ARCINFO GIS COVERAGE OF MAPPED TERRAIN POLYGONS FOR THE LILLOOET FOREST DISTRICT

PROJECT METADATA

A. PROJECT

Citations:

i) Deliverables:

JM Ryder and Associates, Terrain Analysis Inc. 2001. Polygon attribute database for mapped terrain polygons of the Lillooet Forest District. Prepared for the Ainsworth Lumber Company Ltd., Lillooet, B.C.

Silvatech Consulting Ltd. 2001. Seamless, vector-clean ARCINFO GIS coverage identifying mapped terrain polygons for the Lillooet Forest District. Prepared for the Ainsworth Lumber Company Ltd., Lillooet, B.C.

ii) Standards:

Howes, D.E. and E. Kenk. 1997 (contributing editors). Terrain classification system for British Columbia (Version 2). B.C. Ministry of Environment, Recreational Fisheries Branch, and B.C. Ministry of Crown Lands, Surveys and Resource Mapping Branch, Victoria, B.C.

Resources Inventory Committee. 1996. Guidelines and standards for terrain mapping in British Columbia. Government of British Columbia, Victoria, B.C.

Consultant/Department:

i) Terrain Mapping and Attribute Database

J.M.Ryder and Associates, Terrain Analysis Inc.
Box 45005 Dunbar R.P.O.
101 - 4336 Dunbar St.
Vancouver, B.C.

Contact: June Ryder

ii) ARCINFO GIS Coverage

Silvatech Consulting Ltd.
670 - 11th Street NE (PO Box 1030)
Salmon Arm, BC V1E 4P2

Contact: Graham MacGregor

Consultant/Department (continued):

iii) Maintenance of data:

Ministry of Environment, Lands and Parks
Environment Regional Office - Southern Interior
1259 Dalhousie Drive
Kamloops, B.C. V2C 5Z5

Contact: Glenna Boughton

Compilation Scale:

Varied among study areas (see initial fields of attribute database for metadata)

Period of Content:

Varied among study areas: 1978 - 2001 (see initial fields of attribute database for metadata)

Period of Compilation:

Varied among study areas: 1978 - 2001 (see initial fields of attribute database for metadata). Mapping products for individual study areas were compiled to create a seamless polygonal coverage during May 2001.

B. BASE MAP

Compiling Agency:

Base Map Type:	Terrain polygons
Compiling Agency:	Silvatech Consulting Ltd. 670 - 11th Street NE (PO Box 1030) Salmon Arm, BC V1E 4P2

Year(s) of Compilation: 2001

Projection: UTM 10

Ellipsoid: GRS80

Datum: NAD83

B. BASE MAP (continued)

Compilation Method:

Forest Renewal BC-funded district-wide terrain mapping for the Lillooet Timber Supply Area (1997-2001) was digitized using mono-restitution techniques and adhered to Resources Inventory Committee standards. Atticus Resource Consulting Ltd. completed most digital mapping products for these projects.

No metadata was provided by Hugh Hamilton Ltd. and Forsite Consultants Ltd. for terrain mapping completed outside of the Forest Renewal BC-funded district-wide terrain mapping initiative. It is believed that this digital data was compiled using mono-restitution techniques. However, given the lack of associated metadata, map coverages were imported into ARCINFO GIS and checked for planimetric and topographic accuracy relative to TRIM streams and contours.

Digital map coverages produced by Silvatech Consulting Ltd. during this project were compiled using mono-restitution techniques where typelines were present on aerial photographs or digitised directly from paper maps where these existed. Compilation techniques for individual study areas mapped during this project were as follows:

Burkholder Lake	Mono-Restitution
Carpenter Lake (South)	Digitised from paper maps
Downton Creek (upper elevations)	Mono-Restitution
Duffey Lake	Mono-Restitution
Junction Creek (upper elevations)	Mono-Restitution
Lost Valley	Mono-Restitution
Pasulko Lake	Mono-Restitution
Pavilion Creek	Digitised from paper maps
Shulaps Creek (upper elevations)	Mono-Restitution
Stein Valley	Digitised from 1: 50000 NTS paper maps (data was hand transferred from aerial photographs)
Study Areas 56-61	Mono-Restitution

C. MAPPING CONCEPTS

Mapping Entities: Definitions of mapping entities available for use as Predictive Ecosystem Mapping input data are provided in the standards citations provided above.

Map Entities: Definitions of map entities available for use as Predictive Ecosystem Mapping input data are provided in the standards citations provided above.

C. MAPPING CONCEPTS (continued)

Entity Relationships: A Predictive Ecosystem Mapping knowledge base has yet to be developed for this project. Limited information regarding relationships of mapped entities is provided in the standards citations provided above.

D. INVENTORY PROCEDURES

Data Capture

Delineation Method and Criteria:

See the standards citations provided above.

Sampling Design:

See the deliverables (metadata) and standards citations provided above

Sampling Methods:

See the deliverables (metadata) and standards citations provided above

Sampling Frequency:

See the deliverables (metadata) and standards citations provided above

Attribution:

See the standards citations provided above

Quality Assurance

Validation Method:

See the deliverables (metadata) and standards citations provided above

Validation Criteria:

See the standards citations provided above

Validation Design:

See the deliverables (metadata) and standards citations provided above

D. INVENTORY PROCEDURES (continued)

Validation Results:

See the standards citations provided above

Quality Control

Correlation Procedures:

i) Taxonomy: See the standards citations provided above

ii) Attributes: See the standards citations provided above

Map Production: See the standards citations provided above

Edge Matching: See the standards citations provided above

Line Edit: See the standards citations provided above

Symbol Edit: See the standards citations provided above

Attribute Edit: See the standards citations provided above

Legend Edit: See the standards citations provided above

E. INPUT MAP COMPILATION QUALITY CONTROL

Edge Matching: Terrain mapping was completed for sixty-plus study areas in the Lillooet Forest District during the period of 1978 to 2001. Completed mapping varied in Terrain Survey Intensity Level and map scale. Digital terrain mapping products were imported into ARCINFO GIS and checked for positional accuracy. FRBC-funded terrain mapping deliverables were brought in first and updated to form a single polygonal coverage. Most coverages matched well; however, study area borders did not always match exactly. As no typed terrain polygon was < 0.05 ha in area, slivers < 0.05 ha along study area boundaries were merged into the longest bordered neighbour polygon. This rule was developed in consultation with the PGeo who had completed the original mapping products and was intended to eliminate sliver polygons in a manner consistent with the scale of the original mapping. Remaining digital terrain mapping products were then imported into the FRBC-funded terrain mapping coverage without shifting or edge matching of data. This was done because differences in map scale differed greatly among studies. However, polygons < 0.05 ha were again merged into the longest bordered neighbour. Polygon slivers > 0.05 ha but <2 ha were merged manually into neighbouring polygons. This process was also developed in consultation with the PGeo who had completed the original mapping and was considered an acceptable means by which to

eliminate sliver polygons in a fashion consistent with the scale at which the terrain attribute data was captured. Larger boundary slivers were addressed by the same PGeo or her designate and manually merged to appropriate neighbours or typed as individual polygons.

Edge Matching Error: 0 (no shifting of coverages took place)

Attribute/Label Matching: SURF_M1 was the data field that was checked for attribute data matching across study areas. 52% of edge boundaries did not match when comparing the SURF_M1 data field. This can be attributed to a number of factors. Scales of studies differed throughout the project area, which would affect the boundaries across study areas. Terrain analysts also could type differently across study areas. Study boundaries also exist at height of land and it is possible to have different surfical materials across boundaries.

Raster Size: Not applicable

Spatial Reconciliation:

i) Spatial Check Table:

Feature type	Count and/or Average Length (m)	Minimum Shift (m)	Average Shift (m)	Maximum Shift (m)
Point/Intersection				
Linear	3,800	0	0	0
Polygon				
Overall				

Mapped terrain polygons were compared to TRIM lakes and double lined rivers following the standards documents cited above. Terrain polygon boundaries and TRIM hydrography matched well with no major shifts being apparent. Mapped terrain polygons were also compared to TRIM contours. This was accomplished by assessing terrain polygon boundaries relative to major topographic features (e.g. ridges, gullies, and major slope changes). Terrain linework generally matched well with topographic contours, but in some instances terrain typelines deviated by as much as 40 m from identifiable topographic features. These discrepancies were attributed to terrain polygons having been delineated by hand on 1:20,000 aerial photographs and subsequently digitized using monorestitution techniques. Monorestitution techniques themselves have a capture error of ± 20 m. An additional human error of only 1 mm during hand-drafting of terrain polygon boundaries on 1:20,000 aerial photographs would be required to produce a positional error of 40 m as was detected during spatial accuracy checks

Forest Cover for Lillooet PEM.

PROJECT META-DATA

A. PROJECT

Citation:

Forest cover data was created using RIC MOF standards for Forest Cover. Coverage initially created by MOE in 2000. Silvatech corrected errors of slivers to create a new clean coverage.

Consultant/Department:

i) Merging of VRI data sets

Ministry of Sustainable Resource Mgt.
1285 Dalhousie Dr.
Kamloops, BC V2C 5Z5

Contact: Chris Steeves

Cleaning of Slivers

Silvatech Consulting Ltd.
670 - 11th Street NE (PO Box 1030)
Salmon Arm, BC V1E 4P2

Contact: Graham MacGregor

ii) Maintenance of data is by MOF

Compilation Scale: 1:20000

Period of Content: Airphotos taken July, 1987

Period of Compilation: Reinventoried in 1990 with minor polygon updates dating to January 25, 2000

B. BASE MAP

Compiling Agency: MOF, Penticton Data Service Centre

Year(s) of Compilation: 1999/2000

Projection: Albers

Ellipsoid: GRS80

Compilation Method:

Datum: NAD83

C. MAPPING CONCEPTS

Mapping Entities:

Attribute	Attribute Code	Attribute Type	Data Type and Format
Non productive forest code	Npforestcode	Categorical	Number(2)
Height	Invheight	Real	Number(4.1)
Projected height	Prjheight	Real	Number(4.1)
Height class	Ht_class_cd	Ordered class	Number(1)
Projected height class	Prjheightcls	Ordered class	Number(1)
Crown closure	Invcrownclos	Integer	Number(3)
Crown closure class	Calcrowncloscls	Integer	Number(2)
Age	Invage	Integer	Number(3)
Projected age	Prjage	Integer	Number(3)
Age class	Age_class_cd	Ordered class	Number(1)
Projected age class	Prjagecls	Ordered class	Number(1)
Species 1	Species1	Categorical	Char(3)
Species 2	Species2	Categorical	Char(3)
Species3	Species3	Categorical	Char(3)
Logging history	Activitycode_l	Categorical	Char(2)
Logging history year	Activityyear1_l	Integer	Number(2)
Burn history	Activitycode_b	Categorical	Char(2)
Burn history year	Activityyear1_b	Integer	Number(2)

Map Entities:

Entity Relationships:
All mapping entities relate to a particular 1:20,000 BCGS mapsheet and forest stand

D. INVENTORY PROCEDURES

Data Capture

Delineation Method and Criteria: From FC standards

Sampling Design: From FC standards

Sampling Methods: From FC standards

Sampling Frequency: From FC standards

Attribution: From FC standards

D. INVENTORY PROCEDURES (continued)

Quality Assurance

Validation Method: Not Applicable

Validation Criteria: Not Applicable

Validation Design: Not Applicable

Validation Results: Not Applicable

Quality Control

Correlation Procedures: Not Applicable

Map Production: Not Applicable

Edge Matching: Not Applicable (information was matched as is)

Line Edit: Not Applicable

Symbol Edit: Not Applicable

Attribute Edit: Not Applicable

Legend Edit: Not Applicable

E. INPUT MAP COMPILATION QUALITY CONTROL

Edge Matching: Coverage's were joined together and matched as best as possible.

Edge Matching Error: Information was matched as is

Attribute/Label Matching:

Raster Size:

Spatial Reconciliation:

i) Spatial Check Table:

Feature Type	Count or Average Length (m)	Min Shift (m)	Average Shift (m)	Maximum Shift (m)
Polygon	8	0	12	35

TRIM coverages for Lillooet PEM.

TWTR (TRIM water features)
TDEM (TRIM DEM features)
TTRN (TRIM Road features)
TSRF (TRIM Surficial Features)
TCTR (TRIM Contour Features)

PROJECT META-DATA

A. PROJECT

Citation:

TRIM 2 files. Data was appended together for the area of interest, plus surrounding sheets. This was done for subsequent buffer analysis that might affect the classification of features in the AOI. All features contain FCODES pertaining to GDBC standards with the DEM also containing elevation. Final TRIM coverage's were not all supplied as deliverables due to size of Water, Elevation Model and contour files.

Consultant/Department:

i)Merging of TRIM data sets
Ministry of Sustainable Resource Mgt.
1285 Dalhousie Dr.
Kamloops, BC V2C 5Z5

Contact: Chris Steeves

ii) Maintenance of data is by GDBC

Compilation Scale: 1:20000

Period of Content: 1996-08-23 to 1999-07-16

Period of Compilation: 1998-11-17 to 2001-06-13

B. BASE MAP

Compiling Agency: GDBC

Year(s) of Compilation: 2001

Projection: Albers

Ellipsoid: GRS80

Compilation Method:

Datum: NAD83

C. MAPPING CONCEPTS

Mapping Entities:

Attribute	Attribute Code	Attribute Type	Data Type and Format
Feature code	Fcode	Categorical	Char(10)

Map Entities:

Entity Relationships:

D. INVENTORY PROCEDURES

Data Capture

Delineation Method and Criteria: GDBC TRIM RIC standards

Sampling Design: GDBC TRIM RIC standards

Sampling Methods: GDBC TRIM RIC standards

Sampling Frequency: GDBC TRIM RIC standards

Attribution: GDBC TRIM RIC standards

Quality Assurance

Validation Method: Not Applicable

Validation Criteria: Not Applicable

Validation Design: Not Applicable

Validation Results: Not Applicable

D. INVENTORY PROCEDURES (continued)

Quality Control

Correlation Procedures: Not Applicable

Map Production: Not Applicable

Edge Matching: Not Applicable (information was matched as is)

Line Edit: Not Applicable

Symbol Edit: Not Applicable

Attribute Edit: Not Applicable

Legend Edit: Not Applicable

E. INPUT MAP COMPILATION QUALITY CONTROL

Edge Matching:

Edge Matching Error: information was matched as is

Attribute/Label Matching:

Raster Size:

Spatial Reconciliation:

Area of Interest/Analysis units for Lillooet PEM.

PROJECT META-DATA

A. PROJECT

Citation:

The Outer Boundary was created using MOF's Lillooet Forest District Boundary. For analysis purposes, the Lillooet Forest District was broken into smaller sections using MSRM's Landscape units.

Consultant/Department:

i)

Silvatech Consulting Ltd.
670 - 11th Street NE (PO Box 1030)
Salmon Arm, BC V1E 4P2

Contact: Graham MacGregor

Shamaya Consulting
3632 Railway Avenue
Smithers, BC V0J 2N0

Contact: Colleen Jones

ii) Maintenance of data is by MSRM & MOF

Compilation Scale: Unknown

Period of Content: Unknown

Period of Compilation: Unknown

B. BASE MAP

Compiling Agency: MSRM & MOF

Year(s) of Compilation: Unknown

Projection: Albers

Ellipsoid: GRS80

Compilation Method:

Datum: NAD83

C. MAPPING CONCEPTS

Mapping Entities:

Attribute	Attribute Code	Attribute Type	Data Type and Format
Area of interest name	Aoi_name	Categorical	Char(16)

Map Entities:

Entity Relationships:

D. INVENTORY PROCEDURES

Data Capture

Delineation Method and Criteria: Not Applicable

Sampling Design: Not Applicable

Sampling Methods: Not Applicable

Sampling Frequency: Not Applicable

Attribution: Not Applicable

Quality Assurance

Validation Method: Not Applicable

Validation Criteria: Not Applicable

Validation Design: Not Applicable

Validation Results: Not Applicable

Quality Control

Correlation Procedures: Not Applicable

Map Production: Not Applicable

Edge Matching: Not Applicable (information was matched as is)

Line Edit: Not Applicable

D. INVENTORY PROCEDURES (continued)

Symbol Edit: Not Applicable

Attribute Edit: Not Applicable

Legend Edit: Not Applicable

E. INPUT MAP COMPILATION QUALITY CONTROL

Edge Matching: Not applicable

Edge Matching Error: information was matched as is

Attribute/Label Matching: Not applicable

Raster Size: Not applicable

Spatial Reconciliation: Not applicable

No reconciliation took place.