY DATETIME
FP	Few Patches	two or three distinct patches	
MP	Multiple Patches	several distinct patches	
OC	Openings Common	openings common - 3 or more	
OU	Openings Uncommon	openings uncommon - 1 or 2	
SP	Single Patch	single patch distinct from the rest of the canopy	
SS	Single Stem	mainly single stem canopy structure	

LIO Lookup Table Values:

FCU_MGMT_CONSIDERATION_LIST

MANAGEMENT CONSIDERATION CODE	MANAGEMENT CONSIDERATION DESCR	MANAGEMENT CONSIDERATION DEF	EXPIRY DATETIME
COLD	Permafrost	Poor or unstable growing conditions due to soil being perpetually frozen year-round.	
DAMG	Natural Disturbance or Damage	A stand composed mainly of trees that are damaged, dead and/or dying due to natural causes (e.g., ice damage, blowdown, insect/disease damage).	
ISLD	Island	The area is an island (e.g. an area of land that is totally surrounded by water)	
NATB	Natural Barrier	A productive stand that is unreachable due to the physical features of the surrounding area e.g. a mesa or productive forest surrounded by non -forested wetland	
NONE	No Management Consideration	There are no physical or ecological restrictions in the site that need to be considered when determining management of the stand.	
PENA	Peninsula	An area of land that is nearly surrounded by water and is connected to the mainland	
POOR	Stagnated, Poor Tree Growth with No Indicator	A stand exhibiting stagnated growth with no discernible cause of the poor growing conditions.	
ROCK	Exposed Bedrock or Rocky Outcrops	Limits timber harvesting equipment access or the potential for soil erosion.	
SAND	Blow Sand / Exposed Fine Sand, Shallow or No Humus	Potential for erosion.	
SHRB	Heavy shrub / brush	Difficulty with forest regeneration because of shrub or brush competition without major silvicultural intervention.	
SOIL	Shallow Soils	Potential for erosion.	

I STEP	Steep Slopes	I Potential erosion, dangers for equipment operation.	
IWATR	Telluric / Highly Fluctuating, Moving Ground Water	Difficult forest regeneration due to potential of raising surface water.	D
IWETI	Poorly Drained or High Water Table	Difficult forest regeneration due to potential of raising water tables.	

LIO Lookup Table Values:

FCU_SOURCE_DATA_LIST

SOURCE DATA CODE	FOREST SOURCE DESCR	FOREST SOURCE DEF	EXPIRY DATETIME
BASECOVR	Planimetric "base" Layer	Information that is provided by the MNR (e.g., water or evaluated wetlands).	
DIGITALA	Multispectral Scanning (digital Image)	Use of recognition software by analyzing the imagery to produce polygon boundaries. Most commonly used for water feature extraction or roads.	
DIGITALP	Multispectral Scanning (digital Image)	Photo-interpretation of multi-spectral imagery using "Softcopy" software for FRI attributes.	
ESTIMATE	Expected Outcome	The description of a recently renewed stand that has not been revisited is a 'best estimate' of the expected outcome/ result of the renewal treatment applied to the area based on past silvicultural successes.	
FOC	Forest Operations Compliance Inspection	Inspection of a site post Silvicultural treatment to determine if an operator or operation conforms to the approved plan or permit.	
FRICNVRT	Forest Resources Inventory Conversion	Current polygon description based on data conversion from traditional FRI.	
INFRARED	Infrared Satellite Imagery	Used to assess succession and hardwood vs. conifer in young plantations.	
MARKING	Pre-harvest Site Inspection Or Marking	Assessment of the trees in a stand for purpose of establishing a silvicultural or operational prescription. Selecting and marking the trees to be harvested and/or the trees to be left to grow; to sustain and enhance the stand for timber management, wildlife habitat management, aesthetics, recreation, biodiversity and other environmental and heritage concerns.	
OCULARA	Aerial Survey/Reconnaissance	Visual assessment of a stand from a helicopter or fixed wing aircraft.	
OCULARG	Ocular Estimate (ground)	Visual assessment of a stand using extensive ground survey methodologies (i.e., no detailed measurements).	
OPC	Operational Cruise	Measuring standing trees to determine the volume of wood on tract of land.	

PHOTO	Air Photo Interpretation	Photography at a conventional scale of 1:10,000 to 1:20,000	
PHOTOLS	Large Scale Aerial Photography	Photography at a scale larger than 1:10,000 (e.g., 1:500, 1:1000).	
PHOTOSS	Small Scale Aerial Photography	Photography at a scale smaller than 1:20,000 (e.g., 1:100,000).	
PLOTFIXD	Fixed Area Plot	(e.g., FRI- permanent inventory plot)	
PLOTVAR	Variable Area (radius) Plot	BAF prism cruise (e.g., FRI calibration plot)	
RADAR	Radar Satellite Imagery	Radar imagery may provide for image separation among forest types when pre-existing forest and non-forest land cover classifications are incorporated.	
REGENASS	Regeneration Assessment	Survey of a regenerated area to determine how well the new stand is growing (less than 20yrs old). This includes seeding, survival, and stocking assessments.	
SEMEXTEN	Extensive Silvicultural Effectiveness Monitoring Survey	An appraisal of a forest stand's structure and composition using generalized survey sampling methodologies to determine if regeneration or management objectives have been met (i.e., determine if the expected results were achieved). Extensive survey methods are generally used where there are obvious successes or failure, or to identify problem areas requiring more intensive assessment.	
SEMINTEN	Intensive Silvicultural Effectiveness Monitoring Survey	An appraisal of a forest stand's structure and composition using rigorous survey sampling methodologies to determine if regeneration or management objectives have been met (i.e., determine if the expected results were achieved). Intensive survey methods are intended for stands where the status of regeneration is uncertain or specific quantitative data is required to determine the silvicultural effectiveness for operational treatments.	
SPECTRAL	Spectral Satellite Imagery	Can be used to distinguish and identify different forest and plantation types.	
SUPINFO	Supplied information	Forest stand update information from a source other than those listed in the other code options and that is provided by either MNR or Licensee. For example, forest stand disturbance data.	

FCU_STAGE_OF_DEVELOPMENT_LIST

STAGE OF DEVELOPMENT CODE	STAGE OF DEVELOPMENT DESCR	STAGE OF DEVELOPMENT DEF	STAGE OF DEVELOPMENT CODE TYPE	EXPIRY DATETIME
DEPHARV	Recent Harvest Disturbance: No Regeneration	Productive forest area that was recently depleted by clearcut harvesting and have not received a silvicultural treatment such as natural regeneration, seeding or planting. These areas do not have advanced regeneration, or a distinct or established regeneration layer that would be released and/or protected as part of the depletion operation.	Depleted Area	
DEPNAT	Recent Natural Disturbance: No Regeneration	Productive forest area that was recently depleted by natural causes (i.e., fire, blowdown, ice damage, insect and disease) and have not received a silvicultural treatment such as natural regeneration, seeding or planting. These areas do not have advanced regeneration, or a distinct or established regeneration layer.	Depleted Area	
FIRSTCUT	Received A First Removal Harvest	A shelterwood silvicultural system stage of management where overstorey trees are removed in one or more harvests in order to release the established seedlings from competition.	Shelterwood Silvicultural System	
FRSTPASS	Modified Cut: First Pass	A partial harvest where the first harvest operation removes target/specific merchantable tree species from a forest stand. The remaining species are merchantable and are intended to be harvested by another logger/contractor /forest resource licence holder in the next pass. A	Harvest - Clearcut Silvicultural System or Generic Use	

		first pass should be recorded if merchantable tree species remain in the forest stand which have been allocated for harvest - but not yet harvested.		
FTGNAT	Free Growing: Mainly Natural Regeneration	Productive forest areas which were regenerated predominantly by natural means and which have been assessed as free-to-grow / free growing based on a silvicultural effectiveness monitoring survey. This includes areas representing a wide range of stand ages, from recently assessed as free-to-grow / free growing to mature and overmature stands, if the stand has not received any further silvicultural treatment.	Free to Grow	
FTGPLANT	Free Growing: Mainly Planted Regeneration	Productive forest areas which were regenerated predominantly from planted stock and which have been assessed as free-to-grow / free growing based on a silvicultural effectiveness monitoring survey. This includes areas representing a wide range of stand ages, from recently assessed as free-to-grow / free growing to mature and overmature stands, if the stand has not received any further silvicultural treatment.	Free to Grow	
FTGSEED	Free Growing: Mainly Seeded Regeneration	Productive forest areas which were regenerated predominantly by seeding and which have been assessed as free-to-grow / free growing based on a silvicultural effectiveness monitoring survey. This includes areas representing a wide range of stand ages, from recently assessed as free-to-grow / free growing to mature and overmature stands, if the stand has not received any further silvicultural treatment.	Free to Grow	

IMPROVE	Received An Improvement Cut	A selection silvicultural system stage of management where a cut is made in an uneven-aged stand primarily to improve stand composition. Distribution and quality by removing less desirable trees of any species.	Selection Silvicultural System	
LASTCUT	Received a final removal harvest.	A shelterwood silvicultural system stage of management where all of the remaining trees in the overstorey are removed. This is the removal of the seed or shelter trees after the regeneration has been effective.	Shelterwood Silvicultural System	
LOWMGMT	Not Satisfactorily Regenerated Harvest Disturbance	Productive forest stands which were previously harvested and have not reached the regeneration standards as described in an approved forest management plan within the estimated timeframe. Further, these areas require additional silvicultural treatment to bring them up to regeneration standards. This does not include areas that have been recently depleted or recently renewed. However, it may include areas which have received renewal treatments in the past that have failed to produce a regenerated forest to the applicable regeneration standards. This option may also include those areas which have traditionally been designated as barren and scattered (i.e., stocking less than 25%) and areas that have been classified as not satisfactorily regenerated (NSR). The former NSR classes of 2 to 5 are included here.	Low Stocking	
LOWNAT	Not Satisfactorily Regenerated Natural Disturbance	Productive forest stands which were previously depleted by natural causes and have not reached the	Low Stocking	

		regeneration standards as described in an approved forest management plan within the estimated timeframe. Further, these areas require additional silvicultural treatment to bring them up to regeneration standards. This does not include areas that have been recently depleted or recently renewed. However, it may include areas which have received renewal treatments in the past that have failed to produce a regenerated forest to the applicable regeneration standards. This option may also include those areas which have traditionally been designated as barren and scattered (i.e., stocking less than 25%) and areas that have been classified as not satisfactorily regenerated (NSR). The former NSR classes of 2 to 5 are included here.		
NEWNAT	Recently Renewed: Mainly Natural Regeneration	Productive forest areas which have been regenerated predominantly by natural means, but have not received a silvicultural effectiveness monitoring survey and have not been assessed as free-to-grow / free growing.	Newly Regenerated	
NEWPLANT	Recently Renewed: Mainly Planted	Productive forest areas which have been regenerated predominantly by planting, but have not received a silvicultural effectiveness monitoring survey and have not been assessed as free-to-grow / free growing.	Newly Regenerated	
NEWSEED	Recently Renewed: Mainly Seeded	Productive forest areas which have been regenerated predominantly by seeding, but have not received a silvicultural effectiveness monitoring survey and have not been	Newly Regenerated	

		assessed as free-to-grow / free growing.		
PREPCUT	Received A Preparatory Cut	A shelterwood silvicultural system stage of management designed to remove undesirable species of any species from the stand and to select trees to remain that will provide the best seed source. The removal of undesirable trees opens the canopy and enables the crowns of remaining seed bearing trees to enlarge; to improve conditions for seed production and natural regeneration.	Shelterwood Silvicultural System	
SEEDCUT	Received A Seed Cut	A shelterwood silvicultural system stage of management where trees are removed from a mature stand in order to create openings in the canopy / create spaces and to prepare sites for natural regeneration while maintaining the seed bearing trees and protecting any existing advance regeneration.	Shelterwood Silvicultural System	
SEEDTREE	Modified Cut: Seed Tree	An even-aged, silvicultural system that retains mature standing trees scattered throughout the cutblock to provide seed sources for natural regeneration. A method of harvesting and regenerating a forest stand in which all trees are removed from the area except for a small number of seed-bearing trees that are left singly or in small groups. The objective is to create an even-aged stand.	Harvest - Clearcut Silvicultural System or Generic Use	
SELECT	Received A Selection Harvest	A selection silvicultural system stage of management where individual trees or groups of trees are selected for cutting in order to recover the yield and develop a balanced uneven-aged	Selection Silvicultural System	

		structure, while providing the cultural measures required for tree growth and seeding establishment.		
STRIPCUT	Modified Cut: Strip	The removal of a portion of the existing trees in a stand in progressive strips in more than one operation so that the non-depleted portion of the stand is left primarily to provide a natural seed source for regeneration of the depleted area. Several cutting patterns are available to achieve same goal. The removal of trees in one or more passes in a system of strips of various widths; where each strip is less than or equal to 100 meters (5 chains) wide. It is designed to encourage regeneration on difficult and/or fragile sites. Note: Harvesting where the cut strips are greater than 100 meters wide (> 5 chains) should be recorded as clearcut.	Harvest - Clearcut Silvicultural System or Generic Use	
THINCOM	Received Commercial Thinning / Spacing Treatment	Free-growing productive forest areas which have received a mid-rotation partial harvest (reduction in the growing stock) that is designed to meet various objectives such as improving tree spacing, removing trees not suited to the site, and promoting the growth of the best quality trees. The harvested trees are removed from the site and used for commercial purposes.	Harvest - Clearcut Silvicultural System or Generic Use	
THINPRE	Received Pre-commercial Thinning / Spacing Treatment	Free-growing productive forest areas which have received a mid-rotation partial harvest (reduction in the growing stock) that is designed to meet various objectives such as improving tree spacing, removing trees not suited to the site, and promoting the growth of the best quality trees. The trees	Harvest - Clearcut Silvicultural System or Generic Use	

result in a harvest of merchantable volume.

LIO Lookup Table Values:

FCU_TREE_SPECIES_LIST

TREE SPECIES CODE	TREE SPECIES NAME	SCIENTIFIC NAME	FRI COLLECTION IND	EXPIRY DATETIME
AL	Alder, any or mixed	Alnus spp.	No	
AM	Mountain-Ash, any or mixed	Sorbus spp.	No	
AX	Ash, any or mixed	Fraxinus spp.	Yes	
Ab	Ash, Black	Fraxinus nigra	Yes	
Ag	Ash, Red (or Green)	Fraxinus pennsylvanica	No	
Ap	Ash, Pumpkin	Fraxinus profunda	No	
Aq	Ash, Blue	Fraxinus quadrangulata	No	
Aw	Ash, White	Fraxinus americana	Yes	
Bb	Blue-Beech (or American Hornbeam)	Carpinus caroliniana	No	
Bc	Birch, Cherry	Betula lenta	No	
Bd	Basswood	Tilia americana	Yes	
Be	Beech, American	Fagus grandifolia	Yes	
Bf	Fir, Balsam	Abies balsamea	Yes	
Bg	Birch, Grey	Betula populifolia	Yes	
Bl	Linden, Big Leaf	Tilia platyphyllos	No	
Bn	Butternut	Juglans cinerea	Yes	
Bp	Birch, European Weeping	Betula pendula	No	
Bw	Birch, White (or Paper)	Betula papyrifera	Yes	
By	Birch, Yellow	Betula alleghaniensis	Yes	
CE	Cedar, all	Thuja spp.	Yes	
CH	Cherry, any or mixed	Prunus, spp.	Yes	
Cat	Catalpa, Northern (or Bean-Tree)	Catalpa speciosa	No	
Cb	Cherry, Black	Prunus serotina	Yes	
Cc	Cherry, Choke	Prunus virginiana	No	

Cd	American Chestnut	Castanea dentata	Yes	
Cm	Cherry, Mazzard	Prunus avium	No	
Cp	Cherry, Pin (or Wild Red or Fire)	Prunus pensylvanica	No	
Cr	Cedar, Eastern Red (or Redcedar)	Juniperus virginiana	Yes	
Cs	Cherry, Sour	Prunus cerasus	No	
Ct	Cucumber Tree	Magnolia acuminata	No	
Cw	Cedar, Eastern White (or Northern White-Cedar)	Thuja occidentalis	Yes	
EX	Elm, any or mixed	Ulmus spp	Yes	
Ema	Mountain-Ash, European	Sorbus aucuparia	No	
Er	Elm, Red (or Slippery)	Ulmus rubra	No	
Eu	Elm, Rock	Ulmus thomasii	No	
Ew	Elm, White (or American)	Ulmus americana	Yes	
Gb	Black Gum	Nyssa sylvatica	No	
Gt	Locust, Honey	Gleditsia triacanthos	No	
Haz	Witch-Hazel, American	Hamamelis virginiana	No	
Hb	Hickory, Bitternut (or Swamp)	Carya cordiformis	No	
Hc	Horsechestnut	Aesculus hippocastanum	No	
He	Hemlock, Eastern	Tsuga canadensis	Yes	
Hi	Hickory, all	Carya spp.	Yes	
Hk	Hackberry	Celtix occidentalis	No	
Hl	Hickory, Big Shellbark	Carya laciniosa	No	
Hm	Hickory, Mockernut	Carya tomentosa	No	
Hp	Hickory, Sweet Pignut	Carya glabra	No	
Hs	Hickory, Shagbark	Carya ovata	No	
Ht	Hawthorn	Crataegus spp.	No	
Iw	Ironwood (or Eastern Hop-Hornbeam)	Ostrya virginiana	Yes	
Kk	Kentucky Coffee-tree	Gymnocladus dioicus	No	
LO	Locust, Black and, or Honey	Robinia spp.	Yes	

La	Larch, Eastern (or American Larch or Tamarack)	Larix, laricina	Yes	
Lb	Locust, Black	Robinia pseudoacacia	No	
Le	Larch, European	Larix decidua	No	
Lj	Larch, Japanese	Larix leptolepis	No	
Ll	Linden, Little Leaf	Tilia cordata	No	
MX	Maple, any or mixed	Acer spp.	Yes	
Mb	Maple, Black	Acer nigrum, (Acer saccharum ssp. nigrum)	No	
Mf	Maple, Freeman	Acer X freemanii	No	
Mh	Maple, Hard (or Sugar)	Acer saccharum	Yes	
Mm	Maple, Manitoba (or Box Elder)	Acer negundo	No	
Mn	Maple, Norway	Acer platanoides	No	
Mo	Mulberry, Red	Morus rubra	No	
Mp	Maple, Striped	Acer pensylvanicum	No	
Mr	Maple, Red (or Soft Maple)	Acer rubrum	Yes	
Ms	Maple, Silver	Acer saccharinum	Yes	
Mt	Maple, Mountain	Acer spicatum	No	
NON	No incidental tree species documented			
OC	Conifers, Other		Yes	
OH	Hardwoods, Other		Yes	
OX	Oak, any or mixed	Quercus spp.	Yes	
Ob	Oak. Bur (or Mossy-cup)	Quercus macrocarpa	No	
Obl	Oak, Black	Quercus nigra	No	
Och	Oak, Chinquapin	Quercus muehlenbergii	No	
Op	Oak, Pin (or Swamp)	Quercus palustris	No	
Or	Oak, Red (or Northern Red)	Quercus rubra	Yes	
Os	Oak, Shumards (or Swamp Red)	Quercus shumardii	No	
Osw	Oak, Swamp White	Quercus bicolor	No	

Ow	Oak, White	Quercus alba	Yes	
PO	Poplar, any or mixed	Populus spp.	Yes	
PX	Pine, any or mixed	Pinus spp.	Yes	
Pa	Pawpaw	Asimina triloba	No	
Pb	Poplar, Balsam	Populus balsamifera	Yes	
Pc	Poplar, Carolina	Populus X canadensis	No	
Pd	Cottonwood, Eastern	Populus deltoides	Yes	
Pe	Poplar, Silver (or European White)	Populus alba	No	
Ph	Poplar, Hybrid	Populus	No	
Pj	Pine, Jack	Pinus banksiana.	Yes	
Pl	Aspen, Largetooth	Populus grandidentata	Yes	
Pn	Pine, Austrian (or Black)	Pinus nigra	No	
Pp	Pine, Pitch	Pinus rigida	No	
Pr	Pine, Red	Pinus resinosa	Yes	
Ps	Pine, Scotch	Pinus sylvestris	Yes	
Pt	Aspen, Trembling	Populus tremuloides	Yes	
Pw	Pine, White (or Eastern White)	Pinus strobus	Yes	
Red	Redbud	Cercis canadensis	No	
SX	Spruce, any or mixed	Picea spp.	Yes	
Sb	Spruce, Black	Picea mariana	Yes	
Sc	Spruce, Colorado (or Blue)	Picea pungens	No	

* Not a complete list.

LIO Lookup Table Values:

FCU_TYPE_LIST

FOREST COVER UNIT TYPE	FOREST COVER UNIT TYPE DESCR	FRI AREA CLASSIFICATION	FOREST COVER UNIT TYPE DEF	EXPIRY DATETIME
BSH	Brush and Alder	Non-Productive Forest	Areas covered with non-commercial tree species or shrubs. These areas are normally associated with wetlands or water features, and must not be confused with productive forest areas of similar brush or bush cover which have developed as a result of forest management operations (e.g., areas that have been recently depleted or areas that are below silvicultural standards).	
DAL	Developed Agricultural Land	Non-Forested Land	Lands which are cultivated for growing crops, orchards, floral gardens, etc. These areas may include abandoned agricultural lands.	
FOR	Productive Forest	Productive Forest	Areas that are capable of producing trees and can support tree growth. These areas may or may not be capable of supporting the harvesting of timber on a sustained yield basis. Some areas may have physical and/or biological characteristics which effect land use. Thus this polygon type includes both production and protection forest areas. The areas may or may not have timber currently growing on them depending on the stage of development (e.g. recently depleted).	
GRS	Grass and Meadow	Non-Forested Land	Farm areas devoted to pasture for domesticated animals. These areas may also include abandoned grass and meadows, but are not part of the productive forest land base and do not include "barren and scattered" areas. These areas are similar to barren and scattered, but are located near developed agriculture land or unclassified areas and are usually fenced.	

ISL	Small Island	Spatial Only	Islands less than 8 hectares in size, down to a lower limit of 0.0025 hectares or 25 square meters in size (e.g., 5 X 5 meters) are recorded during the inventory production process, but are NOT interpreted or typed for practicality and cost considerations. Only islands 8 hectares and larger are interpreted and assigned an appropriate code, such as FOR or BSH.	
NIL	Not Inventoried Land	The World Polygon	Area without data. Not permitted for area regulated by FIM. Used to maintain tessellation of the layer.	
OMS	Open Wetland	Non-Productive Forest	Wet areas of mosses, grasses, sedges, and small herbaceous plants, often interspersed with small areas of open water.	
RCK	Rock	Non-Productive Forest	Areas of barren or exposed rock (e.g., bedrock, cliff face, talus slope) which may support a few scattered trees, but is less than or equal to 25% stocked.	
TMS	Treed Wetland	Non-Productive Forest	Areas of dry or wet muskeg on which stunted trees occur as widely spaced individuals or in small groups.	
UCL	Unclassified	Non-Forested Land	Non-forested areas which were created for specific uses other than timber production, such as roads, railroads, logging camps, mines, utility corridors, logging camps, gravel pits, airports, etc. Most of these areas have been cleared of trees.	
WAT	Water	Spatial Only	All water areas delineated to the high water mark. No designation (or polygon delineation) between lakes and wide rivers. Therefore, includes lakes, ponds and reservoirs (i.e., inland basin areas containing water) and wide (two-sided) rivers. These rivers are natural or man-made bodies of flowing water, emptying into a stream, river or lake. These are permanent rivers or streams that can be defined by area (versus a line). During the inventory production process rivers 10 meters or wider are identified from the imagery as polygons. Smaller/narrower rivers and streams are maintained as linear features in a centre-line layer(s).	

FCU_VERTICAL_STRUCTURE_LIST

VERTICAL STRUCTURE CODE	VERTICAL STRUCTURE DESCR	VERTICAL STRUCTURE DEF	EXPIRY DATETIME
CX	Complex	A stand in which the tree heights are variable (>20% differentiation in heights) and there are no distinguishable stories in the canopy; an uneven-aged stand. A multi-layered stand structure characterized by trees of many different ages or sizes occurring singly or in groups (e.g., mixedwood stand that has been repeatedly disturbed creating a mosaic of species, age and height classes). Characteristics: - Indeterminate stand origin (e.g., partial harvest, partial blowdown, etc.). - Stocking/crown closure is often patchy and uneven. - Usually a mixedwood condition. - Stands with atypical and unpredictable variation in size, age and species mix. - Distribution of trees by diameter class is generally multi-modal.	
MO	Two Storied with Veterans; overstorey DEVSTAGE	A multi-layered stand structure with two distinct canopy layers but which also includes veterans (e.g., an aspen stand with emergent white pine and a distinct fairly homogeneous understorey of spruce and balsam fir). Characteristics: Similar to the two storied canopy structure, but veteran trees are present in or above the main canopy. In this case, the overstorey layer is used to assign the stage of development (DEVSTAGE) attribute during the inventory creation / photo interpretation process.	
MU	Two Storied with Veterans; understorey DEVSTAGE	A multi-layered stand structure with two distinct canopy layers but which also includes veterans (e.g., an aspen stand with emergent white pine and a distinct fairly homogeneous understorey of spruce and balsam fir). Characteristics: Similar to the two storied canopy structure, but veteran trees are present in or above the main canopy. In this case, the understorey layer is used to assign the stage of development (DEVSTAGE) attribute during the inventory creation / photo interpretation process.	
SI	Single Story	A stand with a simple canopy structure where the age and height of the trees is homogeneous; an even-aged stand (e.g., fire origin jack pine). Characteristics: - Single age class (within 20 years) for the main canopy layer. - Stand height and height to live crown for the primary species is fairly uniform. - Usually a stand that originates from a single disturbance event (e.g., fire, harvest, etc.). - Can have some undergrowth but it should comprise less than 10% of the basal area. - Distribution of	

		trees by diameter class is bell-shaped.	
SV	Single Story with Veterans	A stand characterized mainly by a simple canopy structure, but which also includes veteran trees. Veteran trees are living remnants of a former stand (e.g., an aspen stand with emergent white pine or a young plantation with residual hardwood).	
TO	Two Storied; overstorey DEVSTAGE	A multi-layered stand structure with two distinct canopy layers (e.g., poplar overstorey with a distinct and fairly homogeneous understorey of spruce or balsam fir). Characteristics: - Two separate, homogenous and distinct canopy layers. - Each layer may contain different species. - Differences in age between layers should be greater than 20 years and/or differences in height should be greater than 3 meters. - Understorey, open understorey and overtopped/suppressed are common crown classes within the lower canopy layer. - Percent cover of the lower canopy layer is 5 % or greater. - Usually more than 10% of the basal area is in the lower canopy layer. - Distribution of trees by diameter class is often bi-modal. Note: A black or white spruce plantation containing natural jack pine that has outgrown the spruce by more than 3 meters would be considered a two canopy / two storied stand. - In this case, the overstorey layer is used to assign the stage of development (DEVSTAGE) attribute during inventory creation / photo interpretation process.	
TU	Two Storied; understorey DEVSTAGE	A multi-layered stand structure with two distinct canopy layers (e.g., poplar overstorey with a distinct and fairly homogeneous understorey of spruce or balsam fir). Characteristics: - Two separate, homogenous and distinct canopy layers. - Each layer may contain different species. - Differences in age between layers should be greater than 20 years and/or differences in height should be greater than 3 meters. - Understorey, open understorey and overtopped/suppressed are common crown classes within the lower canopy layer. - Percent cover of the lower canopy layer is 5 % or greater. - Usually more than 10% of the basal area is in the lower canopy layer. - Distribution of trees by diameter class is often bi-modal. Note: A black or white spruce plantation containing natural jack pine that has outgrown the spruce by more than 3 meters would be considered a two canopy / two storied stand. - In this case, the understorey layer is used to assign the stage of development (DEVSTAGE) attribute during inventory creation / photo interpretation process.	