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# INTERIOR WATERSHED ASSESSMENT PROCEDURE for the CORNING CREEK WATERSHED

February 2000

Prepared for:

FEDERATED CO-OPERATIVES LTD. Post Office Box 70 Canoe, BC V0E 1K0

Prepared by:

CONSULTING LTD.

670 - 11<sup>th</sup> Street NE Post Office Box 1030 Salmon Arm, BC V1E 4P2

A Watershed Restoration Project Funded by Forest Renewal BC.

# TABLE OF CONTENTS

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KEY MAP	
1.0 INTRODUCTION	
1.1 Report Use and Limitations of this Study.	
1.2 Objectives	
20 STUDY ΔΡΕΔ	Z
2.0 STUDY AREA	2
2.1 Location	2
2.2 Physiography 2.3 Climate and Hydrology	
3 0 RESOURCES	
3.0 RESOURCES	5
3.1 Forest Resources	5
3.2 Water Resources 3.3 Fish and Wildlife	
5.4 Agricultural Ose	0
3.5 Wilheral Kesources	*
3.6 Recreation and Other Uses	9
4.0 METHOD OF ASSESSMENT	
4.1 Corning Creek Roundtable	2
4.2 Compliation of Existing Information and Base Maps	10
4.3 Equivalent Glearcut Area	4.4
4.4 Reconnaissance Channel Assessments	
4.4.1 Aerial Photograph Analysis 4.4.2 Field Assessments	
4.5 Watershed Report Card	
5.0 ASSESSMENT RESULTS AND DISCUSSION	14
5.1 Equivalent Clearcut Area (ECA)	14
5.2 Reconnaissance Channel Assessments	15
5.2.1 Residual Sub-basin	16
5.2.2 Upper Sub-basin	
5.2.3 East Sub-basin 5.2.4 Ponds Sub-basin and Freeman Brook	
5.3 Watershed Report Card	
6.0 SUMMARY AND RECOMMENDATIONS	
6.1 Watershed Hazard Ratings	
6.2 Restoration Recommendations.	
6.3 Future Harvesting Recommendations	
7.0 REFERENCES	
8.0 LIST OF APPENDICES	32



# 1.0 INTRODUCTION

The Corning Creek watershed encompasses approximately 30 square kilometres of mostly forested land near Shuswap Lake in the Southern Interior region of British Columbia. The creek is known locally as Lee Creek, which lends its name to a small, unincorporated settlement near the mouth of the creek. An overview key map is provided at the beginning of this report delineating the study area.

Resource use within the watershed includes water, forestry, mining, cattle ranging and recreational activities. Concerns have been raised by local landowners regarding the sustainability of water quality in Corning Creek and the effects of continued resource development in the watershed. Through the course of this project, applications were made resulting in Corning Creek being designated as a 'Community Watershed' as defined by the *Forest Practices Code of British Columbia Act*. This elevated classification highlights the need for careful resource management in the watershed.

Federated Co-operatives Ltd. (Federated) of Canoe, BC under Forest License A18670 manage forest resources in the Corning Creek watershed. With Federated acting as lead proponent, funding was made available through the Watershed Restoration Program of Forest Renewal BC to conduct an Interior Watershed Assessment Procedure (IWAP) in the Corning Creek watershed. Goals of the Watershed Restoration Program include restoring and protecting forest, water and fisheries resources adversely affected by past forest harvesting practices. In addition, the IWAP may be used as a tool to assist in future forest development planning.

Silvatech Consulting Ltd. (Silvatech) of Salmon Arm was retained by Federated to complete the IWAP. The IWAP was initially conducted according to Interim Watershed Assessment Procedures proposed by the Ministry of Forests, Kamloops Forest Region (Baxter 1998). Revised (Second Edition) Interior Watershed Assessment Procedures were published by the Forest Practices Code of British Columbia in April of 1999 and were subsequently adopted for the remainder of this project (FPCBC 1999). Landmark (formerly High Country) Forestry Consultants Ltd. performed contract coordination, also of Salmon Arm.

The first step of the IWAP was to form a roundtable committee of stakeholders. Participants in the Corning Creek Watershed Roundtable included representatives from industry, government regulatory agencies, local residents, water licensees and local native bands. A roundtable meeting of stakeholders was held on December 17, 1998, at the offices of the Ministry of Forests in Salmon Arm, BC. The intent of the roundtable was to provide a forum for the discussion of resource use interactions in the watershed. Minutes from the roundtable meeting are provided in Appendix A of this report.

The purpose of the remainder of the IWAP was twofold: firstly, to document the extent of existing forest development in the watershed and identify likely areas of concern; and secondly, based on this information, combined with forest development planning, to anticipate possible future concerns. The assessment focused on the potential for changes in the watershed related to altered stream flows, increased mass wasting (landslides), increased surface erosion and disturbed riparian areas associated with forest harvesting and land development.

This report summarizes the results of the IWAP and makes general comments regarding the present state of natural resources within the Corning Creek watershed. Recommendations



regarding the need for further assessments, restoration projects and/or modified future harvest planning are provided in the summary.

#### 1.1 Report Use and Limitations of this Study

This report has been prepared in accordance with generally accepted engineering practices as applied to the forest industry in British Columbia. Recommendations are the professional opinion of the author(s). Professional values include competence, ethical conduct, individual accountability and responsibility and a commitment to society. Silvatech assumes responsibility for the quality of reporting and the accurate representation of information contained herein.

However, interpretation of field conditions and predicted impacts of future development are judgmental in nature and based on limited field investigation of current and historical evidence. Natural variability in surface and subsurface conditions may create unforeseen situations. Additionally, extreme environmental conditions could foster drastic responses that are unpredictable. It is therefore advised that users of the information in this report are aware of its limitations and assume responsibility for its use. Silvatech's directors, managers, and employees assume no responsibility for the use of information or recommendations contained herein.

#### 1.2 Objectives

The objectives of this project were:

- to characterize the present state of natural resources within the Corning Creek watershed and identify existing resource use interactions and linkages;
- to complete an Interior Watershed Assessment Procedure (IWAP) for the watershed aimed at identifying existing problem areas and possible future forest harvesting impacts that may result in alterations to peak flows, riparian areas, rates of surface erosion and mass wasting;
- to make recommendations regarding the need for further or more detailed watershed component assessments and/or restoration projects; and
- to make recommendations regarding the approach to future forest development.

# 2.0 STUDY AREA

#### 2.1 Location

Corning Creek, known locally as Lee Creek, drains approximately 30 square kilometres of mostly forested land into Shuswap Lake in the Southern Interior of British Columbia. The watershed is located approximately 5 kilometers west of the town of Scotch Creek on the north shore of Shuswap Lake, approximately 60 kilometres northeast of Kamloops. The study area falls within the jurisdiction of the Salmon Arm Forest District



and the Kamloops Forest Region. The Corning Creek watershed can be found on National Topographic Series (NTS) mapsheet 82L/13 and TRIM sheets 82L093 and 82M003.

Access to the lower end of Corning Creek is via the Squilax-Anglemont Road. Access to the upper areas is available along forest service roads originating in Lee Creek and connecting through to Nikwikwaia (Gold) Creek and Scotch Creek. An overview key map is provided at the beginning of this report delineating the study area.

#### 2.2 Physiography

The study area is located within the Shuswap Highlands ecosection of the Columbia Highlands ecoregion (Demarchi 1995). Elevations range from 347 metres at Shuswap Lake to approximately 1820 metres at the headwaters. Corning Creek originates on the gently sloping Adams plateau, gathering tributaries and eventually dropping into a steep-sided, deeply incised valley along its lower mainstem channel. As it emerges from the incised valley and approaches Shuswap Lake, the creek briefly crosses a gently sloping alluvial fan.

The Shuswap Highlands were mostly covered by ice during the Fraser glaciation. The effects of glaciation were to round off and reduce upland relief while steepening and deepening the main valleys (Holland 1976). A mantle of undifferentiated till deposits covers most of the Corning Creek watershed. Steep slopes in the central valley area are shallow to bedrock. Near Shuswap Lake, Corning Creek intersects a terrace delta deposit consisting of well-sorted sands and gravel, possibly related to deposits from Scotch Creek. Some of the fan deposits at the bottom of the Corning Creek watershed are post-glacial. This indicates that natural mass wasting events and sedimentation have been ongoing in the Corning Creek watershed since the Fraser glaciation. (Geological Survey of Canada 1963.)

Bedrock in the Corning Creek watershed belongs to the Sicamous Formation, which consists mainly of limestone and argellite. The upper plateau areas in the headwaters are overlain by the "v" formation, which consists of andesitic and basaltic volcanic rocks. (Department of Energy, Mines and Resources 1969.)

Soils in the Corning Creek watershed are variable depending upon the parent material, moisture and ecological regime. Taxonomy classes are dominantly Brunisols with some Podsols and Luvisols. Generally the soils contain 20 to 50% coarse fragments. Soil textures range from sand to loamy sands and are generally, moderately well drained. The fluvial fan and delta terrace deposits are more highly sorted, containing a higher fraction of sand and gravel (Department of Energy, Mines and Resources 1973).

Preliminary results from terrain stability mapping in the Corning Creek watershed indicate potentially unstable and unstable terrain (terrain classes IV and V) with high erodibility and fine sediment transfer potential throughout most of the central valley. The moderate to gentle slopes and the upper plateau areas form relatively stable terrain (terrain classes I, II, III) with variable (low to high) erosion and fine sediment transfer potential (Preliminary Terrain Stability Mapping provided by EBA Engineering Consultants Ltd. November 1998).



#### 2.3 Climate and Hydrology

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The Corning Creek watershed is located in the Shuswap Highlands Hydrological Zone (FPCBC 1995). Mean annual precipitation is in the 300 - 500 millimetre range on slopes above Shuswap Lake and between 500 - 1,000 millimetres on the plateau region based on regional estimates. Mean daily temperatures in July are typically 16 - 20 degrees Celsius (MOF 1992). Climatic conditions vary with changes in elevation and aspect.

Biogeoclimatic zones found within the study area are predominately Interior Douglas Fir (IDFmw2) in the lower elevations above Shuswap Lake; Interior Cedar Hemlock (ICHmw3 and ICHmk1) in the middle elevations; and Englemann Spruce, Sub-alpine Fir (ESSFwc2) at higher elevations on the Adams Plateau (Lloyd 1989).

Corning Creek is a third order stream where it discharges into Shuswap Lake. It should be noted that during the drier season, Corning Creek frequently dewaters as it crosses permeable alluvial deposits in the lowest reach, and a surface water connection to Shuswap Lake is often not maintained. Upstream, the Corning Creek drainage network includes approximately 25 kilometres of mapped stream channel. None of the first and second order tributaries to Corning Creek are named.

Field observations have confirmed that a channel mapped on TRIM as connecting to Freeman Brook actually discharges into Corning Creek. The tributary may contribute some flows to Freeman Brook, however, only during peak flow periods. The stream connections may have been altered by local water users during the construction of storage ponds at the point of diversion. The connection between that tributary and the Corning Creek mainstem is not mapped on the 1:20 000 scale TRIM, but has been indicated on the map provided.

Water Survey of Canada (WSC) has been gauging Corning Creek since 1981. The gauging station is a continuous gauging system and is located in the lower canyon of Corning Creek above the top of the fan. Historic extremes of discharge (maximum and minimum) for the period of record for the gauge, published by the WSC, are provided in Appendix B. According to the WSC data, the extreme discharge event for the period of record occurred quite recently, in May of 1997 (8.23 m<sup>3</sup>/s). The next highest annual maximum was recorded in 1982 (8.15 m<sup>3</sup>/s) and there were a series of relatively severe annual floods in 1986, 1987 and 1988 (7.45, 7.18 and 7.69 m<sup>3</sup>/s respectively). Recorded annual maximums typically ranged between 3.0 and 8.5 m<sup>3</sup>/s and with one exception (June 3, 1996), all recorded peak flows occurred in May.

A flood frequency analysis was conducted using the fifteen years of gauging data. The results of this analysis are presented in Appendix B. Based on a Log-Normal distribution of the data, the mean annual flood was approximated at 5.4 m<sup>3</sup>/s, and the 100 year flood was 10.9 m<sup>3</sup>/s. The aforementioned <u>1997</u> annual maximum fits the curve at approximately a 10-year return period. A flood of this magnitude is not considered extreme; however, it was of sufficient size to be considered a channel-forming event.

The Ministry of Forests (MOF) maintains a weather station near the headwaters of Tracey Creek, located approximately 40 km north of the study area. The weather station is an automatic recording and remote retrieval facility, which monitors temperature, precipitation, relative humidity, wind speed and wind direction from April 1 - October 31,

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annually. The information is used to generate fire weather indices for the Adams Lake area. Data from the station may be of some limited use in hydrological analyses for the Corning Creek watershed. Allowances must be made for local variations in weather and precipitation caused by altitude, orographic effects and differences in aspect. The period of record for the station is relatively short and as previously indicated, data is limited to the summer season.

### 3.0 RESOURCES

#### 3.1 Forest Resources

Federated Co-operatives Ltd. under Forest License A18670 manage forest resources within the Corning Creek watershed. International Forest Products Limited, Adams Lake Lumber Division, (Interfor) operates immediately adjacent to the western watershed boundary and portions of Interfor's road system pass through the Corning Creek watershed. Some private land logging has also occurred in the study area.

As mentioned above, the predominant biogeoclimatic zones in the Corning Creek watershed are Interior Douglas Fir, Interior Cedar Hemlock and Englemann Spruce, Sub-alpine Fir. All of the primary Interior coniferous tree species are represented within these biogeoclimatic zones, including Douglas fir, western red cedar, western hemlock, western larch, lodgepole pine, white pine, white spruce, Engelmann spruce, hybrid spruce and subalpine fir. Deciduous tree species present include paper birch, trembling aspen and black cottonwood. According to regional data, forest productivity in the area ranges from 3.5 to 6.3 cubic metres per hectare per year (MOF 1992).

Timber harvested in the Corning Creek area supplies several different operations: most of the sawlogs and peelers go to the log dump at Lee Creek and are eventually towed to Federated's Canoe mills. Poles are purchased by BJ Carney or Bell Pole and pulpwood is transported to either Cache Creek or Kamloops. Federated's mill and operations contribute significantly to employment in the Salmon Arm area.

Logging and road construction in the Corning Creek watershed began in the 1930's and harvesting rates increased in the 1970's. Forest harvesting has occurred steadily since that time. A total of 57 kilometres of roads currently exist in the study area. A limited amount of road and trail deactivation has been completed within the watershed. To date, forest harvesting techniques used in the area of Corning Creek consist primarily of clearcutting with conventional ground skidding systems and cable yarding systems. Some partial cutting systems have been used in the past.

Private land logging is limited to the lower portions of the Corning Creek watershed. Both clearcut and partial cutting systems have been used in these areas. As these operations were not controlled by the Ministry of Forests, no information on the harvesting or replanting of cut areas is available. For the purposes of this study, estimates of basal area removal and hydrologic recovery were made through airphoto interpretation.

Reforestation by planting has been initiated throughout the commercially harvested areas of Corning Creek watershed. Depending upon tree species and site location,



leader growth can range up to 60 centimetres per year. Stand tending treatments, including pruning, spacing and brushing, have been undertaken as necessary by Federated and the Ministry of Forests.

At least one significant fire has occurred within the study area, affecting a large portion of the upper watershed (approximately 566 hectares). The fire occurred in 1960 and considerable natural regeneration has taken place since that time. As part of this project, field surveys were conducted to better represent the state of recovery of the burn area in the Equivalent Clearcut Area (ECA) calculations.

Current ECA values for the watershed and each sub-basin are presented in Section 5.1. The totals include both public and private land cleared for the purposes of forest harvesting, mining, agriculture, and powerline right-of-ways. As indicated above, lands affected by forest fires have also been included. Detailed ECA calculation tables are provided in Appendix C.

#### 3.2 Water Resources

Water supplied by Corning Creek is of significant value and importance to many residents in the area. This is reflected by the recent designation of the basin as a 'Community Watershed', as defined by the Forest Practices Code of British Columbia Act. The Ministry of Environment, Lands and Parks (MELP), Water Management Branch, has issued fifty water licenses for the abstraction and use of surface water within the Corning Creek watershed. Maintaining water quality and seasonal availability of flow in Corning Creek is critical to those depending on the resource.

The earliest water license on Corning Creek dates back to 1910 and new licenses have been issued as recently as 1996. According to Mr. J. Cooperman, domestic water users have formed into three main user groups to reduce costs and share facilities. This has also reduced the number of intake sites on the creek. A detailed listing of licensed water users in the watershed is provided in Appendix D of this report.

Most of the water users on Corning Creek divert flows for domestic use, with one permit being issued for irrigation. The total permitted quantity of water that could be abstracted, if maximum permitted demands were met, is in the order of 27,000 gallons (or 122,000 litres) per day. According to the WSC gauging records, the lowest recorded flow in Corning Creek was 8 litres per second or 690,000 litres per day in November of 1987, outside of the irrigation season. Thus, in a theoretical worst case scenario where peak demand coincides with seasonal low flow, approximately 18% of the total creek flow would be abstracted for domestic uses. Typically, however, domestic water users do not abstract close to their permitted maximum. Based on these approximations, water demands only rarely affect flows in Corning Creek to a significant degree. It should be noted however, that reduced flows due to licensed water demands may make a difference to the distance surface flows are maintained in the channel on the alluvial fan approaching Shuswap Lake (most intakes are located at or near the apex of the fan).

Nine water licenses (one pending) have been issued for the abstraction of water from Freeman Brook. Available water in Freeman Brook may be dependent on flows in a tributary of Corning Creek. Two storage ponds have been constructed on a channel confirmed in the field as a tributary to Corning Creek, but originally mapped on TRIM as



Freeman Brook. The MOE files indicate that these storage ponds are considered to be part of Freeman Brook. Licensees drawing water from the ponds are listed as using water from Freeman Brook, whereas they are in fact drawing water from a tributary to Corning Creek. The storage ponds may however, contribute some flow to lower Freeman Brook below the ponds by providing an opportunity for increased local groundwater recharge. It is difficult to determine what the natural configuration of the creeks was prior to construction of the storage pond facilities.

Permitted water uses on Freeman Brook include domestic, irrigation and storage. The total permitted quantity of water that could be abstracted from Freeman Brook if maximums were met is 13,500 gallons (61,000 litres) per day for domestic use and 368 acre-feet (454 million litres) per year for storage and irrigation use. No data on typical flows in Freeman Brook were available and it is not known what portion of this licensed use is abstracted from the storage ponds or intake sites downstream. As previously discussed the Freeman Brook water licenses using the storage ponds are in fact abstracting water from Corning Creek.

Many private residences along the shore of Shuswap Lake are licensed to use water from Shuswap Lake in the vicinity of the mouth of Corning Creek. Although immune to flow fluctuations in Corning Creek and Freeman Brook, these users may be affected by changes in water quality entering the lake.

'Community watershed' status was officially assigned to Corning Creek in October 1999. The watershed delineated by MELP does not include those areas originally mapped as Freeman Brook, which should now be considered as part of the Corning Creek watershed. It is not known whether or how licensed water users on Freeman Brook were included in the application process.

The Forest Practices Code of British Columbia Act provides restrictions on forestry and range practices in community watersheds in excess of non-designated watersheds. Appropriate standards of practice are discussed later in this report under future groups harvesting recommendations (see Section 6.3).

#### 3.3 Fish and Wildlife

No fisheries information was available for Corning Creek on the Ministry of Fisheries" Fisheries Information Summary System (FISS). Nonetheless, stream gradients are not sufficiently steep to exclude fish or eliminate fish habitat from the channel. Rainbow trout (O. mykiss) likely inhabit portions of the watershed. No lakes exist in the headwaters of Corning Creek to provide a source of fish stocks to the creek. The seasonal connection of the stream to Shuswap Lake may prevent fish access during portions of the year. Other barriers to fish movement were not identified during the limited field investigation undertaken through the course of this project.

The neighboring streams of Adams River and Scotch Creek are both well known for significant populations of sockeye salmon (Oncorhynchus nerka), coho salmon (O. kisutch), kokanee (O. nerka), pink (O.gorbuscha), chum (O. keta), Chinook (O. tshaawytscha), Dolly Varden (Salvelinus malma), mountain whitefish (Prosopium williamsoni) and rainbow trout (O. mykiss). Some shoreline spawning of these species may occur in the vicinity of the mouth of Corning Creek.

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Westio Considered The Corning Creek watershed supports a wide range of wildlife populations typical of the Southern Interior region. Deer (*Odocoileus virginiana* and *O.hemionus*), moose (*Alces alces*) and black bear (*Ursus americanus*) are known to populate the study area. Deer winter habitat has been identified on the south-facing slopes above Shuswap Lake (C.L.I. 1975). The specified winter range supports deer from surrounding areas; however, relative snow depths can be a limiting factor affecting annual use of the area.

One trapline permit has been issued in the study area, permit #TRO0337T004. The occurrence of rare, endangered or regionally significant wildlife has not been documented for the Corning Creek watershed.

#### 3.4 Agricultural Use

A small amount of relatively flat benchland along the lower reaches of Corning Creek has been cleared for agricultural purposes. Operations include hay and alfalfa production and livestock operations. Other than the lower reaches of Corning Creek, no land in the study area has been cleared solely for the purposes of agriculture. As previously mentioned, water is diverted from Corning Creek for agricultural irrigation purposes.

One active grazing license has been issued for portions of the study area. License #RANSA1139 permits 420 AUM (animal unit months) in the Corning Creek watershed from May 15 to September 30. Another grazing license may be available for the year 2000 (unreferenced personal communication with Harold Hetherington, MOF). Due to limited grazing opportunities, cattle use is widely dispersed. Biodiversity objectives and strategies are followed in the region to create and maintain a mosaic of habitats through managing grazing intensity. Grazing is scheduled to allow plants and soils adequate recovery time between exposure to livestock. Over-grazing is avoided and some ungrazed sites are maintained. Critical deer winter range identified in the study area is managed to minimize competitive grazing.

In both open range and fenced pastures, heavy cattle use adjacent to streams may cause degradation of streambanks and increase sedimentation in the streams. Special management techniques may be required to limit cattle access near sensitive streams. Cattle use is mostly focused in the upper watershed as steep valley walls limit access to the lower mainstem.

Most of the available forage in the Corning Creek watershed is located in existing cutblocks and around other disturbances associated with harvesting, including landings and roadsides. For this reason, ranchers make frequent use of logged areas and are dependent upon the access provided by forestry road networks. In cutblocks subject to high cattle use, newly planted trees may require protection from possible browsing damage and trampling by cattle. At the same time, cattle grazing can play an important role in conifer survival by controlling competing vegetation. Cooperation and communication between ranchers and the forest licensee is important in achieving integrated resource management objectives.

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#### 3.5 Mineral Resources

The British Columbia Ministry of Energy and Mines has a complete record of all known mineral resources, titles and mines in the area. Massive sulfide (copper-lead-zinc) prospects have historically been developed in the area surrounding the Corning Creek watershed. A search of the database for NTS mapsheets 82L13E and 82M03E revealed 65 mineral claims in good standing belonging to approximately ten different exploration companies. Only one company is known to be active inside the Corning Creek watershed; however, the extent of any development is unknown. No active or past mineral operations were observed during this assessment or the Erosion and Masswasting Risk Assessment recently completed by Silvatech (Silvatech 1999).

#### 3.6 Recreation and Other Uses

The Corning Creek watershed provides some opportunities for various recreational activities. Recreational use may include, but is not limited to, hunting, fishing, snowmobiling, hiking, horseback riding, mountain biking and camping. As is clear by the list of activities, recreational use may occur throughout the year. No information was found documenting the extent or frequency of recreational use in the watershed.

Landscape inventory mapping has been completed for the Corning Creek watershed. Landscape sensitivity ratings are moderate on the south-facing slopes above Shuswap Lake. This is due to the high visibility of the areas from Sorrento and Shuswap Lake. Visual quality objectives (VQO) for these areas call for partial retention to modification of forests. The plateau areas of the upper watershed are not considered to be visually sensitive.

# 4.0 METHOD OF ASSESSMENT

The following sections describe briefly the procedure and methods used to provide the information needed to assess hydrologic conditions and risks associated with forest development in the Corning Creek watershed, according to the second edition (April 1999) of the IWAP guidebook.

#### 4.1 Corning Creek Roundtable

The first step of the IWAP was to form a roundtable committee of stakeholders. Participants in the Corning Creek Watershed Roundtable included representatives from industry, government regulatory agencies, local residents, water licensees and native bands. A roundtable meeting of stakeholders was held on December 17, 1998, at the offices of the Ministry of Forests, Salmon Arm Forest District, in Salmon Arm, BC. The intent of the roundtable was to provide a forum for the discussion of resource use interactions in the watershed. Minutes from the roundtable meeting are provided in Appendix A of this report.

Once members of the roundtable have had an opportunity to review a draft of this report, a second meeting will be held to discuss its findings. The role of the roundtable through the IWAP process has been and will continue to be:



- To identify issues and provide background information to the hydrologist conducting the assessments.
- To review the results of the assessment and ensure that watershed issues have been satisfactorily addressed.
- To review the recommendations provided by the hydrologist and assist in the incorporation of those recommendations into the forest development plan to best protect watershed values.

Minutes of the second roundtable meeting will be attached to the final version of this report and any required changes to its contents will be made at that time.

#### 4.2 Compilation of Existing Information and Base Maps

Various information sources were reviewed to generate digital base maps and collect the data required for the completion of the IWAP. Existing information and references on local physiography and resource use in the watershed were compiled to provide background knowledge and assist in the subsequent detailed assessments. Information sources reviewed include:

- 1:15,000 (approximate scale) 1994 colour aerial photography.
- 1:40,000 (approximate scale) 1997 colour aerial photography.
- 1997 Orthophoto Mapping.
- Federated Co-operatives Ltd.'s Forest Development Plan for Forest Licence A18670 for the period January 1, 1999 to December 31, 2003; 1:30,000 Mapsheets 82L093 and 82M003.
- 1997 (projected) Ministry of Forests' digital Forest Inventory Mapping including .FC1 files.
- Terrain Management Inventory Mapping (TRIM) digital files.
- (1998) Terrain Stability Mapping (Preliminary) by EBA Engineering Ltd.
- WSC stream gauge information.
- MELP water license information.
- Fisheries Information Summary System (FISS) files.
- Surficial Geology (GSC. 1975).
- Bedrock Geology Mapping (Department of Energy, Mines and Resources 1969).
- Soils maps (Department of Energy, Mines and Resources 1973).
- Biogeoclimatic Mapping.
- Forest Service recreation maps.
- Landscape Inventory Analysis maps.

Project maps were developed using TRIM digital mapping files as a base. The existing road network was confirmed and updated using the 1997 orthophoto mapping and recent harvesting plans. Relevant information and polygons from the above-mentioned sources were digitally added to the TRIM base maps. The resultant maps have been included as Appendix E to this report.



#### 4.3 Equivalent Clearcut Area

Equivalent Clearcut Area (ECA) is a measure of the extent of harvesting and the amount of hydrologic recovery at a specified time within a watershed. This information was used to assess the likelihood of changes to flow regimes in the study area. ECA levels were calculated for the Corning Creek watershed and its sub-basins using digital forest cover information. Four mapsheets were required to cover the study area. Except where new field data were available (see below), tree heights were estimated using silviculture information contained within the .FC1 files and projected to 1999 according to estimated leader growth data.

The Corning Creek watershed includes a large historical burn area near the headwaters of the creek. The affected area is of sufficient size to significantly influence ECA levels in the watershed. Recovery following the burn was found to be variable and, in order to determine ECA levels with improved confidence, a field assessment of the affected areas was made. On-site surveys of tree heights and densities were made and this information was incorporated into the ECA evaluation.

According to the IWAP methodology, the watershed was divided into two elevation bands to account for vertical variability in runoff-generating mechanisms. In a typical, spring snowmelt-governed watershed, low areas are usually snow free while snow is actively melting at middle and higher elevations at the time that peak flows occur at the discharge end of the watershed. Research in the Interior of British Columbia has shown that snow typically covers the upper 60% of a watershed when streamflow levels begin to rise in the spring (FPC 1995). To assess the effects of harvesting at higher elevations, a hypsometric curve was plotted and the elevation at which 60 percent of the watershed area was above was determined. The contour corresponding to that elevation was then highlighted on the project base maps as an H60 line. Forest cover removal in areas above the H60 line was considered to more significantly affect major snowmelt peak flows in the watershed.

Excel worksheets were developed to calculate the present (Fall 1998) ECA's for each sub-basin and the Corning Creek watershed as a whole, above and below the H60 line. The separation of equivalent clearcut areas according to the H60 line was done for the purpose of discussion and no weighting factors according to elevation bands were applied to the final ECA figures. To access the effects of proposed harvesting, ECA levels were subsequently recalculated to include future cutblocks according to Federated's 1999 - 2003 Forest Development Plan. The results of these analyses were used to evaluate the likelihood of peak flow alteration according to the IWAP.

A full set of the ECA worksheets is provided in Appendix C. Each worksheet can be easily adjusted or adapted to reflect updated stand height information and/or alternative harvesting scenarios should future plans change. Digital copies of the worksheets will be provided to Federated for this purpose.

#### 4.4 Reconnaissance Channel Assessments

A Reconnaissance Channel Assessment Procedure (ReCAP) was conducted in the Corning Creek watershed to evaluate channel stability along mainstem alluvial stream



reaches and major tributary channels. Assessments were broken into office and field phases. The office phase examined aerial photography to identify any obvious changes in stream morphology or other areas of concern in the watershed. The field phase consisted of overview inspections of selected reaches. Detailed methodologies used during the two phases are discussed below.

#### 4.4.1 Aerial Photograph Analysis

A set of 1:15,000 (approximate scale) 1995 airphotos covering the watershed was provided by Federated for review. In general, both mainstem and tributary channels were found to be too small and forest cover too dense to permit satisfactory assessment of channel conditions. Areas of potential impairment, where discernible, were marked on the orthophoto maps to be confirmed in the field. This would include visible erosion sites, unnaturally wide channel sections, landslide and debris flow tracks, major road crossings, cleared riparian areas, large debris jams, etc.

Using the aerial photography and TRIM base maps, reach breaks were delineated for the mainstem and main channels in each sub-basin, downstream of forest development. A reach is a fundamental channel unit defined as a length of channel homogenous in stream discharge, hillslope connectivity, channel pattern and channel gradient. Although channel characteristics varied somewhat along each reach, the response of the channel to forestry-related activities was expected to be relatively uniform. Reaches have been indicated numerically on the base maps included in Appendix E. A longitudinal profile was generated for the mainstem channel to assist in the identification of reach breaks. Average gradients were calculated for each reach and noted on the profile. The mainstem profile is included as Appendix F to this report.

Where poor visibility on the aerial photography made analysis difficult, reach breaks were confirmed and, if necessary, added or adjusted in the field. It should be noted that, in this reconnaissance level assessment, not all reaches or reach breaks were subject to field inspection.

WSC streamflow data were also reviewed prior to field surveys to reveal any apparent trends and/or identify any recent hydrological events of significance to present channel conditions in Corning Creek.

# 4.4.2 Field Assessments bit late ~ year?

On November 9, 1998, a helicopter reconnaissance flight was made over the watershed aimed at identifying hillslope and channel features not visible on aerial photography. Data for the EMRA was also collected during the flight. Weather conditions and poor visibility on the upper plateau focused efforts toward the lower incised valley where ground access was difficult. Notes and photographs were recorded and the information obtained was used to direct more intensive ground surveys.

Based on the results of the airphoto review and helicopter overflight, a field assessment plan was assembled for the watershed. The plan laid out strategic sites and channel sections to be surveyed that would provide a reasonable overview of conditions in the watershed. The plan was adaptable in that, if unforeseen conditions arose or became

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obvious in the field, additional inspections or site surveys could be undertaken. Whenever potentially impaired channel conditions were observed, efforts were made to determine or confirm the upstream source of the impairments, if any.

While traveling between the sites, easily accessible channel sections and road crossings were quickly spot-checked for obvious changes or problems. This served as a further screen to detect problem areas that may have been missed during the airphoto review and overflight.

As part of the field procedure, expected stable channel types described in the *Channel Assessment Procedure (CAP) Field Guidebook* (FPC 1996b) were compared to existing channel types in the watershed. Where conditions appeared disturbed or unstable, field indicators were recorded and the level of disturbance was estimated. Channel sensitivity, channel instability and evidence of possible changes to flow regimes were identified and described. Additional sites, not previously identified by the airphoto analysis, were investigated where and when observed conditions suggested the possibility of undetected problem areas. Copies of the field notes are provided in Appendix G.

Where lengths of channel were surveyed, CAP Field Form 1 was completed. Channel gradient, depth, bankfull width, and largest stone moved by flowing water were measured at several locations along each surveyed channel section. Hip chains were used to record channel distances. The completed field forms are also included in Appendix G.

During the field surveys, representative photographs were taken of exceptional and/or typical features. Roll and frame numbers of photographs were recorded in the field notes. Documentation of the site photos collected during the field assessment is found in Appendix H of this report. A binder containing all original site photographs has been provided to Federated for their records.

#### 4.5 Watershed Report Card

Using the compiled information, base maps and aerial photographs, watershed report cards were prepared for the Corning Creek watershed under existing and future planned conditions. Assessed parameters and the information sources are listed below:

- Percentage of watershed harvested (forest cover map).
- Equivalent clearcut areas (.FC1 forest cover info and Development Plans).
- Road densities (updated base map and Development Plans).
- Lengths of roads as high sediment source (EMRA).
- Lengths of roads on potentially unstable terrain (terrain stability mapping).
- Landslides (EMRA, airphotos and field).
- Number of stream crossings (base map and development plans).
- Length of stream logged to the streambank (base map, orthorphotos and Development Plans).
- Length of unstable and/or disturbed stream channel (airphotos and field).



Values for these indicator parameters were derived according the methodologies outlined by the original Forest Practices Code IWAP and CAP guidebooks (FPC 1995 and 1996b, respectively).

#### 5.0 ASSESSMENT RESULTS AND DISCUSSION

Results of the Corning Creek IWAP are summarized in the following sections and on the map provided in Appendix E.

#### 5.1 Equivalent Clearcut Area (ECA)

Current equivalent clearcut areas (ECA's) for the watershed and each sub-basin are presented in Table 5.1.1. Detailed ECA calculation worksheets are provided in Appendix C.

Table 5.1.1	1999 Equivalent Clearcut Areas (E	CA)
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Watershed Sub-basin	Sub-Basin Area (ha <sup>2</sup> )	Equivalent Clearcut Area (December 1999)*	ECA
Upper	1000	(ha) 373.6	37.4
East	590	132.3	22.4
Ponds	270	51.7	19.1
Residual	1230	222.2	18.1
Total Watershed	3090	779.8	25.2

\* Area includes both public and private land cleared for the purposes of forest harvesting, mining, agriculture, powerline right-of-ways and lands affected by forest fires.

ECA levels (1999) in the Upper sub-basin of the Corning Creek watershed were estimated to be high, partly due to historically burned areas within the sub-basin. In other sub-basins, and the watershed as a whole, ECA levels were found to be moderate. No weighting for areas above the H60 line were applied to these estimates.

The Residual sub-basin, by definition, consists of the lower, residual portions of the watershed left over once the other sub-basins in the watershed have been delineated. The Residual sub-basin is not a self-contained watershed and disturbances in other sub-basins upstream can affect its stability. Conditions in the Residual sub-basin must therefore be considered in the context of the watershed as a whole. The percent ECA's for the Residual sub-basin, shown in Tables 5.1.1 and 5.1.2, indicate little within the context of the ECA/peak flow model discussed in this section.

Assuming no further forest harvesting, ECA levels in the watershed would decrease with time according to the IWAP model for hydrologic recovery. Based on estimates of growth rates, the following table was generated:

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Year	Upper Sub-basin	East Sub-basin	Ponds Sub-basin	Residual Sub-basin	Total Watershed
1999	37.4	22.4	19.1	18.1	25.2
2000	37.4	22.4	19.1	18.1	25.2
2001	28.0	18.1	19.1	17.0	21.0
2002	25.1	18.1	19.1	17.0	20.0
2003	24.9	18.1	19.1	16.5	19.8
2004	24.3	18.1	19.1	16.4	19.6

#### Table 5.1.2 Recovery of % ECA by Sub-basin Assuming No New Harvesting in the Watershed

Some significant reductions in ECA values occur in the next five years as a result of tree growth and hydrologic recovery, especially in the Upper sub-basin. The recovery of historically burned areas plays an important role in this calculation. Stand heights and leader lengths used in this assessment were based in part on field surveys conducted for this project.

Future planned harvesting in the Corning Creek watershed is preliminary and proposed blocks (867-1,2,3,4 and 5) shown on the accompanying base map. The proposed blocks would increase the ECA in the Upper sub-basin by 2.4%, in the East sub-basin by 1.3% and in the Residual sub-basin by 6.0%. Combined, the ECA for the total watershed would increase by 3.4% following the harvest of the proposed blocks. All five of the proposed blocks are in the vicinity of the H60 line, with approximately 70% of their total area planned above the approximate lower limit of the high snowpack zone. ECA's for the watershed including proposed harvesting are summarized in the Watershed Report Card for future conditions. (Table 5.3.2)

Monitoring ECA levels in a watershed is generally aimed at minimizing the risk of damaging changes to streamflow hydrographs from the cumulative effects of forest harvesting. In community watersheds, maintaining water quality, quantity and the timing of flow are primary management objectives (FPCBC October 1996). According to the IWAP Guidebook, ECA values should not be a management target (FPCBC April 1999). However, evaluation of ECA levels may be used in combination with other factors to assess the impact of timber harvesting on stream channels. The implications of these estimated ECA values are discussed in conjunction with field results later in this report.

#### 5.2 Reconnaissance Channel Assessments

Reconnaissance channel assessments were completed in the Corning Creek watershed on November 3 and 13, 1998; December 18, 1998; and July 13, 1999. Detailed field notes and selected site photographs are provided in Appendix G and H, respectively. Photodocumentation records for all photographs taken during the assessment are also provided in Appendix H. A total of 241 photographs were taken to document exceptional and typical conditions in the Corning Creek watershed. To minimize reproduction costs, a complete set of photographs has been provided to Federated under separate cover, for review upon request.

Results for each sub-basin are presented separately in the following sections. The intent of these discussions is to provide a summary and overview of channel conditions in the



watersheds. For more detailed descriptions of specific sites, refer to the field notes contained in Appendix G. Refer to watershed maps in Appendix E for inspection site locations, sub-basin delineations, reaches surveyed, block numbers and the locations of other features discussed.

#### 5.2.1 Residual Sub-basin

The Residual sub-basin, by definition, consists of the lower, residual portions of the watershed left over once the other sub-basins in the watershed have been delineated. The Residual sub-basin is not a self-contained watershed and conditions in other sub-basins upstream can affect its channel stability. Conditions in the Residual sub-basin must therefore be considered in the context of the watershed as a whole.

The Residual sub-basin comprises the largest portion of the watershed and includes three of the seven mainstem reaches of Corning Creek. Major features within these reaches are the Corning Creek fan and the deeply incised valley associated with the lower mainstem above the fan. Most of the unstable terrain in the watershed is located on the steep valley walls found along the lower mainstem in this sub-basin.

The Corning Creek channel across the fan (Reach 1) was surveyed in detail on November 3, 1998. By definition, channels on alluvial fans are depositional, unconfined and usually have erodible banks. As a result, fans are among the most sensitive areas of any watershed and are generally good indicators of upstream change in sediment and flow regimes.

Reach 1 was found to be mostly stable and followed an established, relatively well incised channel (Photos 1 and 2). Large cedars (>60cm dbh) were noted growing on and out of the banks indicating long-term channel stability. Substrates were predominantly cobble and some bedload movement was apparent. Few fines were noted near the mouth of the creek.

Through much of the reach, the channel appeared deficient of large woody debris (LWD). Some selective cutting and removal of riparian trees had occurred on the adjacent private land, but not enough to substantially affect stream conditions. Instream LWD may have been buried by cobble deposition or mechanically cleared by local landowners at one time. Debris jams and instream LWD serve to check bedload movement in a channel, however excessive debris and/or large jams can also lead to localized deposition, bank erosion and channel avulsions on a fan. Instream LWD is often removed to prevent the latter, at the expense of bedload staging.

During the survey, the channel was dry (no surface flow) up to a point slightly downstream of the lowest water intake, near the top of the fan. This dewatering may be indicative of aggradation and bedload deposition in the lower gradient areas of Reach 1. In order to maintain channel capacity, channel aggradation is usually accompanied by increased bank scour. Evidence of localized bank scour was identified in some areas of Reach 1, but the banks remained generally stable. Thus, channel dewatering in Reach 1 may be mostly related to the typically high permeability of alluvial deposits used to form the fan. The WSC gauge for Corning Creek is located above the top of the fan in a bedrock-controlled canyon and is unaffected by this dewatering.



Two old, partially revegetated landslides were noted near the lower end of Reach 2 (Photos 3 and 4) (see EMRA S1, S2 and S3, Silvatech 1999). The landslides are indicated on the map provided in Appendix E. Although failures S1 and S2 were described as separate occurrences in the EMRA, the two are thought to be connected and indicative of a single large slope movement. Continued sediment contributions to the creek from the slides are likely to be minor. There is some potential for failure S1/2 to be reactivated through bank erosion along the toe of the slide. A private building was observed on the bench above the failure and may potentially be affected should the slope continue to regress. The other landslide (S3) is on a cleared slope and may be related to the construction of a private access road to the floodplain, near one of the licensed water intake sites. This slide is buffered from the mainstem creek by an area of brushed floodplain.

Further upstream in the sub-basin, the confluence of the east tributary and the mainstem was inspected to assess relative conditions in the two channels. The confluence forms the reach break between Reaches 2 and 3 on the mainstem. The east tributary was surveyed for approximately 250m and was found to be in a stable, natural condition. Some evidence of bank scour and bedload movement were identified; however, not more than would be anticipated in an undisturbed natural channel, especially given the recent flood history in the watershed.

Evidence of recently increased channel activity, such as gravel deposits, debris jams with cobble wedges and bank scour were observed along the mainstem in the vicinity of the confluence (Photos 5, 6 and 7). In some areas, aggradation was sufficient to cause channel dewatering for short sections. Downstream of the confluence conditions improved while upstream the conditions deteriorated. Frequent bedrock controls in the channel and along the banks provided some stability to the channel form.

During the helicopter reconnaissance, several slope failures were noted in Reach 3 of the Residual sub-basin. Increased sediment and debris loads identified in the mainstem channel above the confluence with the east tributary were likely related to materials input from these failures. The failures are indicated on the project map provided in Appendix E. The four slides on the right bank of the creek were inspected to assess conditions and likely causes, as part of a detailed channel survey on November 13, 1998. As discussed in the EMRA (Silvatech 1999), failures S4 and S5, one above the other, were likely caused by upslope road drainage problems directing concentrated surface flows onto an unconditioned slope (Photos 8 and 9). A scour track was visible from the bottom of the cutblock, down the full length of the slope to the creek below. A larger debris torrent was likely prevented by the presence of shallow bedrock, limiting scour at the lower end of the track, adjacent to the creek. The EMRA suggested these slides were high risk and high priority for restoration. This is reiterated in the recommendations of this report.

Slope failures S6 and S7 were also inspected as part of the ground survey. These two failures were found to be recently active, enlarged bank failures in relatively deep tills with a high content of fines (Photos 10 and 11). Failure S6 is visible on the 1994 airphotos, however, S7 is not, possibly due to the dense forest canopy. No evidence of upslope issues contributing to either failure was observed and the events were inferred to be natural. Recent activity at the failures may have been the result of toe/bank erosion during the significant discharge event in May 1997, recorded by WSC for



Corning Creek. The slides have likely contributed significant sediment and debris to the creek and continue to be a source of fine-grained sediments.

Although not inspected on the ground, failures S8 and S9 also appeared to be recently active enlarged bank failures, similar to S6 and S7 (Photo 12). Indications of both failures are visible on the 1994 aerial photography. The failures are inferred to be natural, although some harvesting occurred upslope. A forested buffer of relatively flat terrain remains between the cutblock and the top of the slope above the failures, reducing the likelihood of a connection. A detailed site inspection is otherwise required to ascertain possible causes of the failures, — Yes

#### 5.2.2 Upper Sub-basin

Channels in the Upper sub-basin were inspected on July 13, 1999 and were found to be mostly stable. In general, stream power and bedload transport were reduced on the relatively flat gradients of the Adams Plateau. Reduced stream power meant that LWD played a less important function in channel stability. Future supplies of LWD have been affected by harvesting and the extensive area affected by historical wildfires in the subbasin. In the areas inspected, forest recovery was well under way, although the dominant vegetation in many of the riparian areas was alder and willow. The thick, brushy, deciduous vegetation worked well to stabilize banks and floodplain areas, but did not contribute to instream LWD function.

Although not readily apparent in the channel sections, evidence of recent peak flow problems was observed at many road crossings. Road crossings frequently act as constrictions to flow under flood conditions and act as sensitive sites in high flow conditions. At Sites 4 and 12 along the mainstem channel, freshet flows in 1999 had washed over the road surface and eroded the road fillslope near the culvert outlets (Photos 13 and 14). At Site 4, the mainline road was no longer passable to vehicles as a result of the washout. Flow capacity of the 1200mm culvert at Site 4 had been reduced by a collapse in the roof of the culvert (Photo 15). The collapse likely resulted from inadequate cover being provided over the culvert during construction to distribute vehicular loads and/or timbers being placed in the backfill over the culvert. Recommended cover for a 1200mm culvert is 400mm. Cover may have also been reduced during subsequent regrading of the road surface.

Although sufficient water had ponded upstream of both of these crossings to allow overtopping of the road, significant sediment deposits were not observed at or above the culvert inlets. This suggests that sediment transfer was limited during freshet, and is a good indicator of channel stability upstream during a peak flow event.

Similar problems had occurred during the 1999 freshet at road crossings (Sites 3 and 13) on the main west tributary in the Upper sub-basin (Photos 16, 17 and 18). Once again, deposition above the culvert inlets was minimal indicating overall channel stability.

Discharge data for the Corning Creek gauge is not yet available for 1999 to ascertain the statistical significance of any spring 1999, discharge events. Unusually high snowpacks were recorded in the area during the 1998-99 winter season. Problems observed may be the result of, or a combination of; unusually high spring runoff, poorly designed road crossings and/or increased peak flows resulting from historically reduced forest cover in

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the upper basin (i.e. forest fires and harvesting). As previously discussed, ECA levels in the Upper sub-basin are high.

At the lower end of the Upper sub-basin, the mainstem and west tributary drop steeply into the incised valley of the Residual sub-basin. These potentially critical channel sections were briefly inspected for channel stability and/or evidence of increased peak flow regimes. Both channels were dominated by bedrock controls (beds and banks) and appeared unaffected by any recent high flows (Photos 19 and 20). Steep, non-alluvial channels of this type are naturally resilient and/or insensitive to small changes in flow regimes. Along both channels, riparian areas were intact and provided for sustained inputs of LWD.

During the inspection of the Upper sub-basin, a diversion of surface drainage along a disused haul road was noted near Site 10 (Photos 21 and 22). The diverted flows eventually returned to a natural watercourse while still on the relatively flat plateau. Although partly self-armoured, the diverted flows will continue to scour the old road surface and generate fine sediments. Natural drainage should be restored in this area.

#### 5.2.3 East Sub-basin

As discussed in Section 5.2.1, the east tributary of Corning Creek was surveyed for approximately 250m above its confluence with the mainstem. The channel was found to be in a stable, natural condition, with some evidence of bank scour and bedload movement. No slope failures in the sub-basin were observed during the helicopter overflight, or the airphoto assessment. Riparian areas appear to be intact from the confluence upstream to Sites 5 and 6.

The road crossing and channel in the vicinity of Site 5 was found to be in good condition, although some deposition was noted upstream of the 1200mm culvert. Ditchwater was being directed into the creek above the culvert, potentially increasing the turbidity of the creek during rainstorms and/or heavy traffic.

The culvert (1200mm) at Site 6 is probably undersized, as was evidenced by channel aggradation upstream of the crossing (Photo 23). Stored sediments are being revegetated with shrubs. Aggradation may eventually further reduce the capacity of the culvert, compounding the situation. The culvert should be removed or replaced with a larger size, or failsafed through road deactivation.

#### 5.2.4 Ponds Sub-basin and Freeman Brook

On December 18, 1998, an inspection of Freeman Brook and associated storage ponds was made in the company of Mr. Jim Cooperman (local resident and water licensee). Surface flow was only present in the lower one third of the creek. At least one water intake (shallow well) was set up where the surface flows emerged (Photo 24). The lower surveyed portion of the creek was well vegetated with mature trees; however, there is some potential for the creek to leave its present channel and flow down a nearby access road paralleling the creek.

The upper portions of Freeman Brook were dry at the time of the survey and the natural channel became less distinct. Parts of the channel may have been obscured by the

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construction of a steep cleared access leading up to the storage ponds. The access may have been created in order to bury waterlines from the ponds. Cleared areas were revegetating with willows and cottonwoods. Some indication of occasional concentrated surface flows was evidenced by a scoured channel following the access route (Photo 25). The scoured channel may have been caused by a burst waterline or overflows from the storage ponds.

Immediately at the top of the access trail was the first of two storage ponds (Photo 26). A section of corrugated steel culvert was provided as an overflow from the ponds in the direction of Freeman Brook (Photo 27). The main purpose of the culvert appeared to be the protection of the berm from erosion in the event of overflows, preventing a rapid failure of the berm. Regular releases of water from the ponds into Freeman Brook were not apparent. Other than this overflow, no surface water connection was found to exist from the ponds into lower Freeman Brook.

A second pond had been constructed immediately to the west of the first pond. The total area of the two ponds combined was estimated at 1ha and the ponds are sufficiently large to be visible on 1:15,000 aerial photography. At the west end of the ponds, a well-defined natural draw ran towards the mainstem of Corning Creek (Photos 28 and 29). No evidence of recent surface flows was visible in the draw and no outlet or overflow from the ponds had been provided in this direction. The draw eventually led to a very steep, bedrock-controlled gully dropping sharply into the main Corning Creek valley several hundred metres below.

The existence of this well-defined draw leading toward Corning Creek, and the lack of a defined channel in upper Freeman Brook, has led to the following inference; prior to the construction of the storage ponds, surface flows above this point ran into Corning Creek. Construction of the ponds and the access trail has made assessment difficult. Historically, water may have flowed in both directions. Beavers may have played a role in determining which direction the tributary flowed. At this point in time, surface flows are released in the direction of Freeman Brook only during extreme high water conditions when the ponds are over-topped. Some flows likely seep into both drainages from the unlined ponds. The ponds may help to sustain flows in lower Freeman Brook through the summer through infiltration. Due to the steepness of the terrain, the sudden release of water in either direction could cause significant sediment generation and possible slope instability.

Based on the results and inferences of the field inspections, the Ponds Sub-basin was delineated to identify the source area above the man-made storage ponds and the water diversion site at the top end of Freeman Brook.

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#### 5.3 Watershed Report Card

Watershed report cards for Corning Creek under existing and future conditions are provided in the following tables.

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	Units	Upper	East	Ponds	Residual	Total Watershed
Percent harvested, corrected	ha	373.6	132.3	51.7	222.2	779.8
for ECA, 🕼	%	37.4	22.4	19.1	18.1	25.2
ECA above H60 line	ha	373.6	130.1	12.8	46.6	563.1
Un weighted )	%	37.4	22.1	4.7	3.8	18.2
ECA below H60 line.	ha	0.0	2.2	38.9	175.6	216.7
	%	0.0	0.3	14.4	14.3	7.0
Total road density	km/km <sup>2</sup>	2.53	2.00	2.55	2.30	2.34
Length of road as high sediment source.	km	0.5	0.0	0.0	6.9	7.4
Total number of landslides	345)	0	0	0	9	9
Length of Road on potentially unstable slopes.	km	0	0	0	3.8	3.8
Number of stream crossings (including trails).		26	6	6	5	42
Length of stream with	km	16.5	4.3	3.2	1.5	25.5
disturbed riparian forest.	%	71	52	78	11	52
Length of disturbed stream	km					
channel.	%					

# Table 5.3.1 Watershed Report Card for Corning Creek - Existing Conditions (1999)

# Table 5.3.2 Watershed Report Card for Corning Creek - Future Conditions (2004)

	Units	Upper	East	Ponds	Residual	Total Watershed
Percent harvested, corrected	ha	267.2	114.2	51.7	275.9	709.0
for ECA.	%	26.7	19.4	19.1	22.4	22.9
ECA above H60 line.	ha	267.2	112.0	12.8	83.9	475.9
	%	26.7	19.0	4.7	6.8	15.4
ECA below H60 line.	ha	0.0	2.2	38.9	192.0	233.1
	%	0.0	0.3	14.4	15.6	7.5
Total road density	km/km <sup>2</sup>	2.57	2.09	2.55	2.55	2.47
Length of road as high sediment source.	km	N/A	N/A	N/A	N/A	N/A
Total number of landslides	628	N/A	N/A	N/A	N/A	N/A
Length of Road on potentially unstable slopes.	km	0.0	0	0	4.8	4.8
Number of stream crossings (including trails).	850	26	6	6	6	43
Length of stream with	km	17.1	4.3	3.2	1.6	26.2
disturbed riparian forest.	%	74	52	77	12	54
Length of disturbed stream channel.	Km %	N/A	N/A	N/A	N/A	N/A

Note: Future Conditions include all proposed cutblocks.

#### 6.0 SUMMARY AND RECOMMENDATIONS

The following sections integrate and summarize the hazards identified through the various phases of this project and provide discussion on their relative influence on resource management. Assessed hazards focus on potential changes to peak flow regimes, sediment generation and delivery, channel conditions and riparian vegetation. Recommendations are presented with regards to opportunities for watershed restoration and the management of future forest harvesting in the Corning Creek watershed. These recommendations should be discussed by the roundtable committee following the presentation of this report.

Careful planning and open communication is essential to avoid or resolve conflicts in the development of any or all of the resources in the Corning Creek watershed. Forest development activities, including harvesting, road building, access management, forest fire protection, the application of fertilizers and pesticides, can all potentially affect the viability of water resources in Corning Creek. In addition, livestock ranging and recreational activities may also have downstream effects. Resource use interactions must be carefully managed to ensure the sustainability of each resource and the protection of terrestrial and aquatic habitat.

#### 6.1 Watershed Hazard Ratings

Based on the results of our office and field assessments, the following table summarizes qualitative hazard ratings developed for the Corning Creek watershed:

Sub-basin	Peak Flow	Sediment	Channel	Riparian	2.7
Upper	H	M	L	(M)	Gel.
East	(M)	L	L	L /L	14
Ponds	L	L	L	/ L	Sap-S
Residual	Μ 🗸	(H)/	М	L	and
Total Watershed	(M)	M	M	L	pe .

#### Table 6.1.1 Watershed Hazard Ratings

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#### 6.1.1 Upper Sub-basin

Peak flow hazards were rated as high in the Upper sub-basin due to high ECA levels and recent evidence of culvert failures at several road crossings in the sub-basin. Most of the sub-basin is in the high snowpack zone of the Adams Plateau and above the H60 line for the watershed. If ECA levels were adjusted for elevation bands the resultant ECA would be extreme. Although problems were apparent at stream crossings, relatively low gradient channels reduced the potential for impacts to streambanks and the transfer of sediment. For these reasons, and the relatively good condition of the channels observed in the field, the channel hazard was rated as low. Channels in the upper areas may have adjusted to increased flows given the lengthy fire history in the area. The frequency of stream crossings and the extent of reduced riparian buffers in the Upper sub-basin increases the risk of sediment entering channels. As a result, both the sediment and riparian hazards were assigned moderate ratings. 🏸

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#### 6.1.2 East and Ponds Sub-basin

Hazards with regards to the four areas of discussion were mostly assigned low ratings in the East and Ponds sub-basins. A moderate rating for peak flow hazard was given to the East sub-basin due to relatively high ECA levels created by historic fires and harvesting. Once again, most of the sub-basin is in the high snowpack zone and above the H60 line. Although a few recent cutblocks exist, many of the openings in both sub-basins are approaching full recovery. Field surveys did not indicate any significant channel disturbances. Similarly, many of the disturbed riparian areas were found to be through openings approaching full recovery and were generally limited to small, headwater streams. Sediment transfer is likely to be reduced in the relatively small, low gradient channels on the plateau.

#### 6.1.3 Residual Sub-basin

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The Residual sub-basin is not a true watershed; therefore assessments involving ECA levels can be misleading. The peak flow hazard for the Residual sub-basin was given a moderate rating mostly due to elevated harvesting levels in the two upper sub-basins. Altered flow regimes, especially increased peak flows, are more likely to manifest in the mainstem channel through the Residual sub-basin as a result of harvesting in sub-basins upstream. Peak flow hazards in the Residual sub-basin were assigned a moderate rating. Higher stream gradients and closely connected hillslopes make the mainstem channel through the Residual sub-basin more sensitive to increased flows. Several bank failures identified in the field provided good examples of what may result from accelerated bank erosion. For this reason, and the frequency of landslides in the Residual basin, a high risk rating for sediment was assigned. Most of the unstable terrain and all of the roads on unstable terrain were located within this sub-basin. Almost all of the road length designated as a high sediment source was also identified in the Residual sub-basin.

Channel conditions through the Residual sub-basin were generally stable in the reaches inspected; however, some problem areas were noted. Increased slide activity, some natural and some potentially development-related, had caused channel aggradation and an accumulation of large sediment wedges in the mainstem channel above its confluence with the east fork. Bank failures through this section may have been the result of recent or accelerated bank erosion. Frequent bedrock controls in the channel serve to prevent extensive or rapid channel readjustment. The Residual sub-basin also includes the Corning Creek fan. Fans are typically more sensitive to changing flow and sediment regimes. Based on the survey results and anticipated sensitivities, channel hazards in the Residual sub-basin were assigned a moderate rating.

With the exception of some private land clearing near the mouth of Corning Creek, riparian vegetation communities remain essentially intact along the mainstem through the Residual sub-basin. This increases the resilience of the mainstem channel with respect to changing flow regimes.

#### 6.1.4 Total Watershed

The assessment of the Corning Creek watershed as a whole combines the results and issues identified in each of the sub-basins. The peak flow hazard was assigned a moderate rating for the watershed based on the high ECA levels in the upper basin and the relatively good condition of most of the channels. A relatively recent extreme discharge event had occurred in the watershed (May 1997) of sufficient size to be considered a channel-forming event in the lower watershed. Had channel change been more extensive in the lower mainstem or the fan, a higher peak flow hazard rating would have likely ensued. Field evidence of flows exceeding culverts in 1999 was limited to the Upper sub-basin.

Sediment hazards were rated as moderate in the watershed, mostly due to landslides, bank failures and fine-grained soils along the mainstem in the Residual sub-basin and unstable road crossings in the upper watershed. The consequence of increased suspended sediment loading in Corning Creek is elevated by the designation of the watershed as a community water source.

Although channel conditions were generally stable throughout the watershed, some areas of concern were identified, especially in the lower mainstem below the bank failures. Continued sedimentation and/or the catastrophic release of stored sediment from behind a debris jam may ultimately increase the length of disturbed channel. Elsewhere, low gradients on the upper plateau and frequent bedrock controls through steeper sections downstream helped to desensitize those channels' areas. Channels in the Upper sub-basin may have already adjusted to increased flows due to the long history of fires. Channels have recovered along with the riparian forests.

The extent of disturbed riparian vegetation along channels appears high (54%) in the Corning Creek watershed, over 70% in the Upper sub-basin. Some of these disturbed areas are related to historical burns in the watershed and no allowance for recovery of the forests has been applied. In the flatter sections of the upper plateau, historical reductions in riparian forests do not appear to have had a significant effect on channel stability. Although conifer densities have likely decreased, native moisture seeking, high elevation shrubs such as rhododendron, false azalea and willow were present in dense stands. This likely mimics what may be expected under natural conditions elsewhere on the Adams Plateau.

In the lower mainstem (Reaches 1, 2 and 3) where riparian forests are likely more essential to channel stability, forests adjacent to the stream have been left mostly intact. Riparian vegetation along the mainstem will help to reduce sediment transfer, protect stream bank integrity, slow overbank flows, provide channel structure and increase energy dissipation during high flow conditions. Intact riparian areas are essential in geomorphically active areas such as lower Corning Creek and to date, they have been maintained. For these reasons, the overall riparian hazard has been given a low rating for the Corning creek watershed.



#### 6.2 Restoration Recommendations

Restoration in the Corning Creek watershed should begin with controlling sediment inputs related to hillslopes and roads. The three landslides near the lower end of Corning Creek (S1, S2, and S3) are situated on or adjacent to private land and are not likely related to forest development. Most of the other existing slides upstream (S5 through S9) are extremely difficult to access and this presents a formidable obstacle to landslide rehabilitation. An exception is S4, which initiates at an old skid trail/ fire guard. The skid trail should be deactivated to prevent further concentration of surface drainage and additional downslope failures.

The sediment source survey (Silvatech 1999) indicated that roads upslope of slides S4 and S5 were potentially contributing to problems downslope and were given a high priority for restoration. This is reiterated in this report to prevent further failures on the steep hillside above Corning Creek. Existing failures (natural and development related) have already affected creek conditions in Reach 3. Upslope road rehabilitation, including upgrading of the existing mainline, should be aimed at restoring natural, dispersed drainage patterns above the steep, sensitive terrain along Reaches 2 and 3.

Channel disturbance identified in Reach 3 included aggradation and excessive sediment storage. These types of disturbance are widespread along the channel making restoration difficult. Access to the channel also is difficult, if not impossible, in this steep and incised portion of the creek. If sediment inputs to the channel are controlled, the creek will eventually return to a stable condition. Fish habitat has been affected in this area through the infilling of pools, the cementing of substrates and the dewatering of channel sections at low flows, potentially restricting seasonal passage. Fish use in the area is unknown but likely limited to a few resident rainbow trout. For all of the above reasons, instream channel or fish habitat restoration works are not recommended at this time.

For reasons previously discussed, a low riparian hazard rating has been assigned to the Corning Creek watershed. No riparian restoration programs are recommended at this time. Additional planting of conifers may be suggested in portions of the Upper subbasin where stand densities are low, and this may include riparian areas. This suggestion stems as much from the need for hydrologic recovery in the Upper basin and site production as it does from the standpoint of channel stability.

Numerous culvert failures were identified through the course of these assessments, predominantly in the Upper sub-basin. These sites and other specific restoration recommendations are summarized in Table 6.2.1. An indication of work sequence priority is provided. Priority ratings adopted for this project are similar to those used in resource road rehabilitation (Moore 1994) and are summarized in Table 6.2.1.

#### Table 6.2.1 Summary of Restoration Opportunities

Sub- basin	Reach	Site	Problem	Recommendations	Priority
Residual	2	0	Surface flows diverted by road grade.	Provide additional cross drainage on disused road.	м

Interior Watershed Assessment Procedure for the Corning Creek Watershed

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Sub- basin	Reach	Site	Problem	Recommendations	Priority
Residual	3	*	Surface flows intercepted and diverted by old skid trail/fire guard along bottom of block have caused surface scouring and failure S4 (Photo 8).	Deactivate and/or re-contour skid trail to prevent concentration of surface drainage.	Н
Residual	3	-	Inadequate road drainage has caused localized scour and slope stability problems (S4, S5) below roads on steep valley walls along right bank of creek (Photos 8, 9).	Conduct detailed assessment of mainline and spurs throughout the Residual sub- basin. Prepare prescriptions and deactivate/improve roads where necessary.	Н
Upper	trib.	3	Culvert capacity has been recently exceeded causing scour of road surface. (Photo 16).	Increase culvert capacity or failsafe crossing by armouring road.	м
Upper	trib.	4	Culvert is damaged and capacity has been recently exceeded causing washout and scour of road surface. Inadequate cover over culvert to support heavy traffic (Photo 13).	Replace culvert with smaller twin culverts to provide more capacity and increase cover depth.	М
East	trib.	5	Ditchflows directed into creek.	Direct ditchwater into flat vegetated area to promote settling and filtering of fine sediment.	L
East	trib.	6	Undersized culvert is causing aggradation in channel upstream of crossing. Partially plugged inlet.	Increase crossing capacity through deactivation and/or replacement of the culvert.	L
Upper	trib.	9	Undersized culvert has caused overtopping of road. Partially plugged at outlet.	Increase crossing capacity through deactivation and/or replacement of the culvert.	L
Upper	trib.	12	Culvert capacity has been recently exceeded causing scour of road surface and fillslope. (Photo 14).	Increase culvert capacity or failsafe crossing by armouring road.	М
Upper	trib.	13	Crossing capacity has been recently exceeded causing scour of road surface. (Photos 17, 18).	Increase culvert capacity or failsafe crossing by armouring road.	М
Upper	trib.	10	Surface flows diverted by old unused branch road for considerable distance. Intercepted flows directed toward unnatural channel (Photos 21, 22).	Provide adequate cross drainage along branch road and restore natural drainage patterns.	М

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Priority	Risk Based Criteria					
Class	( any or all of the following)					
Н	<ul> <li>corrective action is required immediately.</li> <li>high potential to initiate landslides or mass wasting.</li> <li>actively producing sediment with direct delivery to fisheries streams and/or streams used for domestic water supply.</li> <li>potential threat to human life, private property, public utilities, or travel corridors.</li> <li>conditions are deteriorating or tending toward destabilization.</li> <li>rehabilitation can be effectively accomplished.</li> </ul>					
М	<ul> <li>corrective action is not required immediately but should be completed prior to next high water season.</li> <li>moderate to low potential to initiate landslides or mass wasting.</li> <li>actively producing sediment with direct delivery to non-fish-bearing streams and/or streams not used for domestic water supply.</li> <li>actively producing sediment with indirect delivery to streams.</li> <li>low potential threat to human life, private property, public utilities, or travel corridors.</li> <li>conditions may deteriorate or stabilize with time (uncertain).</li> <li>rehabilitation can be effectively accomplished.</li> </ul>					
L	<ul> <li>corrective action is not required but should be completed if crews or equipment are available in the vicinity.</li> <li>low potential to initiate landslides or mass wasting.</li> <li>potential to, but not actively producing sediment with direct delivery to surface water.</li> <li>conditions are tending toward stabilization.</li> <li>rehabilitation may or may not wholly succeed.</li> </ul>					

#### Table 6.2.2 Priority Ratings used in Table 6.2.1 (after Moore 1994)

#### 6.3 Future Harvesting Recommendations

As previously discussed, Corning Creek was designated as a 'Community Watershed' during the course of this project. The Community Watershed Guidebook (CWG) (FPCBC October 1996) contains guidelines which apply to harvest planning within a community watershed. Best management practices with respect to harvest scheduling, road building, cutblock size and riparian management are discussed therein. Evaluation of proposed future harvesting in this report was based on the Federated Co-operatives Ltd.'s Forest Development Plan for Forest Licence A18670 for the period January 1, 1999 to December 31, 2003 (Mapsheets 82L093 and 82M003).

The potential for peak flow alteration was rated as moderate for the Corning Creek watershed as a whole, based on current channel conditions and an overall ECA of 25%. According to the CWG, target conditions with regards to rate of cut suggest that harvest levels should not be in excess of moderate hazard levels of the peak flow index as calculated by the (outdated) watershed assessment procedure. ECA levels were likely in the same range (~25%) during the 1997 discharge event and little evidence of increased or unusual channel activity was observed. For this reason, it is recommended that a total ECA of 25% be targeted for the watershed into the future. This limit may be revised following a review of channel conditions at a future date or as part of a long-term

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development plan. Currently proposed harvesting in the watershed and predicted recovery would result in an ECA of 22.9% by the year 2004.

This way not be appropriate for the East-sul-barries, for the

For the Upper sub-basin, which lies entirely within the high snowpack zone, the ECA was calculated to be 37.4%. Historically burned areas and older cutblocks contribute significantly to the high rating. Evidence of extreme discharge and culvert over-topping was identified in the sub-basin. This high level of disturbance triggered a high hazard for the potential alteration of peak flows. According to the CWG, the maximum recommended ECA in any drainage basin larger than 250 ha is 30%. Due to the age of some of the disturbances, many openings are recovering in the sub-basin. Projected recovery rates will reduce the ECA levels in the sub-basin to 26.7% by the year 2004, including currently proposed harvesting. Additional fieldwork may be undertaken to refine forest cover data and hydrologic recovery in the sub-basin. It is recommended that ECA levels in the upper watershed be managed to less than 30% into the future. In general, although evidence of potential peak flow problems was not identified elsewhere in this assessment, other sub-basins in the watershed should be similarly managed.

Sediment inputs into Corning Creek have occurred as a result of harvesting activities and poor road drainage on or above sensitive slopes along the west side of the main valley. A target condition listed by the CWG suggests no road-related landslides that directly impact any stream. Proposed cutblocks 867-1, -2 and -3 have been located on terrain identified as potentially unstable in this area. According to the Timber Harvesting Practices Regulations (Section 7(3)), clearcutting is not permitted in an area with a moderate likelihood of landslides and a high risk of sediment delivery to a stream, unless the detailed terrain stability field assessment documents that the assessor has reasonable grounds to believe that clearcutting the area will not significantly increase the risk of landslide (FPCBC 1998b). Short sections of new road construction have been proposed to access these blocks. Detailed terrain assessments should be conducted in the vicinity of these blocks and proposed roads by qualified professionals prior to any development activities. The american shall consider the commutatione effect days

Proposed blocks 867-4 and -5, and 849-1 are situated on less steep, plateau areas adjacent to the watershed divide. If natural drainage patterns are maintained in these blocks, it is unlikely that landslides or significant sediment production will result.

Although existing riparian conditions have been assigned a low hazard rating, the recent community watershed designation suggests greater restrictions around streams. Stream classes S5 and S6 are immediately upgraded to S3 and S4. Goals of riparian unstanted management include minimizing forest and range use impacts on water quality by providing a vegetated buffer and filter between those activities and streams. In addition, stream channel stability is enhanced by protecting streambanks and streambank vegetation, and by ensuring that a long term supply of LWD is available for stream location channel processes.

marganetul Proposed cutblock 867-1 straddles a major tributary of Corning Creek draining the Upper sub-basin. Proposed cutblock 867-3 includes a small mapped stream that may or may rook not exist. In addition to the other concerns identified in these cutblocks, harvesting plans and riparian management prescriptions should be adjusted to reflect Operational Planning Regulations (Part 8, Division 1, Sections 59 and 60) and the goals suggested by the Riparian Management Area and Community Watershed Guidebooks (FPCBC 1998a).



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To monitor the potential effects of future forest development and assess the recovery of problem areas identified within the watershed, an updated assessment is recommended in the year 2004. This assessment should include a review of all identified sediment sources and a reconnaissance of channel conditions in known disturbed areas as well as on the lower fan. A review of ECA levels should also be conducted for each of the sub-basins and the watershed as a whole, including any improved silviculture information. Projected rates of cut according to long-term development plans may be reevaluated at that time.

The following list summarizes the recommendations for future harvesting as discussed by this report:

- 1. Manage ECA's in the watershed as a whole below a maximum of 25%.
- 2. Manage ECA's in all sub-basins below a maximum of 30%, with particular emphasis placed on reducing harvest levels in the Upper sub-basin.
- 3. Review plans to ensure that any future harvesting is consistent with Operational Planning Regulations and Timber Harvesting Practices Regulations for community watersheds (FPCBC 1998a,b). This would include:
  - WRT viparian preciptions
- by Reassessing harvest plans for cutblocks 867-1 and 867-3 and, where appropriate, upgrading riparian management prescriptions. 867-3 to upform 867-3 to upform 4. Conduct a reassessment of watershed conditions, including channels, sediment sources and ECA's, by the year 2004.



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# 8.0 LIST OF APPENDICES

Appendix A Corning Creek IWAP - Minutes from Roundtable Meeting December 17, 1998

Appendix B Water Survey of Canada - Corning Creek (09LE077) Gauging Records and Analysis

- Appendix C Detailed ECA Calculation Tables
- Appendix D Licensed Water Users on Corning (Lee) Creek and Fraser Brook
- Appendix E 1:20,000 Watershed Map (accompaniment)

Appendix F Corning Creek Mainstem Profile

- Appendix G Field notes
- Appendix F Site Photographs and Photodocumentation

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# APPENDIX A

Minutes of Corning Creek Roundtable Meeting December 17, 1998
### memorandum

to:	Pierre Rossouw, Ministry of Forests, Salmon Arm
from:	Karin Janzen, Silvatech Consulting Ltd.
date:	January 4, 1999
re:	Corning Creek IWAP - Minutes from Roundtable Meeting

Meeting was convened at 1:30 p.m. on Thursday, December 17, 1998, at the offices of the Ministry of Forests, Salmon Arm Forest District, 790 16th Street NE, Salmon Arm, BC.

Present were: Pierre Rossouw, Ministry of Forests; Roger Wysocki, Ministry of Environment, Lands and Parks; Jeff Lipsett, Federated Co-operatives Ltd.; Rob Udy, High Country Forestry Consulting Ltd.; George Zorn, Ministry of Forests; Jim Cooperman, landowner and water licencee representative; Alan Bates, Silvatech Consulting Ltd.; and Jeremy Appt, Silvatech Consulting Ltd..

#### Welcome and purpose of the meeting:

Rossouw opened the meeting by detailing the differences between the old IWAP format, which was chiefly a mapping exercise and proved indecisive in its characterization of the subject watershed, and a newer draft procedure yet to be adopted. In the meantime, an interim procedure was developed by the Ministry of Forests, Kamloops Region, in response to the need for field assessments. The new procedure is based on hydrological study of the watershed and it has been adopted for use in this project.

Rossouw went on to comment on the absence of representatives from the Adams Lake Indian Band and the Little Shuswap Indian Band who may have an interest in the Corning Creek watershed and recommended that they be sent copies of the minutes of this meeting and kept informed on the progress of this project and any subsequent recommendations.

#### Review of IWAP procedure:

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Rossouw outlined the agenda for the balance of the roundtable meeting, noting that the subjects to be touched on would include a delineation of the watershed study area, a review of the historical background of the watershed, raising the concerns and issues of both the public and government agencies with the project hydrologist so these could be addressed in the course of his assessments, and setting a timeline for completion of the project's phases. Following today's meeting and the subsequent field work, a draft final report would be prepared by the hydrologist and presented to a second roundtable meeting for review. Ideally this second meeting would culminate in recommendations for the watershed which would be incorporated into the final project report.

Lipsett added that the resulting report and recommendations would be used by the forest licencees operating in the watershed in planning their development proposals.

At this point, Lipsett noted that Interfor hauls on the Forest Service Road within the watershed and while not directly affected by this study, should be kept informed.

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A discussion ensued regarding the levels of digital terrain mapping required within this watershed. Udy pointed out that as there is only a small portion of inoperable land within the watershed, a decision had already been made that Level C terrain mapping would be carried out (excepting private land). It was explained that Level C mapping is a detailed, watershed-wide exercise as opposed to the reconnaissance-level mapping represented by Levels D and E and the highly-detailed, locally-focused studies represented by Levels B and A.

For the benefit of the group, each participant outlined his experience with the IWAP process.

#### Watershed overview:

Rossouw opened this portion of the discussion by pointing out that while not much funding has been available for studies in the Corning Creek watershed in recent years, a considerable amount of work has been done this past year.

Udy detailed the work currently underway in the watershed as being an Erosion and Mass Wasting Risk Assessment (EMRA) (where road and hillslope stability is assessed in terms of potential landslides and related impacts); the IWAP which is the subject of this meeting; and Terrain Stability Level C Mapping (where unstable terrain is assessed for its potential for sediment delivery). With respect to the terrain mapping, it was pointed out that the field assessments have been completed and all that remains for completion of this project is the final mapping. Completion is expected by early March. Draft polygons on photography will be used in the interim.

Rossouw questioned whether an Access Management Plan was in the works for this year. Udy responded that it was not in the plans at this time. Lipsett noted, for information purposes, that the studies currently underway were being done to ultimately develop an Access Management Plan for the watershed.

Wysocki noted that there is a pending application for designation of the Corning Creek area as a community watershed. He also stated that fish-related issues were not a concern at this time in the watershed. Cooperman added that, during a visit with MOE personnel to the area, fish had been sighted in the creek

Rossouw asked for an update on the status of the current application for Community Watershed designation for the Corning Creek area. Cooperman advised that at this time the application appeared to be stalled. He noted that the field checking of the inlets for the three major groups of water licence holders had been done with MELP representatives and that the holdup appeared to be connected with concerns expressed by the Department of Health.

Wysocki explained to the group that the only ramification of Community Watershed status being conferred on the Corning Creek watershed would be its implication on future forest management practices.

Zorn asked how many water licences were held on the Corning Creek system, to which Cooperman responded that he felt there were three major groups of licencees, representing possibly 20 to 30 households; these groups being known as the Simpson group, Carter group and McIntrye group.

At this point in the discussions the question arose as to whether or not Freeman Brook was tributary to Corning Creek. Cooperman maintained that it was and that there were approximately eight water licences on Freeman Brook. Wysocki felt that the matter should be looked into more thoroughly and that if Freeman Brook were, in fact, a tributary to Corning Creek it must be included in the IWAP. Bates said that he would have to examine the area to make that determination. Udy asked if this would require a boundary change for the study area; while Rossouw questioned whether Freeman Brook should be designated a sub-basin for the purposes of the assessments. Bates responded that a boundary change would definitely be necessary and that Freeman Brook, as a second-order stream, would have to be dealt

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with as a separate sub-basin. Cooperman affirmed that Freeman Brook, to the best of his knowledge, has always had a history of forking and flowing in two directions, one of which joins Corning Creek. He further stated that there is a long-ago history of logging in the area and that indications point to the existence of a logging flume on Freeman Brook at one time. In response to a question from Lipsett, Cooperman advised that the licencees on Freeman Brook are represented by the Community Watershed application.

Lipsett confirmed that there was a long history of logging in the Corning Creek watershed with activity in the lower blocks commencing in the late 1980's. Bates added that records indicated some logging activity in the upper areas of the watershed in 1958 - 60 and that a portion of that area was burned over in 1960. He commented that the trees were coming back but had not reached a full recovery height. Rossouw stated that regen information for the area had not been updated in some time. Udy suggested that Silvatech measure regrowth to incorporate current data into the study, to which Bates suggested that stocking density and rate of regrowth should also be checked.

Rossouw indicated that there is some mining exploration activity taking place in the watershed and Lipsett confirmed that there is quite a bit of range use throughout the watershed. Rossouw pointed out that the Hydro line running through the watershed posed some issues and Bates advised that powerlines would be included in ECA calculations. Cooperman stated that a program of spraying had been proposed for the right-of-way, but action by residents had stopped this procedure.

Rossouw questioned the issue of mass movement within the watershed. Appt responded that early indications were that there was only one slide found that could be directly related to the road network. Bates said that he had found some enlarged bank failures through some portions of the watershed, but whether these were the result of fine-grained materials or simply a lot of rainfall could not be quickly determined. Otherwise, mainly natural levels of bank erosion were found in preliminary investigations. Bates felt that the one slide referred to by Appt was probably a minimum of 20 years old and still active and should be dealt with in the near future. This slide could be directly traced to a road drainage on the forest service road above the failure.

Zorn asked Bates how the creek would be classified. He replied that the creek could be broken down into three sections: the fan, a steep mid-section, and a relatively flat plateau at the upper end. He also pointed out that the H60 line had been plotted on the map although it is not required in the updated IWAP procedures. Harvesting above this line is considered to be in a higher snowpack zone which is more likely to be actively melting during flow peaks. Zorn further asked if anything about the watershed could be determined from conditions found at the fan. Bates said that preliminary indications were that the fan was likely post-glacial and relatively stable.

Discussion at this point turned to the purpose of the IWAP with Rossouw pointing out that determining threats to water quality (sediment) and private property (landslides, flooding) were the greatest concerns in assessing the watershed at this level.

Cooperman noted that, to the best of his knowledge, threats to households located near the creek from flooding and/or bank erosion were non-existent. Bates reiterated that the fan was stable. Appt noted that it appeared that 99% of roads in the watershed were built on stable ground and had been developed above any unstable terrain.

The issue of water quality was examined and Cooperman noted that during the 1980's, approximately 10 years ago, the water quality deteriorated very noticeably for a period of a year or two, then gradually improved. In response to a question, he said that this had happened after logging activity in the watershed.

Wysocki questioned whether more harvesting could take place in the watershed without increasing the potential for landslide and sediment problems. Bates responded that more problems are created by road construction related to logging than the actual logging activities. Wysocki also noted the need to

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determine ECA's (Equivalent Clearcut Areas) to which Bates responded that, in his opinion, determination of ECA's may not prove to be a major factor in the assessment of the Corning Creek watershed as there did not appear to be a lot evidence of peak flow problems nor had residents and water users identified flooding as a concern. He restated his opinion that roads cause more problems and that the only solution was to not build them or, at the very least, to upgrade and maintain them.

Rossouw pointed out that range and wildlife issues should be addressed in the hydrologist's report. Wysocki noted that he could (and would) provide some input on this matter. Zorn questioned whether input from a geoscientist was necessary to the study. Bates responded that the objective of terrain mapping was to provide that type of input. Udy reminded the group that terrain mapping was essentially complete for the study area but had just not yet been put into digital format. Once again, Rossouw raised the issue of input from the Indian Bands on any concerns they may have and requested that this be dealt with in the IWAP report.

Bates questioned whether he should comment in his report on specific harvesting proposed in the watershed. Lipsett stated that no approval had yet been given for further harvesting and that blocks proposed were shown on the current Forest Development Plan. He (Lipsett) went on to say that comments could be made regarding the proposed blocks as they stand.

#### Establish Points of Interest and Sub-basin Delineation:

For the purposes of this first roundtable meeting, Rossouw pointed out that a classic watershed delineation had been suggested; that is, from the area covered would include the point of interest where the creek meets the lake and take in the entire watershed. He noted that Corning Creek is a relatively small watershed.

Bates pointed out that initially the watershed was divided into four sub-basins but with the inclusion of the Freeman Brook area, a fifth would be added to the study. The purpose of dividing a watershed into subbasins, he said, was to facilitate focusing future works on a smaller scale. Udy commented that he did not like to see a watershed divided into too many sub-basins as this sometimes had the opposite affect and the focus of a study could be lost. After some further discussion it was proposed that the proposed North and West sub-basins could be consolidated and referenced as the North sub-basin, leaving the so-called East sub-basin, the newly designated Freeman sub-basin, and the Residual sub-basin.

It was decided that the point of interest would be the mouth (lake), but Bates indicated he would include a review of impacts at the main water intake and the Freeman intake.

#### Timelines:

Discussion centred around the fact that further field assessment was likely not possible until next spring and since the Freeman Brook issue had not come to light until today, ideally the project would not conclude until June or July. Udy advised that the current contract stipulated March 15, 1999 as the completion date. Lipsett noted that if the project were to go past that time, there could be funding issues. Bates pointed out that his report could be written within the current scheduled time with a disclaimer to the effect that not all field assessments had been concluded. In taking this course of action, Lipsett noted that the area could then be revisited at some later date to finalize the conclusions and recommendations.

Wysocki suggested that it would be to everyone's advantage to have the draft report available for review at least two to four weeks before the final meeting. Udy suggested that if the draft report was ready for review by March 1, 1999, then the final meeting could be held somewhere about March 22 - 26, 1999 and a final report possibly complete at the fiscal year-end. Silvatech will be responsible for calling the final meeting.

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The meeting concluded at 3:15 p.m. a few final notes to the hydrologist. Rossouw advised that the Department of Fisheries' representative did not attend the meeting because it was felt that there were few fish-related issues. Bates added that he had been playing telephone tag with Bob Harding of DFO and that he would discuss any issues he (Harding) might have with Corning Creek. It was recommended that Bob Costerton of MOE in Kamloops be contacted as he may have snow pack information.

Distribution:

Pierre Rossouw, MOF Roger Wysocki, MELP Jeff Lipsett, Federated Rob Udy, High Country George Zorn, MOF Jim Cooperman Alan Bates, Silvatech Jeremy Appt, Silvatech Dave Nordquist, Adams Lake Indian Band Stuart Adamson, Little Shuswap Indian Band

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### APPENDIX B

Water Survey of Canada - Corning Creek (09LE077) Gauging Records and Analysis FREQUENCY ANALYSIS - LOG PEARSON TYPE III DISTRIBUTION 09LE077 Corning (Lee) Creek

#### SAMPLE STATISTICS

MEAN	S.D.	C.V.	C.S.	C.K.
X SERIES 5.584	1.795	.322	.178	2.417
LN X SERIES 1.669	.336	.201	233	2.710
X(MIN)= 3.050 X(MAX)= 8.230 LOWER OUTLIER LIMIT OF X=	2.497	NO. C	AL SAMPLE S F LOW OUTLI OF ZERO FL	ERS= 0

#### SOLUTION OBTAINED VIA MOMENTS

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DISTRIBUTION IS UPPER BOUNDED AT M= 94.94 LP3 PARAMETERS: A= -.3905E-01 B= 73.87 LOG(M)= 4.553 M = 94.94

#### FLOOD FREQUENCY REGIME

RETURN PERIOD	EXCEEDANCE PROBABILITY	FLOOD
1.003	.997	1.94
1.050	.952	2.96
1.250	.800	4.02
2.000	.500	5.38
5.000	.200	7.06
10.000	.100	8.08
20.000	.050	9.01
50.000	.020	10.1
100.000	.010	10.9
200.000	.005	11.7
500.000	.002	12.7





FREQUENCY ANALYSIS - THREE-PARAMETER LOGNORMAL DISTRIBUTION 09LE077 Corning (Lee) Creek

#### SAMPLE STATISTICS

X SERIES LN X SERIES LN(X-A) SERIES	MEAN 5.584 1.669 2.004	S.D. 1.795 .336 .240	C.V. .322 .201 .120	C.S. .178 233 104	C.K. 2.417 2.710 2.575	
	3.050 3.230 LIMIT OF X=	2.497	NO, OF	SAMPLE LOW OUTI )F ZERO H	1911-1913-1913	

### SOLUTION OBTAINED VIA MAXIMUM LIKELIHOOD

3LN PARAMETERS: A= -2.033 M= 2.004 S= .240

#### FLOOD FREQUENCY REGIME

RETURN PERIOD	EXCEEDANCE PROBABILITY	FLOOD
1.003	.997	1.81
1.050	.952	2.94
1.250	.800	4.03
2.000	.500	5.39
5.000	.200	7.04
10.000	.100	8.05
20.000	.050	8.97
50.000	.020	10.1
100.000	.010	10.9
200.000	.005	11.7
500.000	.002	12.8





Figure 1

FREQUENCY ANALYSIS - GENERALIZED EXTREME VALUE DISTRIBUTION 09LE077 Corning (Lee) Creek

#### SAMPLE STATISTICS

	MEAN	S.D.	C.V.	C.S.	С.К.
X SERIES	5.584	1.795	.322	.178	2.417
LN X SERIES	1.669	.336	.201	233	2.710
L-MOM RATIO	5.584	1.058	.189	.053	032

X(MIN) =	3.050		TOTAL SAMPLE SIZE=	15
X(MAX) =	8.230		NO. OF LOW OUTLIERS=	0
LOWER OU	TLIER LIMIT OF X	= 2.497	NO. OF ZERO FLOWS=	0

### SOLUTION OBTAINED VIA L - MOMENTS

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.....

	DISTRIBUTION	IS	UPPER	BOUNDED	AT	(U+A/K)=	.1802E+02	
GEV	PARAMETERS:		U=	4.77	A=	1.769	K=	.133

#### FLOOD FREQUENCY REGIME

RETURN PERIOD	EXCEEDANCE PROBABILITY	FLOOD
1.003	.997	1.26
1.050	.952	2.65
1.250	.800	3.90
2.000	.500	5.40
5.000	.200	7.18
10.000	.100	8.21
20.000	.050	9.11
50.000	.020	10.2
100.000	.010	10.9
200.000	.005	11.5
500.000	.002	12.2





Mean Report Canadian Hydrological Data © 1997 Environment Canada Station: 09LE77 CORNING CREEK NEAR SQUILAX, BC Latitude: 50°54'54"N, Longitude: 119°32'0"W Region: Vancouver Drainage Area: 26.2 (km²) Parameter: Flow (m³/s)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
1000													
1966		-	-		-	-	0.196	0.106	-	-	÷.	150	
1979		-	-	0.102	1.210	0.311	0.075	0.027	0.037	-	-	273	
1980	-	-	-	-	0.478	0.124	0.083	0.137	0.109	0.193	0.124	-	
1981	0.152	0.178	0.181	0.354	2.070	0.715	0.277	0.095	0.064	0.179	0.235	0.110	0.386
1982	0.063	0.067	0.060	0.286	2.520	1,380	0.427	0.107	0.096	0,131	0.088	0.059	0.444
1983	0.050	0.084	0.336	0.815	2.240	0.881	0.415	0.083	0.083	0.068	0.201	0.094	0.449
1984	0.088	0.080	0.165	0.434	1.280	2.220	0.510	0.066	0.042	0.041	0.033	0.022	0.414
1985	0.020	0.021	0.025	0.440	2.000	0.861	0.100	0.031	0.078	0.135	0.097	0.050	0.323
1986	0.041	0.036	0.131	0.452	2.010	1.040	0.261	0.061	0.056	0.049	0.042	0.035	0.354
1987	0.029	0.034	0.180	0.796	1.650	0.492	0.091	0.033	0.013	0.008	0.016	0.017	0.282
1988	0.014	0.015	0.019	0.822	1.680	0.555	0.132	0.031	0.044	0.110	0.134	0.075	0.304
1989	0.057	0.034	0.046	0.501	1.790	0.672	0.198	0.141	0.121	0.068	0.175	0.114	0.328
1990	0.085	0.065	0.091	0.942	1.250	2.030	0.403	0.064	0.031	0.022	0.056	0.035	0.422
1991	0.038	0.083	0.082	0.576	1.620	0.780	0.203	0.052	0.042	0.018	0.022	0.017	0.296
1992	0.020	0.034	0.125	0.657	1.240	0.359	0.104	0.027	0.026	0.029	0.036	0.024	0.224
1993	0.021	0.020	0.034	0.501	2.490	0.739	0.185	0.120	0.051	0.036	0.027	0.025	0.357
1994	0.032	0.028	0.088	1.020	1.750	0.717	0,165	0.033	0.017	0.021	0.016	0.019	0.327
1995	0.019	0.030	0.058	0.302	1.810	0.846	0.106	0.078	0.026	0.072	0.135	0.122	0.302
1996	0.091	0.086	0.186	0.823	1.530	1.560	0.342	0.080	0.106	0.113	0.201	0.091	0.433
Mean	0.051	0.056	0.113	0.578	1.770	0.924	0.229	0.074	0.062	0.071	0.100	0.061	0.341
Max	0.152	0.178	0.336	1.020	2.520	2.220	0.510	0.196	0.137	0.179	0.235	0.124	0.449
Min	0.014	0.015	0.019	0.102	1.210	0.311	0.075	0.027*	0.013	0.008	0.016*	0.017*	0.224

Extreme Report

#### Canadian Hydrological Data © 1997 Environment Canada Station: 09LE77 CORNING CREEK NEAR SQUILAX, BC Latitude: 50°54'54"N, Longitude: 119°32'0"W Region: Vancouver Drainage Area: 26.2 (km<sup>2</sup>) Parameter: Flow (m<sup>3</sup>/s)

Year		num Instantaneous Vater Discharge		Maximum Daily Water Discharge		Minimum Daily Water Discharge	
							and go
1966		-		-		-	-
1979	¥	120	-	Image: Constraint of the second sec	-		
1980		44		2.12	May 05		-
1981	4.19	22:13 PST	May 25	3.73	May 19	0.029	Sep 1
1982	8.15	23:09 PST	May 17	6.25	100000 Steel	0.038E	1
1983	4.82	18:49 PST	May 24	3.28	May 25	0.0260	las 0
1984	4.37	19:37 PST	May 30	(18) States	100500 C 14050	15 201 CAUSE CO.	Jan 0
1985	5.05	17:30 PST	May 22		5593612475		Dec 3
1986	7.45	18:16 PST	May 26				Jan 0
1987	7.18	02:05 PST	May 01	1.120.000.000	The second second	STATE STATE	Sep 0 Oct 1
1988	7.69	11:38 PST	May 13	5.75	May 13	0.008E	Jan 2
1989	5:54	09:28 PST	May 10	3.78	May 10	0.026B	Feb 0
1990	-	•	-	10.4E	June 11	0.016	Oct 0
1991	3.81	18:31 PST	May 19	2.88	May 19	0.014B	Dec 2
1992	3.07	19:20 PST	May 06	2.29	May 06	0.012	Sep 0
1993	6.25	19:05 PST	May 13	4.84	May 15	0.013B	Feb 1
1994	3.05	20:52 PST	May 09	2.39	May 10	0.007	Sep 2
1995	*	-	-	3.50E	May 15	0.014B	Jan 0
1996	4.91	20:00 PST	Jun 03	3.61	May 31	0.037	Aug 2
1997	8.23	19:00 PST	May 15	6.63	May 15	0.036	Sep 1

### APPENDIX C

Detailed ECA Calculation Tables

#### Upper

Projection Date: Total Sub-basin Area (km<sup>2</sup>): 1999

10

Paget 1 of 3 Date: Jan. 2000

ECA Above Hou	Percent Recovery	Penjected Canopy Beight	Lender Growth	anopy	Main (	Year Harvested	Area Belon R69	Area Ahove H60	Total Area	CP/Block	Mapsheet/Opening Number	GIS Map Ref.#
(ha)	**	(m)	(cm)	Ref. Year	Height (m)		(ha)	(ha)	(ha)			_
52.90	- 0	1,42	56	1997	113	L96		52.9	52.9	665+E	\$255003	101
3.01	90	17.5	tu	1994	17	1.51-53		30.1	30.1		#2N8003	103
4.43	25	3.61	36	1993	0.25	1.91		59	5.9		\$250303-215	104
2.73	90	27.5	.10	1994	27	1.51-53		17.3	27.3		425490	tus.
47.10	-0	137	56	1997	0.25	L95		47.8	47.8		82M080-60	107
93,25	30	6.5	40	1999	63	Bio		186.5	186.5		82M000	100
3.40	n		0	1999		B50		3.4	2.4		8254003	113
1.20	75	7	40	1999	7	B60		4.1	4.8		8254(81)	116
3.32	50	5.34	36	1990	02	L#8,19		6.7	6.7		82M003-222	117
0.01	()	ø	0	1999	0	369		0.01	11.01		12340103	119
11.10	25	3.51	.9	1995	3.33	1,77,78		14.8	14.8		82E092-Ht	321
1.60	n.	n.	4	1998	- 66	ВС		1.6	126 -		#254000	122
1.65	25	3.51	ų	1995	3.15	L77,78		2.2	22		821,1923-01	123
11.40	50		20	1987	4	1.73		0.8	0.8		821,093-02	125
16.58	18	3.51	9	1995	3.15	L77,78		22.1	22,1		\$25,093-01	126
3.75	25	3.31	0	2005	3.13	L77,78		5	5		(2L493-01	127
52.90 3.01 4.43 2.73 47.06 93.25 3.40 1.20 3.32 0.01 1.10 1.60 1.65 0.40 16.58		0 90 25 90 0 90 0 90 0 73 50 0 73 50 0 25 85 55 55 23	1.42     0       17.3     90       3.61     25       27.5     90       1.37     0       6.5     30       0     6.5       3.51     25       0     0       3.51     25       0     0       3.51     25       6.4     50       3.51     25       5.4     50       3.51     25	(cm)     (m)     %       56     1.42     0       10     17.5     90       56     3.61     25       10     27.5     90       56     1.37     0       40     6.5     50       0     0     0       40     6.5     50       0     0     0       40     6.5     30       0     0     0       9     3.51     25       0     0     0     0       9     3.51     25       10     0     1     1       9     3.51     25       20     6.4     59       9     3.51     25	Ref. Year     (cm)     (m)     %       1997     36     1.42     0       1997     36     1.42     0       1994     1n     17.3     90       1994     3.61     25     90       1994     10     27.5     90       1997     54     1.37     0       1999     40     6.5     30       1999     40     6.5     30       1999     40     7     75       1999     40     0     90       1999     0     0     9       1999     0     0     9       1999     0     0     9       1999     0     0     9       1999     0     0     9       1999     0     0     9       1999     0     0     9       1999     0     0     9       1999     0     0     1       1998	Height (m)     Ref. Year     (cm)     (m)     %       113     1997     56     1.42     0       117     1994     10     17.5     90       0125     1993     56     3.61     25       27     1994     10     27.5     90       0.25     1997     56     1.37     0       6.5     1999     40     6.5     390       0     1999     40     6.5     390       1     1979     0     1     0       6.5     1999     40     6.5     390       0     1999     0     0     0       7     1999     40     7     75       0.2     1990     56     5.34     50       0     1999     0     0     0     0       3.15     1993     9     3.51     25     1       4     1987     20     5.4     50       3.15 <td< td=""><td>Height (m)     Ref. Year     (cm)     (m)     %       L96     0.3     1997     56     1.42     0       L51-53     17     1994     10     17.5     90       L91     0.25     1993     36.     3.61     25       L51-53     27     1994     10     27.5     90       L93     0.25     1997     5&amp;     1.37     0       B60     6.5     1999     40     6.5     390       B60     0     1999     40     6.5     390       B60     7     1999     40     6.5     390       B60     0     1999     0     0     0     0       B60     0     1999     60     0     0     0     0       B60     0     1999     60     0     0     0     0       B60     0     1999     0     0     0     0     0       L77,78     3.13</td><td>(ba)     Height (m)     Ref. Year     (cm)     (m)     %       L96     0.3     1997     56     1.42     0       L51.53     17     1994     10     17.5     90       L91     0.25     1993     36     3.61     25       L91     0.25     1993     36     3.61     25       L93     0.25     1997     56     1.37     0       L93     0.25     1997     56     1.37     0       B60     6.5     1999     40     6.5     90       B60     6     1999     0     0     0     0       B60     7     1999     40     6.5     390     &lt;</td><td>(ha)     (ha)     Height (n)     Ref. Year     (cm)     (m)     %       52.9     L.96     n.3     1997     96     1.42     0       36.1     L.51.53     17     1994     1n     17.5     90       5.9     L.91     0.25     1993     56     3.41     25       27.3     L.51.53     27     1994     10     27.5     90       47.8     L.93     0.25     1997     54     1.37     0       186.5     B100     6.5     1999     40     6.5     90       3.4     B60     1     1979     0     1     0       4.4     B60     7     1999     40     6.5     90       4.4     B60     7     1999     0     1     0     0       4.4     B60     0     1999     0     0     0     0       4.4     B60     0     1999     0     0     0     0 <td>(ba)     (ba)     (ba)     Height (m)     Ref. Year     (cm)     (m)     %       52.9     52.9     L96     0.3     1997     56     1.42     0       30.1     30.1     L51.53     17     1994     10     17.5     90       5.9     5.9     1.91     0.25     1993     56     3.61     25       27.3     27.3     L51.53     2.7     1994     10     22.5     90       47.8     47.8     L93     0.25     1997     56     1.37     0       186.5     186.5     B60     6.5     1999     40     6.5     96       3.4     3.4     B60     10     1979     0     10     9       4.8     4.8     B60     10     1979     0     0     9       4.8     4.8     B60     0     1979     56     5.3.4     59       1.48     0.01     B60     0     1999     0     0</td><td>(ba)     (ba)     (ba)     (ba)     Height (m)     Ref. Year     (cm)     (m)     %       66544     52.9     52.9     1.96     n.3     1997     56     1.42     0       30.1     30.1     1.51-53     17     1994     10     17.5     90       5.9     5.9     1.91     0.25     1993     56     3.61     25       27.3     27.3     1.51-53     27     1994     10     27.5     90       47.8     47.8     1.025     0.25     1997     54     1.37     0       186.5     186.5     B10     6.5     1999     40     6.5     90       3.4     3.4     B60     1     1999     0     10     0       4.8     4.8     B60     1     1999     40     6.5     3.14     50       1.48     14.8     B60     0     1999     0     0     0     0     0     0     0     0</td><td>Image: book book book book book book book boo</td></td></td<>	Height (m)     Ref. Year     (cm)     (m)     %       L96     0.3     1997     56     1.42     0       L51-53     17     1994     10     17.5     90       L91     0.25     1993     36.     3.61     25       L51-53     27     1994     10     27.5     90       L93     0.25     1997     5&     1.37     0       B60     6.5     1999     40     6.5     390       B60     0     1999     40     6.5     390       B60     7     1999     40     6.5     390       B60     0     1999     0     0     0     0       B60     0     1999     60     0     0     0     0       B60     0     1999     60     0     0     0     0       B60     0     1999     0     0     0     0     0       L77,78     3.13	(ba)     Height (m)     Ref. Year     (cm)     (m)     %       L96     0.3     1997     56     1.42     0       L51.53     17     1994     10     17.5     90       L91     0.25     1993     36     3.61     25       L91     0.25     1993     36     3.61     25       L93     0.25     1997     56     1.37     0       L93     0.25     1997     56     1.37     0       B60     6.5     1999     40     6.5     90       B60     6     1999     0     0     0     0       B60     7     1999     40     6.5     390     <	(ha)     (ha)     Height (n)     Ref. Year     (cm)     (m)     %       52.9     L.96     n.3     1997     96     1.42     0       36.1     L.51.53     17     1994     1n     17.5     90       5.9     L.91     0.25     1993     56     3.41     25       27.3     L.51.53     27     1994     10     27.5     90       47.8     L.93     0.25     1997     54     1.37     0       186.5     B100     6.5     1999     40     6.5     90       3.4     B60     1     1979     0     1     0       4.4     B60     7     1999     40     6.5     90       4.4     B60     7     1999     0     1     0     0       4.4     B60     0     1999     0     0     0     0       4.4     B60     0     1999     0     0     0     0 <td>(ba)     (ba)     (ba)     Height (m)     Ref. Year     (cm)     (m)     %       52.9     52.9     L96     0.3     1997     56     1.42     0       30.1     30.1     L51.53     17     1994     10     17.5     90       5.9     5.9     1.91     0.25     1993     56     3.61     25       27.3     27.3     L51.53     2.7     1994     10     22.5     90       47.8     47.8     L93     0.25     1997     56     1.37     0       186.5     186.5     B60     6.5     1999     40     6.5     96       3.4     3.4     B60     10     1979     0     10     9       4.8     4.8     B60     10     1979     0     0     9       4.8     4.8     B60     0     1979     56     5.3.4     59       1.48     0.01     B60     0     1999     0     0</td> <td>(ba)     (ba)     (ba)     (ba)     Height (m)     Ref. Year     (cm)     (m)     %       66544     52.9     52.9     1.96     n.3     1997     56     1.42     0       30.1     30.1     1.51-53     17     1994     10     17.5     90       5.9     5.9     1.91     0.25     1993     56     3.61     25       27.3     27.3     1.51-53     27     1994     10     27.5     90       47.8     47.8     1.025     0.25     1997     54     1.37     0       186.5     186.5     B10     6.5     1999     40     6.5     90       3.4     3.4     B60     1     1999     0     10     0       4.8     4.8     B60     1     1999     40     6.5     3.14     50       1.48     14.8     B60     0     1999     0     0     0     0     0     0     0     0</td> <td>Image: book book book book book book book boo</td>	(ba)     (ba)     (ba)     Height (m)     Ref. Year     (cm)     (m)     %       52.9     52.9     L96     0.3     1997     56     1.42     0       30.1     30.1     L51.53     17     1994     10     17.5     90       5.9     5.9     1.91     0.25     1993     56     3.61     25       27.3     27.3     L51.53     2.7     1994     10     22.5     90       47.8     47.8     L93     0.25     1997     56     1.37     0       186.5     186.5     B60     6.5     1999     40     6.5     96       3.4     3.4     B60     10     1979     0     10     9       4.8     4.8     B60     10     1979     0     0     9       4.8     4.8     B60     0     1979     56     5.3.4     59       1.48     0.01     B60     0     1999     0     0	(ba)     (ba)     (ba)     (ba)     Height (m)     Ref. Year     (cm)     (m)     %       66544     52.9     52.9     1.96     n.3     1997     56     1.42     0       30.1     30.1     1.51-53     17     1994     10     17.5     90       5.9     5.9     1.91     0.25     1993     56     3.61     25       27.3     27.3     1.51-53     27     1994     10     27.5     90       47.8     47.8     1.025     0.25     1997     54     1.37     0       186.5     186.5     B10     6.5     1999     40     6.5     90       3.4     3.4     B60     1     1999     0     10     0       4.8     4.8     B60     1     1999     40     6.5     3.14     50       1.48     14.8     B60     0     1999     0     0     0     0     0     0     0     0	Image: book book book book book book book boo

#### Upper

Projection Date: Total Sob-basin Area (km<sup>1</sup>): 1999

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Page 2 of 3 Date: Jan 2000

GIS Map Ref.#	Mapsheet/Opening Number	CP/Block	Total Area	Ares Above H60	Area Below H60	Year Harvested	Main	Canopy	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Abuve 1860	ECA Below H60	Tetol ECA	Comments
			(ba)	(bu)	(ha)		Height (m)	Ref. Year	(cm)	(m)	*	(ha)	(ha)	(hu)	
			_									247.15	0.00	247.15	Sub-totals from page 1
124	\$21,093-02		5.1	5.1		L,73	4	1987	20	6.4	30	2.55	0,00	2.55	
124	\$25.093		5.3	53		BSO	6.5	1999	-40	63	50	2.65	0.90	2.65	Burn, airphoto interpretation 1994
124	\$26,003		n.1**	11.05		L38	19	1994	- ŋ	19.43	- 90	4031	0.00	0.01	**Logged 40% in 1938, airphoto interpretation 1994
137	\$2L003		24.8**	12.4		1.51	19	1994	9	19.45	90	1.24	0,00	1,24	**Loggod 40% in 1998, airphoto interpretation 1994
131	\$2L093		19.1	19.8		B60	9.6	1998	56	10.16	90	1.98	0.00	1.98	Burn, airphoto interpretation 1994.
134	121,093	_	0.8	0.1		B60	9.6	1998	36	1036	90	0.04	0.00	0.08	Burn, airphoto interpretation 1994.
644	#2L093		1.8**	4.4		1.58	28	1994	40	311	90	0.44	11.00	0.44	**Logged 40% in 1958, airphoto interpretation, 1994.
146	821.093-04		43.6	43.6		£77	13	1994	56	13.8	- 99	4.36	1.01	4,36	NSR, Airphoto Interpretation 1994, size visit 1999.
142	82(,119,)	-	139.h	139,6		B50	6,5	1993	40	6.5	50	69.80	0.00	69.80	Burn, airphoto interpretation 1994
143	821.097		16,4	10.4		B60	6.5	1999	40	6.5	50	8,20	0.00	1.29	Burn, aliphoto interpretation 1994.
148	821,023		4.7	. 40		B60	4	1999	40	- 4	25	3.53	0.00	3.93	Bern, airphoto interpretation 1994
191	\$21,013,413		20.2	20.2		B60	4	1999	69	4	25	15.15	0.50	13.15	Burn, Airphoto Interpretation 1994, site visit 1999.
149	#21.093-05		19.4	19.4		1,78	n.	1994	40	12	90	1/94	RBI	1.94	
153	121.003		4.6	4.6		B60	6.5	1999	40	6.5	50	230	30.00	2.90	Burn, aitphoto interpretation 1994
157	#2L/993		12.3	12.2		L	t R	1994	60	21	90	1.23	0.00		Logged 50%, airphoto interpretation 1994, unknown- harvest date
											Culture and	101.00	10.005	101.00	and the second se

Sub-totals 352,60 0,00 362,60



Upper

Projection Date: Total Sub-hasin Area (km<sup>1</sup>):

1999

10

Page 3 of 3 Date Ian 2000

GIS Map Ref.#	Mapsheet/Opening Number	CP/Block	Total Area	Area Abore 1169	Area Below H60	Year Harvested	Main	Cenopy	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Altere Hill	ECA Below H60	Total ECA	Comments
	÷		(ha)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	*	(ha)	(ha)	(ha)	
												362.60	0.00	362.60	Sub-totals from page 2
139	#2L093-30		11.6	11.6		L58	11	1980	14	13.66	90	1.36	0.00	1.16	
166	82L(93-81		4.3	43		1.95	0.25	1995	20	0.85	0	430	0,00	4.30	
102-	82L093-82		4.4	4.4	_	1.95	0.25	1996	20	0,85		4.40	10.00	4.40	
tii4	82L093		1.1**	4,05		ī,	25	1994	20	26	90	0.41	irou	0.41	<sup>44</sup> Logged 30%, alighous interpretation, 1994, unknown barwest date.
(72	821.093-29		73	73	_	1.82	14	1928	19	13.71	50	0.73	0.001	11.73	
								_							
-															
				-											
		_													
-															
											Sub-totals	373,60	0.00	373.64	
										1	Total Perce	STOL .		37.3455	

Total Percent ECA 37,36%

East

Projection Date: Total Sub-husin Area (km<sup>4</sup>): 1999

5.9

Page 1 of 2 Date: Jan. 2010

GIS Map Ref.#	Mapsheet/Opening Number	CP/Block	Total Area	Area Above 1160	Area Below H60	Year Harvested	Main	Салору	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Above Hiso	ECA Below H60	Total ECA	Comments
			(ha)	(5.4)	(ha)		Height (m)	Ref. Year	(cm)	(m)	٩٤.	(ha)	(ba)	(84)	
136	821,023-03		2.6	2.6		B90	9.6	1999	36	9.6	90	11.26	0.08	0.26	Burn, Airphote Interpretation 1994, alte visit 1999
135	121,023-03		4.1	*1		Boll	6.5	1999	40	6.5	50	4.05	0.00	4.05	Burn, Aisphota Interpretation 1994, she visit 1999
130	821,093-03		9,5	9.5		860	9.6	1999	56	9.6	.90	0.95	0.100	0.95	Burn, Airphoto Interpretation 1994, site visit 1997.
133	#2L093-03		0.5	0.5		Boo.	26	1999	36	9,6	- 390 C	.0.85	0,160	0.05	Burs, Airphoto Interpretation 1994, site visit 1999.
139	R21,093,00		17.4	17.4		860	6.5	1999	40	6.5	30	8.70	0.00	8.70	Born, Airphono Interpretation 1994, site visit 1999
329	121,093-00		45.0	45,9		869	9.6	1999	54	9.6	90	4.59	0.00	4.59	Burn, Airphoto Interpretation 1994, site visit 1999
145	421.093-40		76.4	76,4		B(4)	6.5	1999	40	6.5	fa	34.29	B.00	38.20	Barn, Airphoto Interpretation 1994, site visit 1999
150	#2L/I9/3-03		0.02	0.02		L.78		1994	20	12	201	0.00	0,00	4000	
165	#2L193413		6.2**	23		3L	25	1994	20	26	.90	0.31	0,00		**Logged 30%, Airphoto Interp. 1994, unknown hirver date
161	\$21,093.06		13.5	13.5		L80	13	1994	20	16	90	1.35	H DIT	1.35	
163	\$25,093,82		311.2	30.3		1,95	0.25	1995	20	0.85	0	30.50	0.00	30.50	
171	42Le93		7**	3.5		L	25	1994	20	26	-90	0.95	0.00	0.35	**Logged 30%, Airpheto Interp. 1994, unknown hars eu date.
JAK .	821.093		45.7**	22.85		1,	25	1994	20	26	90	2.29	8.06		** Logged 30%. Airphoto Interp. 1994, unknown barves date.
124	821,093-29		27.7	27.7		L82	14	1996	19	15.71	90	2:77	0.00	2.77	Burn, Airphoto Interpretation 1994, site visit 1999.
\$75	821,093		30.7	311.7		L	23	1994	20	26	90	3.07	0.00		Airphoto Interpretation 1994, unknown harvest data
186	821.003-70		28.7	21.7		1,94,95	0,2	1997	20	0.6	0	28.70	1000	24,70	
											Sub-totals	126.14	0.00	126.14	

East

Projection Date:

Total Sub-hasin Area (lon1):

1994

5.9

Average GIS Map Mapsheet/Opening Ares Belas Year Area Projected Percent ECA Above ECA Below CP/Block Total Area Main Campy Leader Number Tetal ECA Comments Ref.# Above H50 Harvested 1160 Canopy Height Recovery 1160 1160 Growth (ha) (hu) (hs) Height (m) Ref, Year (cm) (m) 76 (ha) (ha) (he) 126.14 11.005 126.14 Sub-totals from page 1 \*\*Lagged 30%, Airphoto interp. 1974, unknown harvest 178 121,193 92.2\*\* 26.1 30 1994 1. 20 31 .90 2.61 11.00 2.61 date. \$20.093-36 196 22 22 1.73,74 12 1994 20 13 -90 0.00 2.20 2.20 103 82(0)9/3+26 1.8 1.8 1.74 2.8 1991 12 4 25 1.35 0.00 1.35 Sub-totals 130,10 2.20 132.36

Page 2 of 2 Date: Jun. 2900

Total Percent ECA 22.42%

#### Ponds

Projection Date: Total Sub-hasin Area (km<sup>1</sup>):

1999

2.7

Page 1 of 2 Date: Jan. 2000

GIS Map Ref.#	Mapsbeet/Opening Number	CP/Block	Total Area	Area Above H60	Area Below E60	Year Harvested	Main (	Canopy	Average Leader Growth	Projected Campy Height	Percent Reemery	ECA Above H60	ECA Below 1160	Total ECA	Comments
			(ba)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	- 54	(ha)	(his)	(ha)	
149	121,093		0.3	11.3		L30	16	1994	20	17	.90	0.03	0.00	0.99	Airphoto interpretation 1994.
191	\$2L(93-26		0,3	0.3		674	28	1991	15	41	25	0.23	0.191	0.25	
192	¥2L093-26		2.2	2.2		1.74	2.8	1991	15	4	25	1.65	0.110	1.65	
198	\$21,093-37		2.6	2.4		L74	2.2	1991	211	3.8	25	1.95	0.00	1.95	
2014	821.092-46		2.9	2.9		1.74	0.3	1999	50	0,3	. 0	2.90	11.01	2.90	NSR on Forent Cover, to be planted in 1999.
200	R21.093-86		2,1	2.3		1.94	0.3	1999	50	0.3	20	230	11.00	2.30	NSR on Forest Cover, to be planted in 1999.
205	821.093-36		2,5	2.5		1.94	ιά.	1999	30	113	0	2.50	0.00	2.59	NSR on Forest Cover, to be planted in 1979.
207	K21103-86		1.2	1.2		1.94	0.3	1999	50	10		1,20	0.10	1.20	NSR on Ferent Cover, to be planted in 1999
212	\$21.093-86		0.5		11.5	1.94	0.3	1999	50	0.3	- 0	0.00	0,10	0.50	NSR on Forest Cover, to be plasted in 1999.
216	\$2L093-86	_	0,1		0.1	1,94	0.3	1999	50	:0,3	þ	0,00	20,30	a;10	NSR on Forest Cover, to be planted in 1999.
208	821,093-86		5.5		5.5	L94	0.2	1999	50	0.3	0	0.00	5.50	5.50	NSR on Forest Cover, to be planted in 1999
205	821093-37		14		1.2	L74	22	1998	20	3.8	23	0,00	8.90	0.90	
215	82L093-86		10		11.8	1.94	113	1999	đi	n.1	п	0.00	0.80	0.80	NSR on Eurost Cover, to be planted in 1999
214	N2L093-34		23		93	L74	10	1991	50	14	90	0.00	11.93	11,93	
220	821.093-40		1006		0.05	1.74	9.5	1991	50	13.5	90	0.00	0.01	11.01	
											Sub-totals	12.76	8.74	21,49	

#### Ponds

Projection Date:

Total Sub-havin Area (km2);

1999

2.7

Commenta	Total ECA	ECA Below H60	ECA Above H60	Perceni Recovery	Projected Canopy Height	Average Leader Grawth	anopy	Main C	Year Hervested	Area Below H50	Area Above H60	Total Area	CP/Block	Mapaheet/Opening Number	GIS Map Ref.#
	(ha)	(ha)-	(ba)	%	(m)	(cm)	Ref. Year	Height (m)		(ha)	(fin)	(ba)			
ulo-totals from page 1	21,49	8.74	12.76												
	0.62	\$1.62	0.110	90	13.5	.50	1991	9.5	1.74	6.2		6.2		821,093-40	221
	0.112	0:02	0.00	90	13.5	50	1991	9.5	1.74	0.9		0.9		R21,093-411	223
	0.11	0.11	rf.co.	90	03	50	1991	0.5	L74	L.I		1.1		#21,093-40	225
C Hydro right of way:	13:30	13.30	0.00	0	0	ø	1999	0		13.3	1	13.3		621.093	224
photo interpretation 1994, unknown harves	6.19	6.19	0.06	90	10	20	1994	12	L	61,9		61.9		121.093	226
rphoto interpretation 1994, anknown harves	.0.11	0.11	0.00	90	18	20	1994	17	4	1.1	_	1.1		421.093	2.12
ephoto interpretation 1994, unknown harves	3,87	5.87	0.00	90	(3	20	1994	12	4	51.7		58.7	_	\$21,093	230
R im forest cover.	1.95	3.91	0.00	0	n	20	1997	0	L71	3.9		3.9	_	821,093-52	236
							-								
			_												_
	51.68	38.93	12.76	iub-tetala											

Page 2 of 2 Date: Jan 2000

19,14%

Total Percent ECA

Residual

Projection Date: Total Sub-basin Area (km<sup>2</sup>):

т

1999 12,3

-

GIS Maji Ref.#	Mapsheet/Opening Number	CP/Block	Total Area	Area Ahove 1160	Area Belaw Hon	Year Harvested	Main (	Івлеру	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Above Hst	ECA Below H60	Total ECA	Comments
			(ba)	(his)	(ha)		Height (m)	Ref. Year	(cm)	(m)	**	(ba)	(ha)	(ha)	
244	\$21,093		0.7		0.7		.0	1999	.0	6	- m - 21	0.00	0.70	0.70	Urbas
243	321.093		8.1		- 10		0	1999	0	0	0	0,00	1,10	1.10	Urhae.
239	821.093		20		20		Ŭ.	1999	0			0,00	20.00	20,09	Cultivated.
240	821.093		8.6		0,6		0	1997	0	0	0	0.00	0.60	0.64	Urban
23.8	82L#93		72**		3.6		26	1994	20	27	.90	0.00	0.36	0.26	**Logged 50%, private property.
237	821.093-50		9,3		9.3	D14	173	1925	20	16.1	90	0.00	0.93	4.93	
235	\$21,093		16.5		16.3	L	12	1994	20	13	90	0.00	1.65	1.65	Airphoto interp. 1994, urknown harvest date.
234	\$21(93		3.1		5.1	4	12	1994	20	13	98	0.00	0.51	0.51	Airphota interp. 1994, unknown harvest date.
233	\$2L/993		9,2		9.2	L	17	1994	20	18	90	0.90	0.92	0.92	Airphoto interp. 1924, unknown harvest date
29	#20/93	_	0.1		0.3	t,	12	1994	20	12	90	0.00	0.01	0.01	Airphoto interp. 1994, unknown harvest date.
229	#21093		73		7.3	t	12	1994	20	13	50	0.02	1(7)	0.73	Airphoto Interp. 1994, unknown harveat date.
227	#21.093		4.4		4.4			1999	ø	0	η	0.01	4,40	4,40	BC Hydro right of way.
228	#21.093		15.6	-	15.6			1999	.0	0		0.01	15.01	3330	BC Hydro right of way
222	¥21,093-60	_	1.5		8.5	1.81	0.2	1991	20	1.8	0	0.00	8,50	x 30	
219	\$21.093-41		29.7		29.7	1.78	2.1	1992	20	35	25	0.04	22.28	22.28	
218	K21.093-41		16.t		161	1.08	21	1998	20	2.3	- 10	0.10	16.10	16.10	

Page 1 of 1 Date: Jan 2000

Projection Date: Total Suli-Junin Area (km<sup>2</sup>):

Page 2 of 3 Date: Jan. 2000

GIS Mag Ref.#	Mapshort/Opening Number	CP/Block	Total Area	Area Above Hot	Area Below 1140	Year Harvested	Main (	anopy (	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Above H60	ECA Belaw H60	Total ECA	Comments
_			(ha)	(ba)	(ha)		Height (m)	Ref. Year	(cm)	(m)	%	(he)	(ha)	(ha)	
												0.00	101.39	801.39	Sub-totals from page 1
210	#2L003-59		8.2		1.2	1,83	2.1	1928	20	23	ji	0.110	1.20	8.20	
197	\$21,093-35		16,1		16.1	1.80	17	1994	20	18	90	0.00	1.61	1.63	Airpheto interpretation1994.
204	12L0/3-34		- 0		. 6	LSI	.11.7	1994	20	1.7	- 0	1000	6.00	6.110	Polygon is split, small section logged 10% in 1985
199	#2L/03-38		36.4		26.4	Las	n2	1993	20	1,4	0	0.00	26,40	26.40	
195	42L093-34		14.2		14.2	LNI	0.7	1994	10	1.2		0.00	14,20	14,20	
182	#21.093-33		21.6		21.6	L77,79	3.8	1993	20	4.5	25	0,09	16.20	16,20	
183	¥21,093-33		<b>π.4</b>		8.4	L.77,79	3.8	1995	20	\$.6	25	0,00	0,30	0,30	
182	821,093-33		0.4		0.4	1.77,79	3.1	1995	20	4.6	25	0.00	oto	0.30	
213	822,093-38		3.1	i Ti	5.1	L74	10	1991	30	14	90	0.00	11.51	0.51	
202	\$21,093-36		4.5		4.5	L73.74	12	1994	20	13	911	0.90	0.45	0.45	
176	121,093-29		7	7		1.82	14	1990	19	13.71	90	11,70	0.00	0.70	
179.	121/20-04		n.ut :		0.01	L78,29	6.4	1996	10	417	0	icoi	0.01	0.01	
173	821,092-34		11.05	11.9		1.71,79	ñ4 .	1996	200	0.7		11.99	0.90	11.99	
184	\$21.00-33		2.2	2,2		1,77,79	3.4	1993	20	4.6	25	1.65	0.00	1.65	
181	K2L163-33		17.4	17.4		1.77,79	3.8	1995	29	4.6	25	13.85	0.00	13.05	
190	121.023-04		1,6	t;0		Lat	0.7	1994	49	1.2	0	1.60	0.00	1.60	
											Sult-Initals	28.90	175.57	204,47	

1999 12.3

#### Residual

GIS Map Ref.#	Mapshret/Opening Number	CP/Block	Tetal Area	Ares Above 1160	Area Belass B60	Year Harvested	Main	Canopy	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Above II60	ECA Below Hou	Tutal ECA	Comments
			(ha)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	*	(?=)	(hu)	(ba)	
												28.90	175.57	214.47	Sub-tatals from page 2
185	K2L(0)3		11	- ii		1,98	0.3	1999	20	0.3		1,38	0.00	E30C	Will be plasted in 1999.
300	\$28,093		.10,2	0.2	_	L98	0.32	1999	20	ii.3	0	11.20	0.00	0.20	Will be plasted in 1999.
177	QL093-32		10.9	10.9		LRI	10.9	1995	14	11.36	-90	1.09	0.60	1.675	
138	821.093-30		\$6.8	86.R		1.58	11	1980	14	13.66	90	1.68	0.00	8.68	
171	\$21,003	_		- i		1.	17	1994	20	11	911	0.80	0.00	0.00	Airphoto interpretation, 1994.
169	\$2L093-30		2.5	2.5	_	1.51	-11	1980	14	13,66	.901	0.25	0,010	0.25	
167	1215(93-30		30.1	0,1		1.58	11	1980	14	13.66	90	0.00	6010	0.01	
101	121.093-30		82	0,2		1.51	11	1980	10	12.9	90	0.02	0.00	0.02	
154	42L093-40		74	7,4		B60	3,4	1991	10	4	25	5.55	0.02	5.55	Barn, aiphoto interpretation 1994, site visit 1999
_			_												
			7												

Sub-intals 46.60 175.57 222,17

Upper

Projection Date: 2000 Total Sub-husin Area (km<sup>2</sup>):

111

Fige 1 of 3 Date: Jan. 2000

GIS Map Ref.#	Mapsheet/Opening Number	CP/Block	Total Area	Area Aluve Hól	Area Below Iton	Year Harvested	Main (	Canopy	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Aboye 1160	ECA Below Hón	Total ECA	Comments
			(ha)	(ha)	(ba)		Height (m)	Ref. Year	(cm)	(m)	14	(ha)	(ha)	(ha)	
101.0	#250003	663-1	52.9	52,9		1,967	0.3	1997	36	1,98	i o	52,90	00.00	12.90	Planied 1997.
103	N2M0IO		30.1	30.1		1.51-53	17	1994	10	17.6	90	3.01	0.00	3.01	Airphota interpretation 1994.
\$114	82M00-215		3.9	5.0		1.91	11.25	1993	36	4.17	25	4.43	0,00	4,43	
tins	R2M000	_	27.3	27.3	_	151-53	27	1994	10	27.6	390	2,73	0,00	2.75	Airphoto interpretation 1994
107	K2MI813-68		47,8	42.1		6.95	0.25	1997	36	1:03	.0	47.80	9.00	47.90	
int	K2M003		186.5	186.5		BSU	6.5	1999	40	6.9	50	93.25	10.00	97.25	Burn, airphoto interpretation 1994
113	\$2M003		3/4	3.4		B60		1999	0	0		3.40	0.00	3,40	NSR, airphoto interpretation 1994, uta visit 1999
116	#2M003		4.1	4.8		B60	7	1999	40	7.4	73	£ 20	0.00	1.20	Burn.
112	#2MI003-222		6.7	6.7		L\$8,89	0.2	1996	56	5.8	50	3.35	0.00	3.35	Planted 1990
119	#25d0603		11.01	6.01		BIR		1999	0		9	ant	1.01	11.01	NSR, airphota interpretation 1994, site visa 1999
121	\$21,193-01		IERC:	14.1		L77,78	3,15	1995	9	3.6	25	11,10	0.001	11.10	
122	#2M003		1.6	1.6		<b>B</b> 60	ï	1998	0	0		1,65	0.00	14.8	NSR, airphoto interpretation 1994.
123	R21/093-01		2.2	2.2		1,77,78	3.15	1925		3.6	25	1.65	0.00	1.63	
124	K21.(199.02		0.8	11.1		1,73	4	1987	20	6.6	30	0:40	0.00	0.40	
126	\$25,093.001		22.1	22.1		1.77,78	3.15	1995	9	3.6	25	16.58	iting :	16.58	
127	\$20.093-04		3	3		L77,78	3.15	1993	9	3.6	25	3.75	0.00	3.73	
								- All and a state			iuh-totals	247.15	8,110	247.15	

Upper

Projection Date: 20001 Total Sub-basin Area (km<sup>2</sup>):

10

Page 2 of 3 Date Jan 2000

GIS Map Ref.4	Mapabeet/Opening Number	CP/Block	Total Area	Arca Ahove 1160	Area Below H60	Year Barvested	Main	Canopy	Average Leader Grewth	Projected Canopy Height	Percent Recovery	ECA Abave If60	ECA Below Hito	Tetal ECA	Comments
			(214)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	*	(hu)	(hu)	(ha)	
												247.13	0.00	247.15	Sub-totals from page 1
128	#2Le93-02		5.1	31		1.73	4	1917	20	0.0	30	2.55	0.00	2.55	
124	82L093		33	3,3		B60	6.5	1999	40	6.9	50	2.65	-0.00	2.65	Burn, airphoto interpretation 1994
138	821.093		0.1**	-0.08		1.51	19	1994	9	19,54	90	0.01	0.00	0.01	**Logged 40% in 1958, alphoto interpretation 1994
137	821,093		24.4**	12.4		1.51	19	1994	9	19.54	90	1.24	0.110	1.24	**Logged 40% in (959, airphoto interpretation 1994
131	82L093		19.8	19.8		B10	9,6	1998	54	10.72	- 60	1.98	11,00	1.94	Barn, alephoto interpretation 1994.
134	\$21,1923		17.78	0.8		B40	9.6	1998	56	10.72	.90	11.08	0.00	10.08	Burn, airphote interpretation 1994.
144	82L(r7)		1.8**	4.4		L.58	21	1994	40	30.4	390	0.44	10.00	11.44	**Logged 40% in 1958, airpheto interpretation 1994
146	121,093-04		43.6	43.6		1.77	-10	1994	36	1636	90	4.36	0.00	4.36	NSR. Airphoto Interpretation 1994, nite visit 1999
142	121,093		139.6	139.6		860	6.5	1999	4b	6.9	50	69.00	0.0	69.80	Birn, airphoto interpretation 1994,
143	#2L09)		15.4	16.4		Bio	6.5	1999	40	6.9	50	8.20	0.00	8,20	Burn, siephoto interpretation 1994
148	821.093		42	4.7		860	- 4	1999	40	4.4	28	3.53	0.00	3.53	Dont, alephoto interpretation 1994
121	K2L023-10		202	20.2		B60	4	1999	60	4.6	25	15,15	0.00	15.15	Burn, Airphoto Interpretation 1994, size visit 1999.
149	821,0193-05		19.4	19.4		1.78	.11	1994	ān	13.4	90	1.94	11.00	8.94	
193	#21.093		4.6	4.6		Bóli	6.5	1999	40	6.9	50	2.30	0,00	2,30	Burn, sirphoto interpretation 1934, Logged 50%, airphoto interpretation 1994, unknown
157	#21.093		12.3	12.3		L	18	1994	60	21.6	- 90	1.23	0.00	1.23	Logged 50%, airplicia interpretation 1924, unknown harvest date
											Sub-totals	362.60	0.00	362,60	

#### Upper

Projection Date: 2000 Total Sub-basin Area (km<sup>2</sup>):

111

Page 3 of 3 Date: Jan 2000.

GIS Map Ref.#	Mapsheet/Opening Number	CP/Block	Total Area	Area Alune H6b	Area Below H60	Year Harvested	Main	Canopy	Average Leader Growth	Projected Canapy Height	Percent Recovery	ECA Above H60	ECA Belaw If50	Total ECA	Comments
			(ha)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	- 19	(hu)	(ha)	(ha)	
				1	_							362,69	0:00	362,60	Sub-totals from page 2
139	82L093-341		11.6	31.6		1.58		1940	14	13.8	- 90	1.16	0.000	1.16	
1(6	821,093-81		43	43		1.95	0.25	1996	20	1.05	'n	430	0.10	4.50	
162	\$21,193+82		4.4	44		6.95	0.25	1996	20	1.05	0	4.40	0.00	4,40	
164.2	821,093		8.1**	4.05		L	23	1994	20	26.2	90	0.41	nión		**Legged 30%, airphoto interpretation 1994, unknown harvest date.
172	\$3L093-29		7,3	7,3		1.82	14	1990	19	15.9	91	0.73	0.00	0.73	
_		_		_			_								
_							_								
_															
			[].												
_			1												
			_												
											Sub-tatals	373.60	0.00	373,69	
											Coral Person	Yallow I		12.164	

Total Percent ECA 37.36%

.

#### East

Projection Date: Total Sub-hasin Area (km<sup>2</sup>): 2000

5.9

Page 1 of 2 Date: Jan. 2000

GIS Map Ref.#	Mapubect/Opening Number	CP/Block	Total Area	Area Above B60	Area Below 1160	Year Harvested	Main	Салору	Average Leader Growth	Projected Canopy Height	Percent Recevery	ECA Above Hito	ECA Below Hsa	Total ECA	Comments
			(ha)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	*	(Pro)	(fu)	(ha)	
136	921.093-03		2.6	2.6		Birit	9.6	1999	56	10.16	90	0.25	0,00	0.26	Burn, Airphoin Interpretation 1994, site visit 1997.
125	¥21.073-03		8,1	8.1		<b>B60</b>	6.5	1999	40	6.9	30	4.05	0.00	4.03	Burn, Airphose Interpretation 1994, size visit 1999.
120	421,093-03		U.5	9.5		B60	9.6	1999	56	10.16	90	0.05	0.00	0.95	Barn, Airphota Interpretation 1994, site visit (999.
133	826.093-03		0.5	0.5		B60	9.6	1999	36	30.36	90	0.05	0.00	1.05	Barn, Airphoto Interpretation 1994, site visit (999-
139	821,093-40		17.4	17.4		B60	6.5	1999	40	6.9	50	8.70	0,00	K.70	Burn, Airphoto Interpretation 1994, and visit 1999.
129	821.093-03		45.9	45.9		1960	9,6	1999	56	19.16	90	4.59	0.00	4.59	Burn, Aughons Interpretation 1994, site visit 1999.
145	821,093-03		76.4	76.4		860	6,5	1992	40	6.9	50	28.20	100	38.20	Barn, Airphoto Interpretation 1994, eile viait 1999.
150	821.025-05		0.02	0.02		L78	ाः	1994	20	12.2	- 50	100	0.00	10.00	
162	K21.093-03		6.2**	3.1		É.	25	1994	20	26.2	90	0.31	0.00		**Legged 30%, Airphoto Interp. 1994, usknown harven date.
161	\$20,093-m		13.5	13.5		1.80	15	1994	20	16.2	90	1,35	9,00	1.35	
163	8.2L/MJ7-N2		38.5	30.5		£.95	11.25	1996	29	1.05	0	30.50	0.00	30.50	
170	\$21,093		7	3.5		L	25	1994	20	25.2	- 90	0.35	1000	11.35	**Logged J075, Airphoto Interp. 1094, usknown haeven date.
168	121.093		45.7**	223/3		L2	25	1994	20	26.2	.90	2.29	0.00		**Logged 30%, Airphoto Lucop. 1994, anknown harven date.
174	#21.093-29		27.7	27.7		1.82	14	1996	19	15.9	-911	2.77	\$ un	2.77	Burn, Airghous Interpretation, 1994, size visit 1999.
175	#21.093		30.7	20.7		L.	25	1994	20	26.2	.911	3.117	9,110		Airphoto Interpretation 1994, unknown harvest date
186	M21.093-54		28.7	28.7		1.94(9)	0.2	1997	20	11.8	11.5	28.70	11.00	28.70	
											Sub-totals	126.14	0.00	126.14	

East

Projection Date:

Total Sub-basin Area (km1):

2000

5.9

Date Jan 2000 Average GIS Map Mapsheet/Opening Area Above 1160 Area Below Your Projected ECA Above CP/Block Percent ECA ficlaw Total Area Main Canopy Lesder Total ECA Ref.# Harvested Comments Number HER. Canopy Height Recovery Hon 1150 Grewth (hu) (ha) (ha). Height (m) Ref. Year (cm) (m) 54 (ha)-(ha): (54) 126.14 0.00 Sub-totals from page J 126.14 \*\*Logged 30%, Airphoto interp. 1994, unknown barvost 178 X2L093 52.2\*\* 26.1 30 1. 1994 20 31.2 90 2.01 0.00 2.61 date. 196 821.093-36 22 22 L73,74 12 1994 211 13,2 .90 0.00 2.20 2.20 193 \$21,093-20 1.02EK 1.74 2.8 1991 15 4.15 25 1.35 0.00 1:35 Sub-totals 130,10 2.20 132.30

> Total Percent ECA 22.42%

Fage 2 of 2

#### Ponds

Projection Date: Total Sub-basin Area (km²): 2000

2.7

Page 1 of 2 Date Jan 2000

HS Map Ref.∉	Mapsheet/Opening Number	CP/Black	Tatal Area	Area Abuve 1160	Arva Below H60	Year Harvested	Main (	Склару	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Abme Itio	ECA Below B60	Total ECA	Comments
			(hu)	(hu)	(he)		Height (m)	Ref: Year	(cm)	(m)	**	(ba)	(bs)	(ha)	
189	\$21,023		10	0.3		130	16	1994	211	17.2	90	0.01	4000	0.03	Airphoto interpretation 1994.
191	821.093-26		0.1	11.3		L74	2.8	1991		4.15	25	0.23	-0.09	30.23	
192	R2L(193-26		2.2	2.2		1,74	2.8	1993	15	4.15	23	1.65	0.00	1,68	
178	\$21,093,37		2.6	2.6		L.74	2.2	1991	20	4	25	1.95	() (N)	1.93	
201	121.093-86		2.9	2.9		L/14	113	1959	30	17.8	n	2.90	11.00	2.90	NSR on Forest Crister, to be planted in 1992.
200	121,093-86		2.3	2.3		L94	11.3	1999	50	304	u	2,30	0.00	2.39	NSR on Forest Cover, to be planted in 1999.
206	\$21,093+86		23	2.5		1.94	113	1999	50	100	ж.	2.50	0,00	2.59	NSR on Forest Cover, to be planted in 1999
107	R21.093-86		1.2	1.2		1.94	0.3	1999	50	11.8	ï	1.20	0.00	1.20	NSR on Fotest Cover, to be planted in 1999
212	821.093-86		0.5		0.5	1.94	03	1999	50	0.8	. 0.	11.60	11,50	11,50	NSR on Forest Cover, to be planted in 1999
216	821.093-85		0.1		0.1	1.84	9.3	1999	50	0.8	0	1.00	0.10	0.10	NSR on Forest Coxer, to be planted in 1919.
2418	821,025-80		5.5		3,5	1.94	:0,1	1999	50	0.1	0	0.00	5.50	5.50	NSR on Forest Cover, to be planted in 1999.
205	821,093-37		1.2		1.2	L74	2.2	1991	28	4	25	0.09	0.90	0.99	
215	821.093-86		U.R		1	1,94	113	1999	50	11.8	0	15.169	0.80	0.80	NSR on Forest Cover, to be planted in 1999.
214	82L(P)3-38		9.3		9.7	L74	10	1991	50	14.5	99	0.00	.0.93	10.93	
220	#20.093-40		:0.06		0.05	L74	9.5	1991	50	14	- 90	11.00	10,01	101	
											Sub-totals	12.76	6,74	21.49	

Ponds

Projection Date: Total Sub-basin Area (km<sup>1</sup>): 2000

2.7

Page 2 of 2 Date Jan 2000

GLS Map ReL4	Mapsheet/Opening Nomber	CP/Block	Total Area	Ares Above 1160	Arra Belon H50	Year Harvested	Main	Canopy	Average Lender Growth	Projected Canopy Height	Percent Recovery	ECA Abaye Hso	ECA Below H50	Total ECA	Comments
		l	(ba)	(ha)	(ba)		Height (m)	Ref. Year	(cm)	(m)	*4	(ha)	(ha)	(ha)	
												12.76	8.74	21.41	5ub-totals from page 1
221	X2L093-40		6.2		6,2	1,74	93	1991	511	14	90	9.90	11.62	0.62	
223	K21.093-40		109		0.9	1.74	2.5	1991	50	14	90	0,00	0.09		
225	82L093-40		-1.1			1,74	9.5	1991	50	- 14	90	0,00	2011	0.11	
224	\$2L003		03		13.3		π	1999	0	0	0	0.00	13.30	13.30	BC Hydro right of way:
226	#2L003		61:9		61.9	L	12	1994	20	13,2	\$0	0.06	6.19	6.19	Airphoto interpretation 1994, unknown haevest date
212	\$2L093	_	11		E	L	17	1994	20	18.2	90	0.00	0.11	0.3.1	Airphoto interpretation 1994, unknown hars est date
230	621.093		58.7		58.7	L	12	1994	20	13:2	90	0.00	5.87	5.87	Airphota interpretation 1994, anknown harvest date
236	821,093-52	_	3.9	_	3.9	1.71	0	1997	័ព	0	U	0,00	3,90	3,99	NSR un forest cover
								_	_			-			
									-						
									_						
					_						Carlos Inc.			Course 1	
											Sub-totals	12.76	38,93	51.68	

Total Persent ECA 19.14%

#### Residual

Projection Date: Total Sub-havin Area (km<sup>4</sup>): 2000

12.3

Page 1 of 3 Date Jan, 2000

IS Map Ref.8	Mapsheet/Opening Number	CP/Block	Total Area	Ares Above H60	Area Below 1869	Year Harvested	Main	Canopy	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Above H60	ECA Below H60	Tetal ECA	Comments
			(hu)	(ha)	(ha)		Height (m)	Ref. Vear	(cm)	(m)	55	(744)	(ha)	(ha)	
244	121,093		0.7		0.7	_	σ	1999	20	0	Ш	6,00	0,70	0.70	Urhan.
243	120,093		3,1		3.1		0	1999	4	0	- (i	0.041	8.10	1,10	Urban
239	#21.093		20		20			1099	0	0		0.00	20.00	20,00	Cultivated
240	\$2L093		0.6		0.6		π	1929			0	0.00	0.60	0.60	Urban
238	821,093	_	7.2**		3,4		26	1994	20	27.2	90	0.00	0.36	0.36	**Loggod S034, private property
207	30L093-50		93		0.3	1.84	17.3	1998	20	183	90	0.00	0.93	0.93	
235	\$21,053		16.5		16.5	L	12	1994	20	13.2	90	0,00	1.55	1.65	Aigdioto integr. 1994, unknown hars en date.
234	821.003		5.1		5.1	L	12	1994	20	13.2	90	0.90	0.51	0.51	Airphoto interp. 1994, unknown kars est date.
233	#21,093		9.2	_	9.2	L.	.17	1994	20	18,2	- 90	0.00	0.92	11.92	Airphoto Interp. 1994, ur&month arvest date.
231	421.093		1004		0.1	1	12	1994	20	13.2	90	0.00	8.01	0.01	Airphoto interp. 1994, usknows harvest date.
129	#2L093		7.3		73	L,	12	1994	20	13.2	90	0.09	0,73	0.73	Airphoto interp. 1994, unknown harvest date
117	#2L093		4.4	_	4.4			1999	0		n	12,(1)	4,40	4,40	BC Hydro right of way.
228	821,093	_	15.6		15.6		(d)	1999	n	- 0	0	<b>n</b> (iii)	15.60	15.00	BC Hydro right of way.
122	82E493-60		4.5		1.5	L88	0.2	1091	20	2	0	0.00	K 50	8.511	
219	821,093-41		29.7		29,7	1.78	2.1	1992	20	3,7	25	11.110	22.28	22.28	
218	621.1923-41	_	16.1		16.1	L88	2.1	1998	20	2.5		0.00	16.10	16.10	

Projection Date: Total Sub-basin Area (Jun<sup>2</sup>):

Page 2 of 3 Date Jan 2100)

GLS MAP Ref.#	Mapiheet/Opening Number	CP/Illock	Total Area	Ares Above Hot	Area Below H64	Year Harvested	Main G	anopy	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Above 1160	ECA Bdos H60	Total ECA	Comments
_			(h4)	(ha)	(ba)		Height (m)	Ref. Year	(cm)	(m)	- 14	(64)	(his)	(ha)	
			1					_				0,110	101.37	105.39	Sub-totals from page 1
210	#2L093-39		8.2		8.2	LNR	2.1	1998	20	2.5		0:00	8.20	1,20	
197	821,093-35		16.1		16.1	Lisa	17	1994	29	18.2	- 90	0.00	1.61	1,61	Airphoto interpretation 1994
204	821,093-34		6	_		LRT	0.7	1994	20	1.9	<u>, 6</u>	1000	6.00	0.00	Polygon is split, small section logged 10% in 1980
199.	821.093-58		26.4		26.4	LXB	0.2	1995	20	1.6	ü.	0.00	25.40	26.40	
195	N2L093-34		14.2		14,2	1.61	0.7	1994	10	13	- ¥	0,00	14,20	14.20	
187	\$21,000-00		21,6		21.6	1.77,79	3.8	1995	20	4.8	25	0.00	16.20	16.20	
10	121,005-33		0.4		0.4	1,77,79	3,8	1995	20	4.8	25	0.00	11,30	0.30	
102	42L005-35	_	0.4		n(4)	1,77,79	3.8	1995	20	4.8	23	17.00	0.30	11.311	
213	#2L/93-38		3.1		33	1.74	10	1991	50	14.5	જા	0.00	0.51	0.51	
262	\$21,093-36		4.5		4.5	L73,74	12	1994	20	13.2	90	0.00	0.45	9,45	
176	#2L093-29		2	,		1.82	- 14	1990	19	15.9		0.70	11,00	0,70	
179	\$2Lit93-33		10.01		101	L78,79	0.4	1996	10	6.0	6	0.00	10.91	u ot	
175	821.093-31		11.9	11.9		1.78,79	0.4	1996	10	OR	a.	13.90	(0.00)	11.99	
184	821.093-33		2.2	2.2		1,77,79	3,5	1995	29	4.8	25	1.65	0,00	1.63	
[8]	821.093-33		17.4	17.4		1.77,79	3,8	1995	29	4.6	-25	13.05	0.00	13:05	
(200)	821,093-34		1.6	1.6		LMI	107	1994	311	12	10	1.60	0.00	1.60	
								10			Sub-totals	28.90	175.57	204,47	

2000 12.3

Residual

GIS Map Ref.#	Mapsheet/Opening Number	CP/Block	Total Area	Area Above 1160	Acea Beinn 1160	Year Harvested	Main	Своору	Average Leader Growth	Projected Canopy Height	Percent Rerivery	ECA Above 1160	ECA Below H60	TotalECA	Comments
			(Ira)	(Ins)	(ha)		Height (m)	Ref. Year	(cm)	(m)	- 56	(fix)	(his)	(ha)	
												21.90	175.57	294.47	Sub-totals from page 2
185	#21,993	1	-ù	-ŭ		£91	0.3	1999	20	11.5		2.10	0.00	1.10	Will be planted in 1999
101	1213923		0.2	0.2		- E96	0.3	1999	20	S163	30	0.20	0.00	0.20	Will he planted in 1999
177	\$21,093-32		10.9	10.9		LAI	10.8	1995	14	11.5	93	1.09	18,110	1.10	
158	\$21,093.30		\$6.8	86.8		L18	U.	1980	14	13,8	- 90	8.68	0.00	8.63	
171	42L/003		ж			_L	17	1994	20	18.2	- 90	0.80	1001	10.00	Airphoto interpretation, 1994
169	\$21,093-30	-	2.5	2.5		1.5K	31	1910	14	15.8	991	0.25	1000	11.25	
167	\$21,093-30		0.1	0.1		1.51	11	1990	14	13.8	96	0,01	0.00	11.03	
160	821,193-30		0.2	0.2		1.54	11	1980	10	13	93	0.512	0.00	0.02	
134	K21.143-40		7.4	7.6		800	3,4	1998	60	4.9.	23	5.55	(0,0)	3.35	Bern, airphoto interpretation 1994, site stait 199
			_						_						
						_			_						

5ub-totals 45,60 175.5T 222.17
Upper

Projection Date: Total Sub-basin Area (km<sup>2</sup>): 2002

10

Page 1 of 3 Date Jan. 2000

GIS Map Ref.#	Mapsheet/Opening Number	CP/IMack	Tatal Area	Area Above Hou	Area Below 1160	Year Harvested	Main (	Синару	Average Leader Growth	Projected Canopy Height	Ferent Recovery	ECA Abuye HS9	ECA Below H50	Total ECA	Commente
);		-	(ha)	(84)	(ha)		Height (m)	Ref. Year	(cm)	(m)	74	(ha)	(ha)	(ha)	
601	\$2M003	663-1	52.9	52.9		L16	03	1997	56	2.54	ü	52.50	0.00	52.90	Planted 1997.
103	#256913		36.1	30,1		151.55	17	1994	10	17.7	90	3.01	1.00	3.07	Airphots interpretation 1994.
1114	12Min0-215		5,0	5.9		1.91	0.25	1993	56	4.73	25	4.43	3000	4.43	
105	82M003		27.3	27,3		1.51-53	27	1994	10	27.7	90	2,73	0,00	2.73	Airphetu interpretation 1994,
107	82M080-60		47.1	47.8		1.93	0.25	1997	56	2.49	0	47.10	0.00	47.80	
108	#250m3		186,5	186.5		869	6.5	1999	40	7.3	75	46.63	100	46.63	Burn, alephoto interpretation 1994.
1.13	82M003		3.4	3.4		B64	η	1999	0		я.	3,40	0.00	3,40	NSR, niphoto interpretation 1994, site visit 1999
116	\$2M003		4.8	4.8		B50		1999	40	- 2.0	25	1.20	0.110	1.20	Dum.
312	\$2M003-222		6.7	6.7		1.81,19	0.2	1990	56	6.36	59	3.35	ii.tio	7.35	Planied 1990
110	425603		0.01	0.01		Billio		1999	ü	0	n	10.01	11.00	11.416	NSR, airphote interpretation 1994, site visit 1999
121	121.693-411		(4,1	14.8		3,77,78	3.15	1993	36	3.69	25	11.10	11.00	11.10	
122	42M003		156	16		860	0	1928	0		0	1.60	0.00	1.60	NSR, alephoto interpretation, 1994
123	821.093-01		2.2	2.2		L77,78	3.15	1995	9	3.67	25	1.65	0.00	1.65	
125	#21.093-02	_	0.8	11.8		1.73	4	1987	20	0.8	511	0(40	0.00	0,40	
126	821,693-01		22.1	22.1		£77,7%	3.15	1995	9	3.60	25	16.58	0.00	16.58	
127	\$2L093-01		3	5		1,77,78	3.15	1995	9	3.60	25	3,75	10.00	3.75	
											Sob-totals	200.53	0.00	200.53	

Upper

Projection Date: Total Sub-basin Area (3m<sup>1</sup>): 2001

10

Page 2 of 3 Date: Jan 2000

GIS Map Bef.4	Mapsheet/Opening Number	CP/Block	Total Area	Area Above B60	Arca Below 2160	Year Harvested	Main	Савору	Average Lender Growth	Projected Canopy Beight	Percent Recovery	ECA Abave Holl	ECA Below Hán	Total ECA	Comments
			(818)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	#	(ha)	(ha)	(ha)	
												200,53	0.00	2001.53	Sub-totals from page 1
128	#2L/03.a02		5.1	5.1		L.73	4	1987	20	6.8	\$0	2.55	10.00	2.53	· · · · · · · · · · · · · · · · · · ·
124	821,093		5,3	5.3		BSH	6.2	1999	40	23	75	1.33	-0000	1.33	Burn, airphoto interpretation 1994
138	N2Lit93		0.1**	0.05		L58	12	1994	9	19.65	90	0.01	0.00	0.00	**Logged 40% in 1958, airphen interpretation 1994
137	K21.093		21.8**	12.4	-	139	10	1994	9	12.63	90	1,24	11:10	1.24	**Logged 40% in 1998, slephoto interpretation 1994
131	831,1193		19.8	19.6		260	9.6	1998	54	11,28	90	1.98	11.00	1.98	Barn, airphota interpretation 1994.
134	K21,1923		0.8	0.1		Bro	9,6	1998	20	11.39	90	0.08	0.00	11.038	Burn, airphoto interpretation 1994.
144	K21.003	_	1.8**	-44		L58	28	1994	40	310.4	50	0.44	0.00	0.44	**Logged 40% in 1958, airphoto interpretation 1994
146	\$2(.09)-04		43.6	43.6		L77	10	1994	56	16.92	90	4.36	0.00	4.35	NSR, Airphoto Interpretation 1994, the visit 1999.
142	\$2(.05)		139.6	139.6		B60	63	1999	40	7.5	75	34.911	0.00	34.90	Bern, simbolu interpretation 1994.
143	42L/85	_	19.4	16.4		B60	6.5	1999	:40	7.5	75	4(10)	-R.00	4.10	Barn, siephoto interpretation 1994
148	420/93		4.7	4.7		B/r0	æ	1999	40	4.8	25	3.53	0,00	3.55	Burn, sirphoto interpretation 1994
151	821.093-03		20.2	20.2		B60	¥.,	1999	60	5.2	311	10.10	6,00	10,10	Burn, Airphoin Interpretation 1994, site visit 1979
149	\$2L993-02		19.4	19.4		1,78	n.	1904	40	13.4	90	1.94	0.00	1.94	
153	121/803		4.6	4.6		869	6.5	1999	40	-73	75	1:13	0.00	1,13	Barn, airphoto interpretation 1954.
157	421.097		12.3	12.3		Ŀ	18	1924	60	22.2	9ii	1.23	0.0d	1.25	Loggod 50%, airpheio enerpretation 1924, unknown horvest date
											Sub-tutals	203.45	0.00	269,45	

# Upper

Projection Date: 2001 Total Sub-basin Area (km²): 10

Page 3 of 3 Date: Jan 2000

715 Map Bet#	Mapshoet/Opening Number	CP/Block	Total Area	Area Ahovy 1160	Arca Belon 1960	Year Harvested	Main (	Cannyy	Average Lesder Growth	Projected Canopy Height	Percent Recovery	ECA Above H60	ECA Belos H60	Total ECA	Comments
_			(ha)	(ha)	(ba)		Height (m)	Ref. Year	(cm)	(m)	75	(ha)	(he)	(ha)	
							_					269.49	0.00	269.45	Sob-totals from page 2
159	82L093-30		11.6	11.6		L.58	11	1990	14	13,94	- 911	1.15	0.00	1.16	
166	82(.093-8)		4.3	43		1.95	0.25	1996	20	1.25	0.5	4.30	0.00	4.30	
162	821,093-82		4.4	4.4		1.95	0.25	1996	20	1.25	0	4.40	0.00	4,40	
164	82L(693		×1**	4,05		L	25	1994	20	26.4	90	0.41	0.00	0.41	**Logged 30%, airphots interpretation 1994, unknown Sarvest date
172	821.093-20		7.3	73		L.12	14	1990	19	16.09	988	0.73	anti	0.75	
	-														
											iub-totale	280,45	0,06	280.45	

Total Percent ECA 28.04%

#### East

Projection Date: Total Sub-basin Area (km²): 2004

5.9

Page 1 of 2 Data: Jan. 20(4)

S Map let A	Mapsheet/Opening Number	CP/Block	Total Area	Area Alung 1160	Area Belion 1160	Year Harvested	Main 1	Canapy	Average Leader Growth	Projected Campy Height	Percent Reemery	ECA Above H50	ECA Belon Him	Total ECA	Comments
_			(ha)	(hui)	(ha)		Height (m)	Ref. Venr	(cm)	(m)	- 56	(ha)	(lu)	(hui)	
36	#21.093-13		2.6	2.6		Boil	9.6	1999	56	10.72	90	0.26	0,00	11.26	Burn, Airphoto Interpretation 1994, site visit (199)
35	K21.093-03	-		.1.1		B//0	6.5	1999	40	73	75	2.03	10.00	2.03	Born, Airphoto Interpretation 1994, site sisit 1999
7/0	K2L093-03		2.5	9.5		BØ		1999	36	30.72	90	0.05	0.00	11.95	Barn, Airphoto Interpretation 1994, she visit 1999
33	#2L093-00	_	0.5	0.5	()	BS0	9.6	1999	50	10.72	98	0.105	11.199		Burn, Airphoto Interpretation 1994, aire viait 1999.
39	821.093-03		17.4	17,4		B60	6.5	1999	40	7,3	75	4.35	0.00		Barn, Alephoto Interpretation 1994, site visit 1999.
29	KJL003-03		45.9	45.9		B60	9.6	1999	56	10.72	- 90	4.59	:10.00		Burn, Airphoto Interpretation 1904, Jun visit 1999.
45	121,093-03		76.4	76.4		B60	6.5	1999	40	7.3	75	19.10	0,00	2010	Burn, Airphoto Interpretation 1914, site visit 1999
50	\$21,093+05		11.92	0.02		1.78	11	1994	20	12.4	90	8.00	10.00	0.00	And a second
65	\$21.093.403		6.2**	3.1		L_	25	1994	20	26.4	90	0.31	om	0.31	**Logged 30%, Airphoto Interp. 1994, anknewn harven datar
ń1	K21,093-66		13.5	13.5		1.80	15	1994	20	16.4	90	135	0.00	1.35	
65	K2L093-82		30.5	30.5		1.95	11.23	1996	20	1.25	a.	20.50	11:00	201.30	
70	121,093	-	725	3.5		1	25	1994	20	26.4	50	0.35	0.00		**Logged 30%, Aupheon Interp. 1994, weknown Eirs en: late
64	12(2)/93		45.7**	22.85		L	25	1994	20	26.4	90	2.22	0,00	2.29	**Logged 30%, Airphoto Interp. 1994, unknown harvest fate
74	42L093-29		27.7	22.7		1.12	14	1990	19	16.09	.90	2.77	0.001	2.77	Barn, Airphoto Interpretation 1994, site vien 1992
7.8	821,093		30.7	30.7		1.	25	1994	20	26.4	:90	3.02	ana.		Kiphote Interpretation 1994, unknown harvest date
10	822,093-70		28.7	28.7		1.94,95	0.2	1997	20	1		28.70	0.160	28.70	
											uh-retals	100.66	11.00	100.66	

.....



East

Projection Date:

2001

Total Sub-basin Area (km1): 5.9 Date: Jan. 2000 GI5 Map Average Mapsheet/Opening Ares Area Below Vear ECA Above Projected Percent ECA Belaw CP/Block Tutal Area Main Canopy Leader Total ECA Commente Ref.A. Number Above H40 1160 Harvested Canopy Height Recovery 1160 1150 Growth (hu) (ha) the). Height (m) Ref. Year (cm) 74 (m) (ha) (ha) (ha) 100.66 0,00 100.66 Sub-rataly from page 1 \*\*Logged 30%, Airphota interp. 1994, urknown harvest 178 #21,193 52.2\*\* 26.1 L 30 1994 20 314 -90 2.61 0.00 2.61 date. 821,093-36 196 72 22 1.73,74 12 1994 211 13.4 90 dim. 2.20 2.20 193 821.093-26 1.8 1.3 L74 2.8 1994 4.0 25 13 1.35 0.045 1:35 Sub-intals 114,62 2.20 106.52

Total Percent ECA

18.11%

Page 2 of 2

Ponds

Projection Date: Total Sub-basin Area (km<sup>2</sup>): 2001

2.7

Page 1 of 2 Date: Jan. 2000

GIS Map Ref.#	Mapaber0Opening Number	CP/Block	Total Area	Ares Above H40	Area Below H60	Yenr Harvested	Main	Сапору	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Above 1160	ECA Below Bio	Total ECA	Comments
			(ha)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	16	(ba)	(ha)	(hu)	
189	\$26.003		43	63		L39	16	1994	20	17.4	90	0.03	0.00	0.10	Airphoto interpretation 1994
191	\$2L993-26	_	6.3	- 1(3		L74	2.8	1991	15	43	- 25 -	0.23	0.00	0.23	
192	821,093-26		2.2	2.2	_	L74	2,8	1991	15	43	23	1.65	0.00	1.65	
1996	\$21,093-37		2.6	2.6		L74	2.2	1991	20	4.2	25	2.95	0,00	1.95	
201	821.093-86		2.9	2.9		1,94	63	1999	30.	1.3	0	2.98	0.00	2.90	NSR on Forest Cover, to be planted in 1990.
200	K2L023-16		23	23		1.94	0,3	1999	50	12		2,30	1000	2.30	NSR on Forest Cover, to be planted in 1999.
206	\$21,023-86		2.5	2.5		1.94	0,3	1999	30	013	0	2.50	0,00	2.50	NSR an Forest Cover, to be plasted in 1999
207	\$21,093-86		1.2	12		1.94	0.3	1999	50	13	Ш	1,20	0.09	1.29	NSR on Forest Cover, to be planted in 1999.
212	\$21,093-86		0.3		6.5	1.94	0.3	1999	50	1.3		0.00	0.50	0.50	NSR on Fatout Cover, to be planted in 1999.
210	#21,093-86	_			0.1	L94	0.3	1999	50	13	0	- 1000	0.10		NSR on Forent Cover, to be planted in 1999.
2018	#2L093-86	_	5.5	_	55	1.94	0.3	1999	59	33	0	0.00	3.30	3.30	NSR an Forest Cover, to be plasted in 1999
205	82L093-37	_	1.2		62	1.74	2.2	1991	20	42	25	0.00	0,90	0.90	/****#********************************
215	82L093-86		0.1		0.8	L94	11.3	1999	20	1.3	11	0.00	11.80	11,802	NSR on Forest Cover, to be planted in 1929.
214	N2L093-34	_	93	-	93	1,74	10	1991	211	15	90	0.00	0.59	0.93	
220	N21,093-40		11.06		0.06	1.74	9.5	1991	50	.143	.90	1000	1003	0.01	
											Sub-totats	12.76	8.74	21.49	

Ponds

Projection Date: 2001 Total Sub-Jussin Area (km<sup>2</sup>): 2.7

Page 2 of 2 Date: Jan 2000

IIS Map Ref.#	Mapsheet/Opening Number	CP/Block	Total Area	Arca Above 1860	Aren Below Hón	Year Harvested	Main	Canopy	Average Leader Growth	Projected Campy Height	Percent Recovery	ECA Abuse H6b	ECA Below 1160	Total ECA	Comments
			(ha)	(hs)	(ha)		Height (m)	Ref. Year	(cm)	(m)	74	(ha)	(hu)	(bis)	
												12.76	8.74	21.49	Sub-cotals from page 1
221	121,093-40		6.2		6.2	1.74	9.5	1991	50	14.5	90	0.00	0.62	0.62	
223	821.093-40		0.9		0.9	1.74	9.5	1991	50	1437	90	11.00	0.09	0.03	
225	821,097-40	-	0.00		1.1	L.74	9.5	1991	30	14,3	50	0.00	0.1	0.71	
224	#2L093		13.3		13.3		0	1999	0		0	10,000	13.36	13.30	BC Hydro right of way.
226	#21,093		61.9		63.9	L.	12	1994	20	13,4	90	0.00	6.19	6.12	Aiepkoto interpretation 1994, unknown harveit date
232	821,093		-11	-	1.1	_ L _	17	1994	20	18.4	.96	3000	0.02	0.11	Airphoto interpretation 1994, unknown harvest dote.
230	821,093		51.7		58.7	1. E	12	1994	20	13.4	- 20	0.00	5.87	5.87	Airphose interpretation 1994, unknown hartest date.
236	#21.093-32		3.9		3.9	LTI	<u>.</u>	1997	di -			0.00	3,911	3.90	NSR on forest cover
						_	-								
_						_									
_															
_												-			
-		-								-		-			
_		_					-								
											Contract of Contract				
										1	Sub-Intale	12.76	38.93	51.68	

Total Percent ECA 19.14%

#### Residual

Projection Date: 2001 Total Sub-Instit Area (km<sup>2</sup>): 12.3

Average Area Belisw GIS Map Mapsheet/Opening Vear. Ares Prejected Percent ECA Aberr ECA Below Main Canepy CP/Block Tutal Area Leuler Tetal ECA Ref.# Comments Number Above H60 1160 Harrested Canopy Height Hitt Receiver 1169 Grunth (ha)-(ha) (ha) fleight (m) Ref. Year 14 (em) (m) (ha) (ha) (he) 0.7 244 821,093 0.7 0 1999 0 11 Π. 0.001 0.711 11.711 Urban. 243 k21,093 8.1 8.1 ÷. 1999 11 0 Ŧ 0.00 3.10 1.10 Urban. 239 \$21,003 20 20 11 1995 0 11 10 0.005 20.00 26.00 Cultivated. 2,40 0.6 6.6 \$21,095 11 1999 0 11 10 0.011 11.60 0.60 Libes. 238 #2E-093 7.2\*\* 3.6 26 1994 20 27.4 90 0.00 036 11.36 \*\*Logged Mrt6, private property. 237 \$21,003.46 0.2 93 1.84 17.3 1995 20 18.5 911 0.00 0.93 0.93 235 821.093 16.5 16.5 Ľ 12 1994 20 13.4 -99 0.01 1.65 1.65 Airphoto interp. 1994, unknown hars est date. 234 821.003 5.1 3.1 L 12 1994 1013,4 96 0.00. 0.51 Airphoto interp. 1994, unknown ltarvest date. 0.51 233 \$21,093 9.2 9.2 L. 17 1994 20 100 18.4 0.00 0.02 0.92 Airphoto istorp. 1994, ueknowe harvest date 231 872,015 41.1 41.1 12 4 1994 20 13.4 90 niin. 111.111 IT BT Airphoto interp. 1994, unknown harvest date: 7.3 229 \$21,003 7.3 L. 12 1994 20 12.4 90 0,00 31.73 11.73 Airphoto interp. 1994, unknamn haevest date. 227 4.4 44 \$2L093 10 1229 н .... 11 4.40 11:00 4.40 BC Hydrn right of way. 224 \$2L003 15.6 15.6 ù? 1999 ñ. .... 0 ir del 13.60 15.62 BC Hydro right of way. 83 222 #21.093-60 8.5 1.84 0.2 1991 20 2.2 0 0.00 8,50 1.50 219 #21,093-41 29.7 29.7 1.78 2.1 1992 20 3.9 25 0.10 22.28 22.28 218 121.095-41 16.1 16.1 LXX 2.1 1998 291 2.7 10 0.00 16.10 16:10

Sub-totals 0.00 101.39 101.39

Page 1 of 3 Date: Jan 2000

### Residual

Projection Date: 2001 Total Sub-basin Area (km<sup>2</sup>): 12.3

Page 2 of 3 Date: Jan 2009

GIS Map Ref.#	Mapsheet/Opening Number	CP/Block	Total Area	Ares Above Hiso	Area Below H60	Year Harrestol	Main (	Сапору	Average Lender Grewth	Projected Canapy Height	Percent Reenvery	ECA Above IIra	ECA Below Hou	Total ECA	Comments
			(ha)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	- 25	(64)	(ha)	that	
												0.110	101.32	101,39	Sub-totals from page 1
210	\$26,093,59		1.2		8.2	1.88	2.1	1998	20	2.7		9,00	8.20	8.20	
197	121,073-35		10.1		16.1	L10	17	1994	20	304	99	0.00	1.61	1.61	Airphoto interpretation [1954.
204	K2L093-34		0	- 1	- 0	EAT.	0.7	1994	20	2.1	0	0.00	6.50	6.482	Polyger is uplit, small section logged (10% in 1986
199	#21.093-58		26.4		26.4	LXE	<b>U.2</b>	1993	20	1.8		0.00	26-40	26.40	
195	121,003-34	_	14.2		14.2	1.81	87	1994	111	1.4	п	0.00	14.20	14.29	
187	#21,093-33		21.6		21.6	1.77,79	3.8	1995	20		50	0.00	19.40	10,80	
283	#21,093-03	_	.0(4)		0.4	1.75.99	3.8	1995	20	- 15	50	icai	0.20	0.20	
192	42(20)3-33	_	4.0		0.4	1,37,29	33	1995	20		30	0.00	0.20	0.20	
213	\$21,093-38		5.1		51	L74	10	1091	50	15	90	0,00	0,51	0,51	
2:02	42L093-36		4.5		4.5	1,73,74	12	1994	29	17.4	90	10.00	0,43	11:45	
170	#2L093-29		.7	7		1.92	14	1990	19	16.09	- 90	0.70	0.00	1.70	
179	#2L093-31		a ot		1001	L76,79	6.4	1996	10	6.9	6	0.00	101	100	
173	#2L093-31		11.9	11.9		1,74,79	0.4	1995	16	0.9		11.99	o.m.o	11.90	
194	(2L093-33		12	2.2		L77,79	3.8	2095	20	3	50	1.10	0.00	1.300	
10	#21,093-33		17.4	17.4		6.77,79	3.8	1995	20	5	- 50	3.71	6.00	8.20	
191	X2L093-34		1.6	1:6		1.81	0.7	1994	10	1.4	0	1.60	0.00	1.09	
											Sub-torals	24.00	169.97	193.97	

sun-titfalk 14,00 169,97 193,97

Residual

Projection Date: Total Sub-basin Area (km²): 2001

123

Page 3 of 3 Date Jan 2000

GIS Map Rrf.#	Mapsheet/Opening Number	CP/Black	Total Area	Ares Above H50	Ares Below H60	Year Harvested	Main	Canopy	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Abose Man	ECA Below El60	Total ECA	Comments
			(ha)	(84)	(hii)		Height (m)	Ref. Year	(cm)	(m)	×.	(ha)	(ha)	(ha)	
					_							24.00	169.97	193.97	Sub-totals from page 2
185	126/03		-141	1.1		£.98	0,3	1999	20	7.03	, p	1.10	0.00	1.10	Will be planted in 1999
160	621,093		0.2	0.2	1	LUR	63	1999	20	0.7	.0	0.20	0.00	0.20	Will he planted in 1999
171	\$2L093-32	_	10.9	10.9	_	1.81	10.8	1993	14	11.64	941	1,02	0,00	1.09	
158	#2L093-34		86.8	16.8		1.91	11	1980	14	13.94	- 95	8.64	8,00	4.68	
171	82L093	_		- 8		L	17	1994	20	184	- 90	ione 1	0.00	0.80	Airphoto interpretation, 1994
1697	821.093-30		2.5	25		L.58	11	1990	14	13.94	911	0.23	0,00	0.25	
167	A2L/03-30		11.1	0.1		LSR	11	1980	14	13.94	30	0.03	11.049	0.01	
180	#2L(293-30	_	0,Z	0.2		LSt	11	1980	10	13.1	90	0.02	11:00	0.02	
154	821.093-00		7.4	7.4		B60	3,4	1998	(0	5.2	30	3(31)7	1000	3.39	Burn, airphinto interpretation 1994, site visit 1999
_		_					-								
							-				_				
									_						
											the south	10.65	140.07		

Sub-totals 39,85 169.97 299,82

### Upper

Projection Date: 29412 Tetal Sub-havin Area (km1):

10

Page 1 of 3 Date: Jan 2000

GIS Map Ref.#	Mapsheet/Opening Number	CPoBlock	Total Area	Area Abuse H60	Area Below Hón	Year Harvested	Main	Canopy	Average Leader Growth	Projected Campy Height	Percent Recovery	ECA Above Hot	ECA Belaw H60	Total ECA	Comments
			(ha)	(his)	(ha)		Height (m)	Ref. Year	(cm)	(m)	*	(ha)	(ha)	(ha)	
101	#25/0803	66541	32.9	32.9		1.96	0.3	1997	36	3.1	25	39.6K	0.00	39.68	Planted 1997
102	#2M003		30.1	30.1		1.51-53	17	1994	10	17.8	90	2,0)	0.00	3.01	Airphoto interpretation 1994
104	#2M000-215		5.9	5.9		L.91	0.25	1993	56	5.29	30	2.95	0,09	2.95	
145	R2MING		27,5	27.3		L51-53	27	19894	10	27.8	- 90	2.73	0.00	2:73	Airphoto interpretation 1994
107	12M003-60		47,8	47.6		1.95	0.25	1997	56	3.05	25	55.85	0.00	35.85	
100	\$255003		146.3	186.3		B60	4,5	1999	40	7.7	75	46,63	6.00	45.63	Burn, airphoto interpretation 1994
113	#2M00)	_	3.4	3.4		B60	0	1999		ö		3,40	0.00	3,40	NSR, airphoto interpretation 1994, site visit 1999
116	#2M003		4.8	4.8	-	Bón	7	1599	40	1.2	75	1.20	17,00	1.20	Bum,
117	1250907-222	-	.6.7	6.7		L48,89	0.2	1990	56	6.92	50	3.35	0.50	3.35	Planted 1990
119	#2M003		0.02	0.01		B60	a	1999	0		0	0.01	100	not	NSR, airphoto interpretation 1994, site visit 1997
121	#21,093-00		14.8	14,8		1.27,78	3.15	1995	9	3.71	25	10.10	0.00	11,10	
122	\$2Moi0	_	718	1,6		B60	3a2	1998	0	Ū.	10	1.69	dinis.	1,69	NSR, airphoto interpretation 1924
123	121,092-01		22	2.2		L77,78	3.15	1995	9	3.78	21	1.65	0.00	1.65	
125	#2E/0/3-4Q		11.8	0.8	-	L73	4	1917	20	7	- 73	0.20	0.04	0.20	
120	82L093-01		22,1	- 32.1		1,77,78	3.15	1995	20	3.71	25	16.58	0.00	16.51	
122	×21,093-01		- <b>S</b> C	3		L77,78	3.15	1993	95	3.71	25	3,75	0:06	3.75	
											Sub-totala	173.48	0.00	173.68	

## Upper

Projection Date: Total Sub-basin Area (km<sup>2</sup>): 2012

10

Page 2 of 3 Date: Jan. 2000

GIS Map Ref.4	Mapsheet/Opening Number	CP/Block	Total Area	Arca Above 1160	Area Below H50	Year Harvested	Main	Сапору	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Above H60	ECA Below Hon	Tetal ECA	Comments
			(ha)	(ha)	(hu)		Height (m)	Ref. Year	(cm)	(m)	*	(ba)	(ha)	(he)	
1												173.68	0.00	\$73.68	Sub-totals from page 1
128	821.093-02		3.1	5.1		1.73	4	1987	20	7	75	1.28	2.00	1.28	
124	821.023		5.5	- 53		Bott	6.5	1992	40	7.7	75	1.33	0.00	1.23	Burn, airphoto interpretation 1994
138	#21.093	_	0.1++	0,05		1.58	12	1924	9	19.72	90	ii.iif	1000	10,11	**Logged 40% in 3938, sirphote interpretation 1994
137	426.093		243**	12.4		1.58	19	1994	89	19.72	90	1.24	0,110	1.24	**Loggod 40% in 1958, airphots interpretation 1994
131	821.093		19.8	19.8		B60	9.6	1998	55	11.84	90	1.98	10.00)	1.94	Burn, airphoto interpretation 1994,
134	\$21.093		0.8	0.8		B69	9.6	1004	20	11.84	90	0.08	0.001	11.03	Barn, airphoto interpretation 1954.
144	821.025		1.1**	4.4		L58	28	1994	40	31.2	941	0.44	0.00	0.44	**Loggod 40% in 1958, airphoto interpretation 1994
146	K21,073-04		43.6	43.6		1.77	D	1994	56	17.48	90	4.36	0.00	101032	NSR, Airphota Interpretation (994, site visit 1999)
142	120.003		139.6	139.6		B60	6.5	1999	40	2,7	75	34.90	0.00	34.90	Barn, airpholo interpretation 1994
143	\$2L003		16.4	164		860	6,5	1990	40	7.7	75	4.10	0.00	4.10	Burn, airphoto interpretation 1994
141	\$2L007		.4.7	4,7		Bno	4	1999	40	5.2	50	2.35	0,00	2.35	Barn, airphoto interpretation (1994,
151	#2L093-03		20.2	20.2		B(0	4	1999	68	5.8	50	10.10	11.00	10,10	Barn, Airphoto Interpretation 1994, site visit 1999
349	302L093-05		19.4	1934		L78	11	1994	40	14.2	90	1.94	œ.mii	1.94	
153	821.093		4.6	46		Вон	6.5	39992	49	7.7	75	1.15	0.00	1.15	Barn, airphoto interpretation 1994
157	#21,093		12.3	12.3		L	18	1094	60	22.0	::90:	1.23	11.00		Logged 50%, airphoto interpretation 1994, unknown harvest date.
										5	inb-totals	240.15	0.00	240.15	

Upper

Projection Date: 2007 Total Sub-basin Area (km<sup>3</sup>);

10

Page 5 of 7 Date: Jan. 2000

GIS Map Rcf.#	Mapsheet/Opening Number	CP/Block	Total Area	Area Ahove 1160	Area Below H60	Year Harvested	Main	Canopy	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Above 1160	ECA Below II60	Total ECA	Comments
			(bai	(hu)	(h=)		Height (m)	Ref, Year	(cm)	(m)	*	(ha)	(944)	(he)	
												240.15	0.00	240.15	Sub-totals from page 2
199	#28.003-30		11.6	116		1.78	-11	1990	14	14.08	90	1.16	11.00	1.16	
166	121,093-81		43	43		L95	9.25	1996	20	L,45	0	4.30	100	430	
162	420.093-82		44	4.4		1.95	0.25	19963	20	E48	0	4,40	0,00	4.40	
164	821.093		×1**	4.05		L	-25	1994	20	26.6	90	0.41	11.00	0.41	** Logged 30%, airphoto interpretation 1994, anknown harvest date
172	821,003-29		73	7.3		6.82	14	1950	19	16.28	911	0.73	0.00	11 73	
										_					
_			-												
_		_			_		-	-			_				
					-							-			
										L	Sub-totala	251.15	0.00	251.15	
										t	Total Perce		The second	25,11%	

Total Percent ECA 25,11%

East

Camments	Total ECA	ECA Below H60	ECA Above H69		Projected Canrey Height	Average Lender Grawth	Canopy	Main 0	Year Harvested	Area Below H60	Area Above H60	Total Area	CP/Block	Mapsheet/Opening Number	GIS Maja Ref.N
	(ha)	(ha)	(ha)	14	(m)	(cm)	Ref. Year	Height (m)		(ba)	(ha)	(hui			
Burn, Airphoto Interpretation 1994, site visit 1999.	0.26	0.05	0.26	- (90) - (10)	11.28	36	1999	2.6	Den.		2.6	26		\$21,023-03	136
Burn, Airphoto Interpretation 1994, site visit 1999	2.03	0.09	2.03	75	7.7	411	1999	6.5	B60		1.1	8.1		\$21,093-00	135
Burn, Airphote Interpretation 1994, site visit 1999	0.95	0.09	11.95	90	11.28	56	1999	9.6	Bon		9.5	9.5		\$21,093-03	13((
Burn, Aughora Interpretation 1994, site visit 1999	0.05	8,00	0.05		11.20	56	1999	9.6	<b>B60</b>		6.5	3035		821,093-08	133
Barn, Airphoto Interpretation 1994, site visit 1999.	4.35	0.00	4.35	25	7.7	46	1999	6.5	960		12,4	17.4		\$21,093-03	139
Burn, Airphoto Interpretation 1994, site visit 1999	4.39	0.00	4.59	90	11.28	56	1999	9.6	B60		45.9	45.0	_	\$21,093-03	129
Barn, Airphoto Interpretation 1994, site visit 1999.	19,10	n 00	19.10	75	7,7	40	1999	6.5	860		76,4	76.4		x21.093-03	145
**Lagged 30%, Airphoto Intern. 1994, unknown hury	8.00	0,90	0.00	.90.2	12.6	20	1994	an -	1.78		0.02	0.02		821.093-46	150
date	0.91	8.04	11.34	90	26.6	20	1994	25	1		3.t	6.2**		\$21.093-03	165
	1.35	0.06	1.33	99	10.0	20	1594	15	1.80		13.5	13.5		121.093-4%	161
**Logged 30%, Airphons Interp. 1974, anknown haro	30.50	0.00	311.30	0	1.45	20	1996	0.25	1.95		30,5	30.5		421.093-81	167
date. **Logged 30%, Airphoto Interp. 1974, anknown harv	0.25	1.00	1035	.90	26.6	20	1994	.25	L.		3.5	1944		\$21.013	170
date.	2.29	0.000	2.29	3907	26.6	20	1994	25	L.		22.85	45.7**		\$2L003	164
Burn, Airphoto Interpretation 1994, site visit 1999.	2.77	0.062	2.77	90	16.28	19	1990	14	1.82		27.7	22.7		\$21,093-29	171
Airphoto Interpretation 1974, unknown harvest date	2.07	0.05	3,67	90	26.6	20	1994	25	L.		30.7	311,T		821,003	175
	28,70	0.060	28.70	200	12	20	1997	0.2	194.95		28.7	28.7		821.093-70	190

Sub-tutals 100.66 0.00 100.66

East

Projection Date:

2002

Tural Sub-havin Area (km<sup>1</sup>): 5.9 Average Area Below Year Projected Percent ECA Above ECA Below Mapcheet/Opening GIS Map Area Total ECA CP/Block Total Area Main Canopy Comments Leader Campy Height Recovery 1164 1160 Harvested Ref.# Number Above H60 H60 Growth 54 Height (m) Ref. Year (ha) (ha) (hn) (ha) (cm) (m) (hs) (But) 101566 0.000 100.66 Sub-totals from page 1 \*\*Logged 30%, Airphoto interp. 1994, unknown harvest 32.2\*\* 30 1994 20 31.6 90 2.61 0.0 2.61 date 178 X2E/03 26.1 L 120.043-36 32 22 L73,74 12 1994 20 13.6 -90 0.60 2.20 2.20 196 1.8 LX: L74 2.8 1991 15 4.45 25 1.35 11 1217 1.35 193 420,093-26 Sub-totals 104.62 2.20 106.82

Page 2 of 2 Date Jan 2000

Total Percent ECA 18.11%

Ponds

Projection Date: Total Sub-havin Area (km<sup>1</sup>):

rea (km<sup>1</sup>): 2.7

2002

	Pa	gr. I	cf	2
Đ:	he:	lan.	20	(83)

15 Map Ref.#	Mapiheet/Opening Number	CP/Block	Tetal Area	Area Abaye 1100	Area Below H60	Year Harristol	Main (	Canapy	Average Leader Growth	Projected Canopy Height	Percent Receivery	ECA Above H60	ECA Below 1660	Total ECA	Comments
			(ba)	(he)	(ha)		Height (m)	Ref. Year	(cm)	(m)	- 54	(hu)	(ha)	(he)	
199	821.093		03	0.3		£30	16	1994	24	17.6	90	0.03	0.00	0.03	Airphoto interpretation 1994.
191	#21,093-26		n.3	0.3		1,74	2.1	1991	15	4.45	25	0.23	0.05	0.23	
192	\$2L093-26	_	2.2	2.2		L74	2.5	1991	15	4.45	25	1.65	0,00	1.65	
198	821.097-37		2.6	2,6		L74	2.2	1991	20	306	25	695	0.00	1.95	
201	\$21,093-\$6		2.9	2.9		1.94	0.3	1999	50	1.8	-0	2.90	0.00	2.95	NSR on Forest Cover, to be plasted in 1999.
200	821.093-86	-	23	2.3		1.94	0.3	1333	50	1.8		2.20	0.00	2.30	NSR on Forest Cover, to be planted in 1999
206	N21,1193-R6-		2.5	2.5		1.94	0.3	1999	50	1.8		2.50	0.00	2.50	NSR on Forest Cover, to be planted in 1992.
207	\$21,093-86		12	0.02		1.94	0.3	1999	50	1.8	.0	1,20	30.00	1,26	NSR on Forest Cover, to be planted in 1999.
212	#2L093-86		63		0.5	1.94	0.3	1999	50	1.8	<sup>0</sup>	0.00	0.50	0,50	NSR on Forest Cover, to be planted in 1999.
216	\$21,093-NS		0.3		0.1	1.94	0.3	1992	50	1.8	ė	0.00	0.20	0,10	NSR on Forest Cover, to be planted in 1999.
208	\$21,093-86		5.5		5.5	1.94	113	1999	50	1.8	¢	11,611	5.50	5,50	NSR on Forest Cover, to be planted in 1999.
205	#2L093-37		1.2		1,2	1.74	2.2	1991	20	4.4	2.5	0,00		.0.90	
215	K21,093-86		0.8		0.8	L94	0.3	1999	50	71.90	0	0.50	0.10	.0.911	NSR on Forest Cover, to be planted in 1999.
214	821,093-38		9,3		9.3	1.74	10	1991	50	15.5	- 00	11.00	0.93	и.93	
220	821.093-00		0.00		0.06	L74	9.5	1991	50	15	90	0.00	8011	HIST	

Ponds

Projection Date: 2002 Total Sub-basin Area (km<sup>7</sup>): 2.7 Page 2 of 2 Date: Jan 2000

Ref.#	Mapsheet/Opening Number	CP/Block	Total Area	Arca Above B60	Area Below Hill	Vear Harvested	Main (	Canopy	Average Leader Grawth	Projected Canopy Height	Percent Recovery	ECA Abuve H60	ECA Belan H60	Total ECA	Commenta
_			(ha)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	**	(ba)	(ha)	(ha)	
												12:26	8,74	21,49	Sub-totals from page 1
221	\$2L093-ani		6.2		6.2	1.74	93	1091	50	iii ii	90	0.00	0.62	0.62	
223	\$21,093-40		0.9		0.9	L.74	9.3	1991	50	18	99	0,00	0.09	45.693	
225	QL093-an	_	1.1		1.1	L,74	9.5	1991	50	15	.90	0.00	8.11	11.11	
224	12(.093		13.3		13.3			1929		и.	0	0.00	13:30	13.30	BE Hydro right of way
226	\$2L/993		61.9		61.9	<u>т</u>	12	1994	20	13.6	30	0.000	6.19	6.19	Airphoto interpretation 1994, ur&nown harvest date
232	K2L/993		1.1		i.i	1.	17	1994	20	18.6	90	0.00	0.11	0.11	Airphoto interpretation 1994, unknown harvest date
230	\$2L093		58.7		58.7	L.	12	1994	20	13.6	90	0.00	5:17	5.87	Airphoto interpretation 1994, unknown harvest date
236	\$21.093-52		3.9		3.9	6.71	n	1997	0	0 :		0.110	3.90	3,90	MSR on forest cover
-									_		-				
												-	-		
											_				
_										-	_				
							1 1								
						·					Sub-totals	12,76	38,93	51.64	

Total Percent ECA 19.14%

Residual

Comments	Total ECA	ECA Below III-0	ECA Above 1860	Percent Recovery	Projected Canopy Height	Average Leader Growth	anapy	Main (	Year Harvested	Area Below H60	Ares Abore 1160	Total Area	CP/Block	Mapsheet/Opening Number	GIS Map Ref.A
	(ha)	(ba)	(ha)	56	(m)	(cm)	Ref. Venr	Height (m)		(hat)	(ha)	(ha)			
Urban.	0.20	41.711	31.09	0.00)	ЭЙ.	ØS.	1999	0		0.7		0.7		K2L/09/8	244
Urben	×10	6.10	0.00	0	Ú.	é	1999	ų		8.1		3.1		¥26,043	243
Cultivatist	29.00	29,00	4.00			8	1999			20		20		621.003	239
Urban.	b.60	9.60	0.00	.0		0	1999			10.6		20.6		K2L(#/)	(24)
**Logged 510%, private property	0.36	9.26	0.00	.901	27.6	20	1994	26		3.63		7.2**		K2E093	238
	8.93	0.93	0000	290	18.7	20	1995	173	L84	9.3		9.3		122,003-50	237
Airphoto interp. 1994, urknewe harvest date.	3.65	1.65	0.110	941	13.6	29	1994	12	_ L _	36.5		16.5		826.093	235
Airphoto interp. 1994, unknown harvest date.	0.51	0.51	0,00	90	13,6	20	1994	12	l	5.1	-	2.1		821,003	234
Airphoto interp. 1994, unknown harvest date.	0.92	0.92	0,110	.90	18.6	20	1994	17	$\langle t_{\rm c} \rangle$	92		9.2	_	\$21,033	232
Airphoto interp. 1994, anknown harvest date.	2.01	6011	0.00	390	13.6	20	1994	12	Ľ.	0.1		11.1		821.097	231
Airphoto interp. 1994, unknown harvest date.	0.73	0.73	0.1151	781	13.6	20	1994	12	- 1-	7,3		73		121.093	229
BC Hydro right of way.	4.40	4.40	0.00	0	π	9	1999	0		4.4		4.4		621.093	222
BC Hydro right of way.	15:50	15.60	:0.un	0			1999	0		15.6		15.6		\$2Le93	228
	4:50	1.50	0,00	.0	2.4	29	1991	0.2	1.88	8.5		¥.5		\$2L013-68	222
	32.28	22.28	0.00	25	43	29	1992	21	1.78	29.7		29.7		\$21.0/3-41	219
	16.00	15.10	6.00	- 10	2.9	29	1998	11	1.88	16.1	··	16.3		825,003-41	218

Residual

Projection Date: 2007 Tatal Sub-havin Area (km<sup>1</sup>): 11.1 Page 2 of 3 Dote: Jan 2000

GIS Map Ref,#	Mapsheet/Opening Number	CP/Block	Tetal Area	Area Above H60	Area Ilclow Hón	Year Harvested	Main (	Canopy	Average Leader Grawth	Projected Campy Height	Percent Recovery	ECA Above Bob	ECA Below Hin	Tetal ECA	Comments
			(fta)	(ha)	(fui)		Height (m)	Ref. Year	(tm)	(m)	- 96	(liz)	(ha)	(hu)	
												- 1000	101.39	101.39	Sub-totals from page 1
210	82L093-89		8.2		8.2	LSI	23	1998	20	2.9	05	D,00	1,20	8.20	
197	#21,093-33		16.1		46.1	LRU	17	1994	20	18.6	90	0,10	1.61	1.61	Airphota interpretation1994.
204	\$2L093-34		6		6	LNL	-0.7	1954	20	13	ų.	0.00	6.00	6,00	Polygon is split, small section logged 1054 in 1980.
199	821.093-58		26.4		26.4	LRA	0,2	1993	20	2	0	0,01	26.40	26.00	
199	821,093-34		14.1		14.2	1.41	0.7	1994	10	1.5	<b>0</b> 0	0.00	14.20	14.20	
187	821,093-33		21.6		21.6	1,77,79	3.6	1995	20	3.2	50	0.00	tosin	10.80	
183	82L093-33		11.4		0.4	L27,79	3,8	1995	20	3.2	511	1000	0.211	f(2))	
182	#2L1997-33		0.4		0.4	L77,79	3.8	1995	20	5.2	đn	R.00	0.20	9.20	
213	#21.092-38		33		53	1.74	30	1991	50	15.5	596	1.00	10.51	0.51	
202	121,093-36		430		¥3	£73,74	12	1994	20	13.6	90.	0.00	0.45	0.45	
176	\$21,003-29		7	1		LR2	14	1990	19	16.28	90	0.70	11.000	0.70	
179	\$2L(03-31		0,01	_	not	1,78,79	41.8	1996	10	1	0	a mr	9.01	0.01	
173	321/05-31		15%	11.9		1,78,79	0.4	1926	10	21	0	11.90	0.00	11.59	
124	\$21,003-33		2.2	2.2		1.77,7V	3.8	1993	20	5.2	510	21.10	0.00	1.10	
181	\$21,003-33		17,4	17.4		1,72,79	1.8	1993	29	52	511	8.70	0.161	8,70	
190	121303-34		1.6	1.4		1.81	67	1994	10	1.5	1	1.60	0.00	1.64	
											Sub-totals	24,00	169.97	193.97	

Residual

Projection Date:

20012

Comments	Total ECA	ECA Below II68	ECA Ahme 1060	Percent Recovery	Projected Canopy Height	Average Lender Grewth	Canopy	Main (	Year Harvested	Area Below H50	Area Ahme H69	Total Area	CP/Block	Mapsheet/Opening Number	GIS Map Ref.#
	(ha)	(ha)	(ha)	%	(m)	(cm)	Bef. Year	Height (m)		(ba)	(ha)	(54)			
Sub-totals form page 2	195.97	169.97	24.00												
Will be planted in 1990.	1.10	0.00	1.10	φ.	0.9	29	1999	0,3	L94		LI.	1.1		\$21,003	185
Will be plasted in 1999	0.20	11 (31	0.20	0	0.9	29	1999	0,3	- 1.91		0.2	0.2		K2U093	180
	1.09	0.00	1.09	- 90	11.76	14	1995	30.8	1.41		10.9	10.9		K1L003-32	177
	8,68	41,000	8.68	- 50	14,00	14	2980	H.	1.58		36.1	86.B		K2L003-30	199
Airphoto interpretation, 1994.	0.80	0.00	0.80	50	18,6	20	1994	17	L.		к	- 4		\$21/83	171
	0.25	0.00	11.25	50	14.111	14	1980		1.58		2.5	2.5		K2L(7/3-30	102
	0.01	0.00	30.01	.50	14,01	14	1980	11	L58		0.1	0.1		K2L093-30	167
	0.02	0,10	0.02	-96	13.2	10	1980	H	1.58		0.2	0.2		\$21,003-30	110
Born, airphoto interpretation 1994, sile visit 1999	3.70	0.00	3,70	30	3.8	60	1994	3.4	<u>6</u> 00		7,4	7.4		822,023-03	154

Sub-totals 39.85 169.97 209.82

Page 3 of 3

Upper

Projection Date:	2003
Total Sub-hasin Area (lum2):	10

HS Map Ref.#	Mapsheet/Opening Number	CP/Block	Total Area	Area Ahme 1160	Area Below H60	Year Harvested	Main (	Tanapy	Average Lender Grawth	Projected Canopy Height	Percent Recently	ECA Above 1160	ECA Belaw Hito	Total ECA	Comments
			(ha)	()ta)	(ha)		Height (m)	Ref. Year	(cm)	(m)	N.	(64)	(ha)	(ha)	
101	82M003	605-1	52.9	52.9		1,98	03	1997	54	3.66	25	32.68	0.00	39.68	Planted 1997
113	82M005		20.1	30,1		1.51-53	17	2994	jo-	17,9	90	3.01	0.00	3.0t	Airphyso interpretation 1994
104	82M003-215		3.9	35.9		1.91	/0.25	1993	56	5.85	50	2.95	10.00	2.95	
1115	8234000		27.3	27.3		1.51-53	27	1994	.10	22.9	2.94	2.73	0.00	1.73	Airphoto interpretation 1994.
1.07	K2M0(0-64)		47.8	47.8		1.95	11.25	1997	36	3.61	25	35.85	1000	35,85	
108	82Mm0		185.5	116,5		860	6.5	1999	40	4.1	75	46.63	0.00	45.63	Burn, airphoto interpretation 1994
10	32M007		3.4	3.4		B60	- 0	1992	n	1	0	3,40	0.00	3.40	NSR, airphoto interpretation 1994, size visit 1999
116	4250003		4.8	4.8		B60	<b>X</b>	1999	40	3.6	75	4.29	0.00	1.20	Bum.
117	1256003-222		0.7	67		1,88,89	112	1990	56	2.48	25	1.68	0.00	1.68	Planted 1990.
112	1235/03		0,01	11.01		Вон	0.	1999	n	a	n	0.01	11.00	10.61	NSR, airphote interpretation 1994, site visit 1999
121	821.0973-01		14.8	143		1,77,78	3.15	1993	9	3.37	25	11.10	30.00	11.89	
122	\$250HO		1.6	1.6		B50	ii.	13938				1.00	0.00	1.60	NSR, airphoto interpretation 1994.
123	821/193-01		2.2	2.2		L77,7K	3.15	1995	9	3.87	28	1.65	0.00	1.65	
125	82L003-02		Ű.I	(HOR		6,73	4	1917	20	7.2	73	0.20	11.00	0.20	
126	\$21.093-01		22.1	22.1		L.77,78	3.15	1995	30	3.17	25	16.58	11:00	16.58	
127	121,093-01		3	5		L77,78	3.15	1995	0	3.87	23	3.73	11,00	3.75	
											Sub-totals	172.00	0.00	172.00	

Page 1 of 3 Date: Jan 2000

Upper

Projection Date: 1003 Total Sub-basis Area (4m3)

10

Page 2 of 3 Date: Jan 2000

Comments	Total ECA	ECA Below Hou	ECA Above HEO	Percent Recorety	Projected Canopy Height	Average Leader Growth	ampy	Main C	Year Harvested	Area Sclow Itta	Area Above 1160	Total Area	CP-Block	Mapsheet/Opening Number	GIS Map Ref.N
	(ha)	(ha)	(ha)		(m)	(c==)	Ref. Year	Bright (m)		(ha)	(ha)	(ha)			
Sub-totals from page 1	172.00	iciai	172.00												
	1.28	0.00	1.28	75	7.2	20	1987	4	1.73		\$1	5.1		K2L1093-02	128
Burn, airphoto interpretation 1994	133	0.10	1.33	75		40	1999	6.5	B60		52	5.3		K26.093	124
**Loggod 40% in 1958, nitphyto interpretation 19	0.00	0,00	0(0)	90	39.81	29	1914	19	L58		16.03	0.1**		\$21,003	138
**Logged 40% in 1958, airphoto interpretation 19	1.24	0.00	1.24	90	19.81	.9	1994	19.	1.58		12.4	24.8**		421.093	137
Burn, airphoto interpretation 1994.	1.98	0.50	1.98	90	12.4	36	1938	9,6	Bõil		19.8	29.8		\$25,005	131
Burn, airpboto interpretation 1994.	0.01	100	0.08	99	12.4	56	1228	9,6	Bou		- 0.9	0.8		121.093	174
**Logged 40% in 1958, airphoto interpretation 19	0.44	100	0.44	90	31.6	411	1994	28	L58		- 44	1.822		021.603	144
NSR, Airphota Interpretation 1994, site visit 1999.	4.36	0.00	436	90	18/14	56	1994	Ű	1,77		43.6	43.6		#21.093-04	(40
Burn, airphoto interpretation 1994	3430	100	34.911	75	8.1	411	1999	6.5	B64		139.6	139.6		12(203)	142
Bern, airphoto interpretation, 1994	4.10	0.00	4.10	75	8.1	40	1999	6.5	B60		16.4	16.4		825:03	140
Burn, airphoto interpretation 1994	2.35		2.75	50	3.6	40	1999	4	260		42	4.8		R25(9)	148
Burn, Airphota Interpretation 1994, site cost 1999	10.10	50.00	10.10	30	6.4	60	1999	4	B60		20.2	20.2		K2L003-43	151
	1.94	0.00	134	90	14.6	40	1994	11	L78		19.4	19.4		\$25,093-05	149
Born, airphoto interpretation 1994	1.15	0.00	1.15	75	53	40	1999	6.5	B90		4.6	4.6		821,093	(55
Logged 50%, alrehuito interpretation 1994, unknow harvon date:		0.00	1.22	90	23.4	60	1994	11	-14-		12.5	12.3		821.093	157
	233,43	0.00	238,48	Sub-totale											

Upper

Projection Date: 2003 Total Sub-havin Area (km<sup>5</sup>):

tit

Page 3 of 3 Date: Jan. 2000

Commente	Total ECA	ECA Below Hon	ECA Above 1169		Projected Canopy Height	Average Leader Growth	lampy	Main (	Vear Harvesteil	Area Below H60	Arcs Above 1160	Total Area	CP/Black	Mapsher@Opening Number	GIS Map Ref.#
	(hu)	(hu)	(his)	- 54	(m)	(cm)	Ref. Year	Height (m)	ļ	(ba)	(ba)	(ha)			
-lutab from page 2	238.44	0000	231.48												
	1.16	0.60	1.16	90	14.23	14	1980	ii	1.59		11.0	11.6		821343-30	199
	4,30	1000	4.38	۵	1.65	29	1996	0.25	1.95		43	-13		821(#3.81	Inte
	4.40	0.00	4.40	п	1.65	20	1996	0.25	L:25		4.4	4,4		K21.1923-82	162
ogged 30%, airpheto interpretation 1994, urkni ert date			0.41	90	26.8	20	:1994	-25	ji,		4.05	0.00		K21.003	164
	0.73	30.00	0.73	911	16.47	19	1990	14	L12		73	23		K2L053-29	172
						_	-		_	_					
															_
												_			
				_											
	249,47	0,00	249,47	Sub-totals	3										

Total Percent ECA 24.95%

East

Penjection Date: Total Sub-basin Area (km<sup>1</sup>): 2093

5.9

TIS Map Ref.4	Mapsheet/Opening Number	CP/Block	Tatal Ares	Arca Above 1869	Ares Below H60	Year Harvesteil	Main	Compy.	Average Leader Granth	Projected Campy Height	Percent Recovery	ECA Above H69	ECA Below Intel	Total ECA	Comments
			(ba)	Chai .	(ha)		Height (m)	Ref. Year	(cm)	(m)	*	(ha)	(ha)	(ha)	
136.	821,093-40		2.6	2.6		Bell	9.6	1929	30	1134	.90	0.26	0,081	0.26	flum, Airphoto Interpretation 1924, site visit 1999.
135	821.093-05		8.1	81		<b>B</b> 60	63	1999	.40	6.1	23	2.03	ic lie	2,10	Burn, Airphoto Interpretation 1994, size visit 1999.
1,30	821,093-03		0.5	93		Bott	2.6	1999	56	11.84	90	0.95	11:10	0.95	Burn, Airphoto Interpretation 1994, site visit 1999
(32	821.002-00		a.5	9.5		Bell	9,6	1999	55	11.84	91	0.05	10.01	0.05	Burn, Airphoto Interpretation 1994, site visit 1992.
139	X1[095-03		12.4	17,4		860	63	1999	40	36.0	75	435	1001	4.35	Burn, Aiephoto Interpretation (1994, site visit 1995)
129	821,093-03		45.0	45.9		860	9:6	1999	36	11.84	00	4.59	1000	4.59	Burn. Airphoto Interpretation 1994, site visit 1995.
145	N21.093-93		76.4	76.4		Bind	6.5	1999	40	4.1	75	19,10	11.90	12.10	Burn. Airphoin Issupretation 1994, size visit 1999.
1.50	821,093-05		11.112	0.02		1.74		1994	20	12.8	90	0.00	11.00	11.193	
165	82(.)893-03		6,2**	34		L	25	1994	20	26.8	90	0.31	0.00	11.31	**Logged 30%, Airphotn Interp. 1914, unknown barve date.
int .	\$21,093-56		153	13.5		Lito	18	1994	20	16.8	50	(38	Stones	1.38	
143	#21.093-82		30.5	30.5		1.95	0.25	1996	20	1.65		30,50	0.00	30,50	and the two over a start we would also have been
170	\$21,093		7**	3.5		.1.	25	1994	20	26.8	90	0,33	0.00	9,35	** Logged 30%, Airphnin Interp. 1994, unknown hars e date.
10C	62(1)93		45.7**	22:85		t.	25	1994	20	26.8	90	2.29	0.00	2.19	**Logged 30%, Aurobata Interp. 1994, unknown harse date
(74	\$21,093-29		27.7	23.7		L12	13	1990	19	16.47	90	2.77	0,00	2.72	Burn, Airphoto Interpretation 1994, tite visit 1997.
175	\$21,093		30.2	30.7		1.	25	1994	20	26.8	99	3,07	0,110	3,67	Airphoto Interpretation 1994, unknown han est date
116	\$2(393-70		28.1	21.7		1.94,95	0,2	1997	20	1.4		28.70	0,00	28.70	
											Sub-totala	100.66	0.00	100.66	

Page 1 of 2 Data: Jan. 2000

East

Projection Date: 2003 Total Sub-basin Area (km²): 5.9 Page 2 of 2 Date: Jan. 2000

GIS Map Ref.#	Mapiheet/Opening Number	CP/Black	Total Area	Arva Above H60	Area Below Jifa	Year Harvested	Main 6	Canopy	Average Lender Growth	Projected Canopy Height	Percent Retriery	ECA Above H60	ECA Below H60	Total ECA	Comments
			(ha)	(ha)	(ha)		Bright (m)	Ref. Year	(cm)	(#)	- 36	(ha)	(tray	(714)	
				_		_						100.66	0,00	-198.66	Sob-totals from page I
174	82L093		32 2**	26.1		L	30	1994	29	31.8	90	2.51	0,00	2.61	**Logged 30%, Airphoto interp. 1994, unknown harve- date
195	\$21,ir:0-36		22		22	1.73,74	12	1794	20	13.8	50	0.00	2.20	2.20	
193	821.053-26		1.4	1.8		L74	2.8	1991	15	4.6	25	1.35	0.00	1.25	
-		-	-								-		-		
							-								
								_							
									_						
								_	_						
-											Sub-tstab	104.62	2,20	106.82	

Total Percent ECA 18.11%

Ponds

Projection Date: 2003 Total Sub-basin Area (km<sup>2</sup>): 2.7

GIS Map Ref.∉	Mapdier0Opening Number	CP/Block	Total Area	Arca Above H50	Arex Below H60	Year Harristed	Main (	anopy .	Average Leader Grawth	Projected Canopy Height	Percent Recovery	ECA Above H60	ECA Belaw J160	Total ECA	Comments
			(ha)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	1	(ha)	(ha)	(hs)	
189	821,023		83	0.3		1.30	10	1994	20	17.8	96	0.0	0,80	1012	Airpheto incorpretation 1994
191	821.093-26	_	113	0.3	0	1.74	2.8	1991	13	4.6	25	0.23	0.02	0.23	
192	#21.099-26		22	2.2		L14	2.8	1991	15	4.6	25	1.65	0.00	1.65	
198	K2L023-37		2.6	2.6		1.74	2.2	1994	20	4.6	- 25		0.00	1.95	
2111	K21,023-86		2.9	2.9		1.94	0.5	1999	30	23	0.7	2.90	100	2.98	NSE on Forest Cover, to be planted in 1999.
200	\$21,023-86		23	2.3		1.94	0.3	1999	30	2.3	0	2.30	0.00	2.30	NSR on Forest Cover, to be planted in 1999.
200	821,093-86		25	2.5		L94	0,3	1992	20	2.1	9	2,50	0.00	2.50	NSR on Forest Cover, to be planted in 1929
207	NTL093-86		12	(12)		L94	0.3	1999	20	2.3	0.;	1.29	0,00	1,211	NSR on Forest Cover, to be plasted in 1999
212	K21,093-86		11.8		0.5	£94	0.3	3999	50	2.3	- 6Č	0.00	0.50	0.511	NSR on Ferent Cover, to be planted in 1999.
216	821,092-84		0.1		01	L94	0.3	1999	319	2.3	. #	0.110	= 10	0.10	NSR on Forest Cover, in he planted in 1999
248	821,093-85		5.5		5.5	L94	0.3	1992	50	2.3		0,110	3.50	3.50	NSR on Forest Cover, to be planted in 1999.
205	321.093-37		12		1.2.	L74	2.2	1998	20	46	-25	0,00	0.90	0,90	
215	X2L093-86		11.8		-0.8	1.94	- 10.X	1999	50	2.3	ũ.	0.00	11,805	0,80	NSR on Forest Cover. to be planted in 1999.
214	821,092-38		9.3		9.3	L74	10	1991	511	16	911	0.00	#:90	0,93	
220	\$21,003.10		0.96		0.05	L74	9.5	1991	50	15.5	90	0.00	0.01	0.01	
											Sub-treals	12.76	8.74	21.49	

Page 1 of 2 Date Jan 2000

Ponds

Projection Date: Total Sub-linim Area (km<sup>2</sup>):

2.7

2003

Page 2 of 2 Date: Jan 2005

15 Map Ref,#	Mapsheet/Opening Number	CP/Block	Total Area	Area Above H60	Area Below Hou	Year Harvested	Maint	Савору	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Above H50	ECA Belini H60	Total ECA	Comments
			(fixi)	(ha)	(fia)		Height (m)	Ref. Year	(cm)	(m)	(ML)	(ha)	(ba)	(ha)	
							_		_			12.76	8,74	21.49	Sub-titals from page 1
221	821,093-40		312		6.2	1.74	9.5	1991	50	0.088	.90	0.00	0.62	0.62	
223	\$21.093-40		0.9		11.9	1.74	9.5	1991	511	15.5	90	0.00	0.119	0.09	
225	821.003-40		1.1		1.1	1,74	23	1991	50	15.5	90	0.00	0,11	2,12	
224	N21.192		13.3		13.3		0	1999	a	л	0	n on	13.30	12.30	BC Hydro right of way.
226	821/03		61.9		61.9	4	12	1994	20	13,8	390	11.000	639	6.19	Airphoto interpretation 1994, unknown harvest date
232	N21.093		11		1.1	े E	17	1994	20	18.8	90	11.00	0.11	0.11	Airphote interpretation 1994, unknown harvest date.
230	121.093		58.7		58.7	L	12	1994	20	13.8	30	0.00	5 87	5.87	Airphota interpretation 1994, unknown harvest date
236	\$21,093-52		3,9		3,9	L71		1997	0	n	0	0.00	1.90	3.90	NSR on forest cover
_															
	_	_		-											
				_							-				
							-								
												12.76		_	

Total Percent ECA 19.14%

Residual

Projection Date: 2003 Total Sole-basin Area (5="1: 12.3 Page 1 of 3 Date Jan 2000

	H60	ECA Abore 1160	Percent Recovery	Projected Canopy Height	Leader Growth	Sanepy	Main C	Vear Harvesteil	Area Below H60	Arca Abovy 1160	Total Area	CP/Block	Mapsheet/Opening Number	GIS Map Ref.#
(ba)	(ha)	(ha)	56	(m)	(cm)	Ref. Year	Height (m)		(hu)	(ha)	(ha)			
0.70	0.301	aciain:	- 0	п	.0	1999	п		0.7		0,7		421,000	244
8,20	8.10	0.00		- ü	0	1999	u		8.1		4.1		121,093	243
20,00	20.00	0,00		0		1999		_	20		20		\$2(.09)	239
0.69	0.60	0.00	- 0	0	202	1999	0		0.6		-0.0		421,093	240
0.36	0.36	0.002	90	228	20	1994	26		3.6		7.2**		\$21,093	238
0.93	0.93	0.00	90	11.9	20	1995	17.3	LNI	6.0		93		\$2L093-30	137
1.65	1.15	0.00	949	13.8	20	1594	12	L	16.5	]]	16.5		\$21,093	235
11.51	.0.51	10.00	510	13.8	20	1994	12	1	5,1		5.1		#2L093	234
11392	0.92	0.00	- 90	303	20	1994	37	1	9.3		9.2		\$2E093	233
10.00	inat	0.00	54	13.8	26	1994	12	i.	163		ii.i		121,093	231
11.73	0.73	0,00	50	13.8	20	1994	12	- L	7.7	_	73		421,093	229
4.40	4.40	-0.00	0	н		1999	ò	_	4.4		44		121.003	227
1530	15.60	0.00	0	IC.	0	1999	0		15.6		15.6		126/93	228
1.50	8.50	0.00	ü	2.6	20	1991	0.2	1.14	8.5		1.5		#21.013.6a	122
22.28	22.23	0.00	25	43	20	1992	2.1	1.78	29.7		29.1		\$21,093-41	219
12.69	12,08	0.00	25	31	20	1998	2.1	2,84	16.1	e	16.1		#2L(9)3-#1	218
	8,30 29,00 0,60 0,36 0,00 1,65 0,51 0,51 0,51 0,73 4,40 15,60 4,50 4,50 22,24	8 10 8 10   20 00 20 00   0.60 0.60   0.35 0.35   0.93 0.93   1.55 1.65   0.51 0.52   0.72 0.92   0.81 0.01   0.73 0.73   4.40 4.40   15.60 15.60   8.50 8.30   22.28 22.28   12.08 12.08	0.000 8.10 8.30   0.000 250.00 250.00   0.000 0.600 0.600   0.000 0.355 0.355   0.000 0.931 0.931   0.000 0.51 0.55   0.000 0.51 0.52   0.001 0.52 0.32   0.001 0.531 0.53   0.001 0.531 0.53   0.001 0.531 0.53   0.001 0.531 0.53   0.001 0.531 0.53   0.001 1.530 0.430   0.000 15.60 15.60   0.000 8.530 4.30   0.000 22.28 22.24   0.001 12.04 12.04	H 0.000 8.10 8.10   H 0.000 20.000 250.00   H 0.000 20.00 250.00   H 0.00 0.060 0.060   90 0.00 0.35 0.35   90 0.00 1.55 1.65   90 0.00 0.51 0.52   90 0.00 0.51 0.52   90 0.00 0.51 0.52   90 0.00 0.51 0.52   90 0.00 0.51 0.52   90 0.00 0.51 0.52   90 0.00 0.53 0.32   90 0.00 0.53 0.32   90 0.00 15.60 15.60   90 0.00 15.60 15.60   90 0.00 8.50 8.50   90 0.00 12.28 22.24	6 11 0.000 8.10 8.10   0 0 0.000 20000 20000   0 0 0.000 20000 20000   0 0 0.000 0.050 0.060   27.8 90 0.000 0.35 0.35   18.9 90 0.00 0.51 0.51   13.8 90 0.00 0.51 0.51   13.8 90 0.00 0.51 0.51   13.8 90 0.00 0.51 0.51   13.8 50 0.001 0.72 0.32   13.8 50 0.001 0.72 0.32   13.8 50 0.001 0.72 0.32   13.8 50 0.001 0.73 0.73   14.8 50 0.001 0.73 0.73   19 0 0.009 15.60 15.60   14.0 0 0.000 8.50 4.30	0 8 0 0.000 8.10 8.10   0 0 0 0.000 20.00 20.00   0 0 0 0.000 20.00 20.00   20 27.8 90 0.00 0.36 0.36   20 27.8 90 0.00 0.35 0.35   20 18.9 90 0.00 0.93 0.93   20 13.8 90 0.00 0.51 0.53   20 13.8 90 0.00 0.51 0.53   20 13.8 90 0.00 0.51 0.53   20 13.8 90 0.00 0.51 0.53   20 14.8 50 0.00 0.51 0.01   20 13.8 50 0.00 0.13 0.33   0 0 0 0.00 15.60 15.60   20 2.6 0 0.00 8.50 8.50	1999 0 0 0 0 0 8,10 8,10 8,10   1999 0 0 0 0,00 2500 2500   1999 0 0 0 0,00 2500 060 060   1999 0 0 0 0,00 0,00 0,00 0,00   1994 20 27,8 90 0,00 0,03 0,03 0,93   1994 20 18,9 90 0,00 1,63 1,65   1994 20 13,8 90 0,00 0,51 0,51   1994 20 13,8 90 0,00 0,51 0,51   1994 20 14,8 90 0,00 0,01 0,01 0,01   1994 20 14,8 90 0,00 0,01 0,01 0,01   1994 20 13,8 50 0,00 0,03 0,03 0,03   1994	0 1999 0	H 1999 H H H O HH K H K H K H   H 1999 H O H 0 H 0 H 22 HH 25 HH 22 HH 24 HH 24 HH 25 HH 24 HH 0 HH	8.1 H 1999 0 6 H 0.000 8.10 8.10 8.10   20 0 1999 0 0 0 0.000 20.000 20.000 20.000 20.000 20.000 20.000 20.000 20.000 20.000 20.000 20.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.001	8.1 0 1929 0 8 0 0.000 8.10 8.10 8.10 8.10 8.10 8.10 8.10 8.10 2.000   20 0 1929 0 0 0 0 0 0.00 20.00 20.00 20.00 20.00 20.00 20.00 20.00 20.00 20.00 20.00 0.00 0.00 20.00 20.00 <td< td=""><td>8.1 8.1 0 1999 0 0 0 0 0 8.10 8.10 8.10 8.10 8.10   20 29 0 1999 0 0 0 0 0.00 29.00 29.00   0.6 0.5 0.5 0 1999 0 0 0 0.00 29.00 29.00   0.6 0.5 0.5 26 1999 0 0 0 0.00 0.60 0.60   7.2** 3.6 26 1994 20 27.8 90 0.00 0.35 0.36   9.3 9.3 L84 17.3 1995 20 18.9 90 0.00 0.51 0.93   16.5 1.65 1.12 1994 20 13.8 90 0.00 0.51 0.53   9.2 9.2 1. 17 1994 20 13.8 90 0.00 0.91 0.91 0.91 0</td><td>4.1 8.1 0 1999 0 6 0 0.000 8.10 8.10 8.10 8.10   20 20 20 0 1999 0 0 0 0 0 0 0 0.000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 0 0 0.000 2000 2000 0 0 0.000 2000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.001 0.01 0.01</td><td>421.093 4,1 8,1 9 <th< td=""></th<></td></td<>	8.1 8.1 0 1999 0 0 0 0 0 8.10 8.10 8.10 8.10 8.10   20 29 0 1999 0 0 0 0 0.00 29.00 29.00   0.6 0.5 0.5 0 1999 0 0 0 0.00 29.00 29.00   0.6 0.5 0.5 26 1999 0 0 0 0.00 0.60 0.60   7.2** 3.6 26 1994 20 27.8 90 0.00 0.35 0.36   9.3 9.3 L84 17.3 1995 20 18.9 90 0.00 0.51 0.93   16.5 1.65 1.12 1994 20 13.8 90 0.00 0.51 0.53   9.2 9.2 1. 17 1994 20 13.8 90 0.00 0.91 0.91 0.91 0	4.1 8.1 0 1999 0 6 0 0.000 8.10 8.10 8.10 8.10   20 20 20 0 1999 0 0 0 0 0 0 0 0.000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 0 0 0.000 2000 2000 0 0 0.000 2000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.001 0.01 0.01	421.093 4,1 8,1 9 <th< td=""></th<>

Residual

Projection Date: 2003 Total Sub-basin Area (km<sup>2</sup>): 12.3 Page 3 of 3 Date: Inc. 2000

GIS Map Ref.⊮	Mapsheet/Opening Number	CP/Block	Total Area	Area Above H60	Area Belmi Hfd	Year Harvested	Main (	Canopy	Averaige Lender Growth	Projected Canopy Height	Percent Recovery	ECA Above H60	ECA Below H60	Total ECA	Comments
			(ha)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	*	(hu)	(ba)	(24)	r
												0,00	.97,36	97.36	Sub-totals from page 1
210	821.092-39		8.2		8.2	1.88	2.1	1998	20	3.1	25	0:10	6.15	6,19	
197	\$21,093-35		16.1		16.1	1,897	17	1994	20	18.8	90	0.00	1,61	1.61	Airpânto interpretation 1994.
204	\$21,093-34					LRI	0.7	1994	20	2.5		0,01	6.01	6.00	Polygon in split, small section logged 10% in 1980
199	821.093-38		16.4		26.4	1.84	0.2	1995	/20	2.2		0.00	26.40	26.40	
195	x21,093-34		162		14.2	1.41	0.7	1994	10	1.6	- 11	n.un.	14.20	14.28	
187	621.095-33		21.6		21.6	1,77,79	3.8	1995	20	34	511	0.00	10.80	10.00	
LX3	x21.093-33		0.4		0.4	L77.79	3.8	1995	20	51	50	nuin -	0.20	11,211	
182	x21.093-33		0.4		0.4	1.77,79	3.8	1995	20	5,4	511	0.00	11.211	0.29	
213	K21,093-38		3.1		3.1	1.74	10	1991	30	16	30	0.00	0.51	0.51	
202	821.093-35		4.5		4.5	1.72,74	12	1994	20	13.1	90	0.00	0.45	0.45	
120	\$21,093-29		- 7	7		1,82	14	1999	19	36.47	98	0.711	0.00	0.70	
179	(8213993-34)		11.01		ji.cij	1.26,29	- 9.4	1996	10	4.1	.11	0.000	- 4,04	::0,03	
173	321.093-31		119	11.9		1.78,79	0,4	1996	10.	Sit	30	11.99	0.00	31:90	
184	821.093-33		2.2	2.2		1.77,79	3.1	1295	30	5,4	50	1.10	0.00	1,10	
141	82(.093-33		17.4	17.4		1,17,29	3,8	1995	211	5,4	50	8.70	11,000	8,70	
190	#21.093534		1.6	1.6		LII	9.7	1994	10	1.6	- 0	1.69	0.00	1.00	
							-0				Sub-totale	24.00	163.89	187.89	

Sub-tatals 24.00 163.89 187.89

#### Residual

Projection Date: 2003 Total Sub-basin Area (km<sup>2</sup>): 12.3 Page 3 of 3. Date: Jan. 2000

GIS Map Ref.#	Mapduxt/Opening Number	CP/Block	Tetal Arcs	Aren Abore 1890	Area Below 1160	Year Harvesteil	Main	2.empy	Average Leader Growth	Projected Canopy Beight	Percent Recovery	ECA Above H60	ECA Belaw Han	Total ECA	Comments
			(ba)	(be)	(ha)		Height (m)	Ref. Year	(em)	(m)	74	(ha)	(hu)	(ba)	
_												24.00	163.19	187,89	Sub-totals from page 2
185	¥2L093		1.1	-11		1.9K	11.3	1999	20	1.1		1.10	0.09	1.10	Will be planted in 1999.
180	821.093		11.2	1(2)		1.94		1999	20	1,1	0	9,20	9,09	0.20	Will be planted in 1999.
177	821.003-32		10.9	10.5		LNI	10.8	199 <b>5</b>	14	11.92	.90	1.09	0,00	E092	
158	821.093-30		86.8	R5.8		1.54	11	19900	14	14.22	- 90	8.65	0.00	8.68	
121	#2L093		ĸ			L	17	1994	20	38.8	90	0.80	0.00	0,80	Airphoto interpretation, 1994
369	821,093-30		2.5	2.5		1.58	-11	1980	14	14.22	90	0.25	0.00	0.25	
167	#21.093-30		0.1	305		1.50	30 S	1980	14	14.22	- 90	0.01	ILUIT	0.01	
160	42L093-30		0.2	11.2		1.58	11	1980	10	13.3	90	8.02	n'nn	0.02	
154	#2L09/5-03		7.4	7.4		B60	3.4	1998	69	6.4	50	3.70	0.00	3.70	Burn, airphoto interpretation 1994, site visit 1999.
												-			
								_	_						
-															
				_						_	Sub-tutala	39.85	163.89	203.74	

Sub-totals 39.85 163.89 203.74

Upper

Projection Date: Total Soloftasin Area (km<sup>2</sup>): 2004

10

GIS May Ref.#	Mapsheet/Opening Number	CP/Block	Total Area	Area Ahave Bio	Area Below H60	Year Harvested	Main	Склиру	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Above H60	ECA Below Hot	Tetal ECA	Community
			(5a)	(ha)	(ha)		Height (m)	Ref. Year	(cm)	(m)	18	(hu)	(ha)	(ha)	
101	\$255003	p.644	\$2.9	52.9		L96	0.3	1997	56	4.22	25	32.68	0.00	39.6R	Planted 1997
103	\$255003		30(1	30.1		1.31-53	17	1994	10	л	્રગ્રા	2.01	1,110	3.01	Airphoto Interpretation 1994
104	K2M903-215		3.0	5.9		L91	0.25	1993	36	641	.50	2.95	0,00	2.95	
115	\$255003		27.3	27.3		1.31-53	17	1994	to	23	99	2,73	0.00	2.73	Airphoto interpretation 1994.
107	1220003-60		47.8	47.8		L95	0,25	1997	56	4.17	25	35,85	0,00	35.85	
106	K2M009		=116.3	186.5		Всо	0.1	1929	40	1.5	75	46.63	0.00	46.63	Burn, airphoto interpretation 1994
112	\$2M003		3.4	3.4		B40	0.0	1999	u.	0	- 0	33.40	0.00	3.40	NSR, airphoto interpretation 1994_aite visit 1999
116	8254060		4.8	4.8		Bia	7	1999	-40	9	-95	0,48	0.00	0.48	Barn
117	#256003-222		5.7	0.7		L88,89	0.2	1990	56	8.04	75	1.68	0.00	1.68	Planted 1990.
119	8250063		11.01	0.01		80	0.000	1929	α		- 00	:0.03	0,00	0.01	NSR, auphoto interpretation 1994, site visit 1999
121	121.093-07	_	14.8	14.8		1.77,78	3.15	1995.		3.96	25	11.10	0.00	41.30	
3122	#2M003		1.6			Bin		1998	σ	.0			0.00	1.01	NS8, airphoto interpretation 1994.
123	#2[.093-0]		2.2	2.2		1,77,71	9.15	1995	92	3.96	15	1.68	HORE:	1.652	
125	421.093-02			0.8		L.73	-4	(987	20	ži	28	0.20	0.00	0.20	
124	121.093-00		22.1	22.1		L77,78	3.15	1995	9	3.96	23	16.58	ii.tim	16:58	
122	421.093-01	_	5	- 5 -		1,77,78	3.15	1925	9	3.96	23	3.75	0.00	3.75	
											Sub-totale	17528	8.90	171.25	

Page 1 of 3 Date: Jan 2000

۰.

Upper

2004 Projection Date: 10 Total Sub-havin Area (km<sup>2</sup>):

Ref.#

12K

124

138

152

101.

134

144

146

142

143

148

151

149

153

157

Average Ares Below Vear. Projected Percent ECA Above. ECA Belim Mapsheet/Opening GIS Map Ares Tital ECA CP/Block Main Campy Lender Comments Tetal Area 860 1160 Number Abayr H9 H60 Harvested annpy Height Recovery Growth (cm) (ha) (ha). Height (m) Ref. Year (71) 26 (ha) (ha) (his) (ha) 171.28 10,043 171.28 Sub-totals from page 1 87LH93-02 5.1 5.1 1.73 4 1987 20 7.4 75 1.28 0.00 1.28 5.3 5.5 6.5 1999 40 15 75 1.53 0.165 1.33 Hum, airghete interpretation 1994: **B60** 32L093 0.05. 17 90 19.9 90 10,01 030 0.01 \*\*Logged 40% in 1958, airphoto interpretation 1994 ¥2L093 0.19 1.58 1994 24.8\*\* 12.4 1.58 19 1994 90 19.9 -90 1.24 0.00 124 \*\* Logged 40% in 1958, airphoto interpretation 1954. 121.093 12.8 Bon 9.6 1998 55 12.96 90 1.98 0.00 1.94 Barn, alephoto interpretation 1994 19.8 #2L093 31.8 0.8 Bolt 9.6 1998 56 12.96 -95 0.08 0.00 0.08 Burn, airphoto interpretation 1994. 821,093 32 90. 0.44 0.00 0.44 \*\*Logged 40% in 1958, airphoto interpretation 1994. 8.8\*\* 4.4 1.58 28 1294 40 821,003 43.6 L77 13 1994 56 11.5 90 4,36 0.00 4.36 NSR, Airphete Interpretation 1994, site visit 1999. K2L093-04 43.6 6.5 1999 40 \$5 75 34.00 0.00 31.90 Boll Burn, airphoto interpretation 1994. K21,003 139.6 139.6 6.5 1.5 75 4,19 0.00 4.11 16.4 1999 40 Burn, airphoto interpretation 1994 #21.093 16.4 B60 4 1999 40 50. 2.35 0.00 235 4.7 4.7 Doit-6 Burn, dirphoto interpretation 1994 #21,1193 75 0.00 5.05 Burn, Airphoto Interpretation 1994, site visit 1999. 20.2 D44 4 國便 60 7 5.05 821.093-03 10.2 \$21,193-05 12.4 19.4 L78 11 1994 40 15 90 1.94 0.00 1.94 Burn, airphoto interpretation 1994 Logged 50%, airphoto interpretation 1994, unknown 4.0. 4.6 Bar 6.3 1999 411 8.5 75 1.15 0.00 1.15 w21,000 12.3 11 24 90 1.23 R.III. 1.23 82L093 12.3 1. 1994 60 harvest date

Paul: 2 of 3 Date: Jan. 2000

232.74 232.71 Sub-Listals 0.00

Upper

2004

Projection Date:

Tetal Sub-basin Arva (km2): 10 Average Area Belew GIS Map Mapsheet/Opening Year Projected Percent ECA Above ECA Below Ares CP/Block Main Canopy Total ECA Total Area Leader. Comments Above H60 Harvested Cannyy Height Ref.# Number H60 Recovery H60 1160 Grunth Height (m) Ref. Year (Ba) (hs) (fra) (cm) (m) 2 (2+4) tho (ha) 232.71 0.00 232.71 Sub-totals from page 2 11.6 11.6 1.58 15 1040 14 14.36 -98 1.15 159 ¥21.093-30 1.16 0.00 43 4.3 1.95 11.25 1996 20 1.85 .0 4.30 0.00 4.30 266 821.0907-81 4.4 0.25 321,093-82 44 1.9.1 1996 20 1.85 0 4.40 0.00 4,40 162 \*Loggod 30%, airpliceo interpretation 1994, unknown 1.05 Ъ 25 91 164 \$2L/i93 1100 1994 20 27 0.41 0.00 11.41 horvest date. 71 7.3 1.12 34 911 172 821.093-29 1990 19 16.66 11.73 0.00 11.73 Sob-totale 243.78 0,00 243.70

Total Percent ECA

24.37%

Page 3 of 3 Date Jan 2000

East

Continents	Total CCA	ECA Below Hou	ECA Above H60	Percent Recovery	Projected Canopy Height	Average Leader Growth	Canopy	Main (	Year Harvested	Area Belaw H60	Area Abase H60	Tetal Area	CP/Black	Mapsheet/Opening Number	GIS Map Ref.#
	(ba)	(ha)	(hu)	76	(m)	(em)	Ref. Year	Height (m)		(ha)	(ha)	(ha)			
Buon, Airphoto Interpretation 1994, site visit 1929	0.25	0,10	0.26	00	12.4	36	1999	94	g.a		2.6	2.6		821.093-03	136
Burn, Airphoto Interpretation 1994, see visit 1999	2.03	41 (83	2.03	75	1.5	40	1999	6.5	860		8.1	8.1		#21.093-03	125
Burn, Airphoto Interpretation 1994, site visit 1999.	n.95	11.00	11.95	.90	12.4	56	1999	9.6	860		9.5	.9.5		821,093-(0	130
Barn, Airphoto Interpretation 1994, site visit 5999	0.05	0.907	1015	.90	12.4	- 36	1999	9:6	B60		0.5	10		#21(69)-0()	153
Burn, Airphoto Interpretation 1994, site visit (199)	435	2000.	4.35	75	8.5	40	1999	6.5	860		17.4	174		821.053-03	139
Born, Airphoto Interpretation 1994, site visit 1999	4.59	0.00	4.59	90	12,4	56	1999	9.6	9(0		45.9	45.9		82L093-03	129
Burn, Airphoto Interpretation 1994, site visit 1999	19:10	0.00	19.10	75	3.5	49	1999	6.5	800		76,4	76.4		#2L893-83	145
	0.00	0.00	0.000	.90	13	20	1994	- 38	1,78		0.02	0.112		X2L093+05	1510
**Logged 30%, Airpheto Interp. 1994, anknown harve date.	0.01	0,041	0.31	90	27	20	1994	23	ΤĒ.		3.1	6.2**		#21,093.03	165
	1.35	0.00	1.35	00	17	20	19924	15	1,80	-	12.5	13.5		\$21,003.005	161
	to in	0,110	20,50	19	1.85	29	1996	11.25	1.93		30.5	30.5		821.003-82	163
**Logged 30%, Airphoto Interp. 1994, unknown harve date.	0.35	- 1010	0.35	-90	27	20	1994	25	6		3.5	7**		NTE1003	170
**Logged 30%, Airphoto Imerp. 1934, unknown harve date		9.00	2.29	90	27	20	1294	23	1		22.85	45.70		621.093	164
Burn, Airphoto Interpretation 1994, site (1811-1999	2.77	0.00	1.77	00	16.65	19	1998	14	1.02		22.7	27.7		\$21,593-29	174
Airphoto Interpretation 1994, usknown harvest date.	3.117	19,1117	3.87	90	27	20	1994	25	L		311.7	30.7		\$21,093	175
	38.70	0.000	28.70		1.6	20	1997	0.2	194.93		28.7	28.7		821,1923-30	186

Sub-totals 100.66 0.00 100.66

East

Projection Date: 2004 Total Sub-basin Area (km<sup>3</sup>): 5.9 Page 2 of 2 Date: Jan 2000

Comments	Total ECA	ECA Below H50	ECA Above H50		Projected Canopy Height	Average Leader Granth	lampy	Main C	Year Harvested	Ares Belan H60	Aren Aboyr H60	Tital Area	CP/Block	Mapsheet/Opening Number	GIS Map Ref.V
	(54)	(ba)	(ba)	<b>%</b>	(m)	(cm)	Ref. Year	Height (m)		(hut)	(bid	(ha)			
tatab from page 1	100.65	0.00	101056												
agged 30%, Airphota interp. (994, unknown har		0.09	2.61	545	32	20	1994	38	4		26,1	52.2**		KZLIP93	178
	2.20	2.20	ii.du	90	14	20	1994	12	L73,74	22		22		\$21,073-30	196
	1.25	0,00	1.35	25	4.75	13	1991	2.8	1.74		1.8	1.4		#2L(#23-26	193
										_					
				_											_
				-									-		
				_					×						
				-			_								_
	106.81	2.20	104.62	Sub-totals			6						-		

Total Percent ECA D.11%

1
### Ponds

Projection Date: Total Sub-basin Area (Ism<sup>2</sup>1: 2004

2.7

Page 1 of 2 Dole Jan 2000

GIS Map Rcf.#	Mapsheet/Opening Number	CP/Block	Total Area	Arca Ahose H60	Area Below Hái	Year Harrested	Main (	Салару	Average Leader Growth	Projected Canopy Height	Percent Recovery	ECA Above 1000	ECA Below H60	Tetal ECA	Comments
			(ha)	(ha)	(hu)		Height (m)	Ref. Year	(cm)	(m)	54	(ha)	(ha)	(hu)	
189	82L093		0.3	6.3		1.30	16	1994	20	18	SH.	4,113	1000	0.03	Airphoto interpretation 1994
191	821.093-26		ā3	0,3		L74	2.8	1991	15	4,75	25	n.23	0.00	0.23	
192	x21.097-20		2.2	2,2		1,74	2.8	1921	15	4,75	21	1,65	0.09	1.65	
198	#2L093-37		2.6	2:6		L74	2.2	1991	20	4.8	25	1.92	0.00	1.95	
201	\$21.093-86		2.1	2.9		1.94	83	1999	30	2.8	<u>0</u>	2.99	0.00	2.90	NSR on Forest Cover, to be planted in 1999
200	\$21.073-86		2,3	2.3		L94	113	1999	50	2.8		1.30	0.00	230	NSR on Forest Cover, to be planted in 1999.
205	621,023-86		2.5	2.5		1.94	0,3	1999	50	2.8		2.59	0.00	2.50	NSR on Forest Cover, to be planted in 1999.
207	821.093-86		12	1.2		1,94	0,3	1999	50	2.8	- 10	1.20	0,00	1.20	NSR on Forest Cover, to be planted in 1999.
212	821.093-86		11.5		0.5	1.04	0.3	1999	50	2.8	8	0.00	0.90	ii.50	NSR on Forest Cover, to be planted in 1999
216	821,093-86		0.3		0.1	2.94	0.3	(99)	50	2.8	- 10	0,00	0.10	0.10	NSR on Forest Cover, to be planted in 1999
208	x21.093-86		3.1		5.5	1/94	0.3	1999	30	2.8	. 0	0.115	5,50	5.50	NSR on Forent Cover, to be planted in 1999
205	321,093-34		1.1		12	234	2.2	1991	-20	-43	25	0,10	0,90	0.99	
215	821.090-86		0.8		11.8	04	0.3	1999	50	2.1	- îi	6,16	0,60	0.80	NSR in Firent Cover, to be planted in 1999.
214	821,093-31		0,1		93	L74	10	1991	340	16.5	294	0.10	0.93	0.93	
220	#21.097-40		0.05		0.06	L74	9.5	1991	50	16	90	0,00	0.01	12,013	
											Sub-totale	12.76	8.74	21.49	

Ponds

Projection Date: Total Sub-basin Area (km<sup>3</sup>): 2004 2.7

Page 2 of 2 Date: Jan 2000

G15 Map Ref.#	Mapsheet/Opening Number	CP/Block	Tetal Area	Area Above \$150	Aren Belaw Höll	Year Haricsted	Main	Сальру	Average Leader Grawth	Projected Compy Height	Percent Recevery	ECA Above Bio	ECA Below H50	Tend ECA	Comments
_	l		(ha)	(ha)	(ha)	v	Height (m)	Ref. Year	(cm)	(m)	56	(lui)	(hu)	(ha)	
												12,75	6.74	21.49	Sub-tailaith from page 1
221	821,093-40		6.2		6.2	L74	9.5	1991	50	16	- 90	0.05	0.62	1062	
223	82L0/23-40		11.9		0.9	1.74	0.5	1921	311	16	290	0.00	0,09	0.02	
225	821.093-40		1.1	<u>]</u> ]	1.1	1.74	9.5	1991	50	16	90	0.00	0.11	9.11	
224	321.050		13.3		13.3		.0	1999	0	0	.0	0.00	13:30	13.31	DC Hydro right of way.
226	821.093		61.9		61.9	L.	32	1994	20	14	90	11.00	6.19	6,19	Airphoto interpretation 1994, unknown haevest date.
232	821.093		1.1		1.1	L.	17	1994	20	19	90	100	0.11	0.11	Airphota interpretation 1994, unknown harvest date.
250	821.093		58.7		38.7	L	12	19814	20	14	90	11.00	3.87	5.87	Airphoto interpretation (994, unknown harvest date.
236	\$21,093-52		3.9		3.9	1.71	.0	1997	0	0			3,90	3.90	NSR on forest cover.
-					_						_				
_															
_															
_		-			_		-				-				
				_			1				-				
	-							-			Sub-totals	12.76	38,93	51.68	
										1	Total Perce		aures.	19,14%	

#### Residual

Projection Date: 2004 Tatal Sub-Inixin Area (km²): 12.3 Page 1 of 3 Date Jan 2008

Comments	Total ECA	ECA Below Hou	ECA Above 1169	Percent Retmery	Projected Canopy Height	Average Leader Grawth	Windo)	Main C	Year Harvested	Area Belon H60	Area Abixe H60	Total Area	CPiBlack	Mapdoet/Opening Sumber	GIS Map Ref.#
	(ha)	(hni)	(he)	54	(m)	(cm)	Ref. Year	Meight (m)		(ha)	(ha)	(tu)			
Urbas	0.70	0.70	0.00	ö	ü	0	1999	0		0.7		M.7		\$21,093	244
Urban	8.(1)	K DI	içar.			-	1999			8.1		1.1		121,000	243
Dubivated	20.00	2000	0.00	-11		.0	1999	- 0		20		.20		\$26003	239
Diban.	11.611	D.GH	0.007			0	1999	п		8:6		0.62		\$2L013	240
**Logged 30%, private property	0.36	0.36	0.110	90	28	20	1994	26		3.6		7 2**		\$2L093	2.38
	0.93	0,93	0.00	90	19,1	20	1995	17.3	L84	9.3		93	_	\$21,093-50	237
Airphato interp. 1994, unknown harvest date	1.65	3.65	0.110	90	14	201	1994	12	L	16.5		16.5		K21.003	225
Airphoto interp. 1994, unknown harvest date	0,51	0.51	0.09	- 90	14	201	1994	12		\$3		390		\$21,093	224
Airphoto interp. 1974, anknown harvest date.	0.92	0.92	0.025	90	19	20	1994	17	Ł	9.2		9.2		821.093	233
Airphoto interp. 1994, unknown harvest date.	0.01	0.01	0.00	90	н	211	1994	12	L	0,1		0.1		821.093	231
Airphoto interp. 1994, unknown harvest date.	11.73	0.73	0.112	90	14.	211	1994	12	L	7.3	_	7,3		#2L(93	229
BC Hydro right af wry.	4.49	4,40	6.19	- 11		0	1999	.0		4.4		44		42L/90	227
BC Hydro right of way.	15.64	15.60	0.02	11	II.	. 0	1999	a.		19.62		15 m		421,093	228
	4.30	8.50	0.00	0	2.8	20	1991	0.2	6.68	8.5		8.5		121,093-68	222
	22.28	22.28	0.00	25	4.5	20	1992	2.1	L.78	29.7		29.7		121,093-41	219
	12.05	12.08	0.09	25	3.3	20	1998	2.1	DH .	16.1		16.1	-	#20.097-41	238
	97.36	97.36	0,000	Sub-totals.											

### Residual

Projection Date: 2004 Total Sub-basin Area (km<sup>2</sup>): 12.3 Page 2 of 3 Date Jan 2000

Commente	Total ECA	ECA Belon Hop	ECA Abeve 1169	Percent Recovery	Projected Canopy Height	Average Leader Growth	ыпору	Main C	Year Harvested	Area Below H60	Arca Above H40	Tital Area	CP/Block	Mapsheet/Opening Number	GIS Map Ref.∉
	(ha)	(ha)	(ha)	54	(m)	(cm)	Ref. Year	Height (m)		(hz)	(ha)	(ha)			
Sub-totals from page 1	97.36	97.36	icon:												
	6.15	6.15	0.10	25	33	20	1998	21	1.85	8.2		8.2		\$21,093-59	210
Airphoto interpretation(994	1.61	1.04	0.160	90	19	211	1994	17	E.80	16.1		16.1		821.093-35	197
Polygon is uplit, small acction legged 10% in 19	6.00	6.10	0.00	0	2.7	20	1994	.0.7	LN	6		- 6		821,093-34	204
	26.40	26.40	0.00	:0	2.4	20	1993	0.2	E48:	25.4		26.4		821.003-54	199
	14.20	14.20	0.00	0	1.7	10	1994	0.7	LII.	14.2		14.2		82L0/3-34	198
	18.10	1030	0.00	50	5.6	20	1995	3.8	L77,79	21.6		21.0		#ZL093-33	187
	11.20	0.20	0.00	50	5.6	20	1995	3.8	1,77,79	0.4		100		W2L093-33	183
	0.20	0.20	11:00	30	3.6	ža	1995	3.8	L77,79	0.4		ાલ		#2L//03-33	182
	11.53	131	100	90	16.5	50	1991	10	L74	3.1		31		82L093-38	213
	0.45	11.45	0.00	50	14	20	1994	12	1.73,74	4.5		41		#21,093+36	202
	0.70	0.00	0.70	50	16,65	19	1998	14	L.8.2		7	7		#2L007-29	176
	0.01	0.01	0.00	0	3.2	40	1996	0.4	1,78,79	0.01				12L093-31	179
	11.90	0.00	E11.90:	0	312	10	1996	0.4	1,78,79		11.9	1136		121.003-31	173
	1.19	o tio	1.10	50	5.6	20	1995	3.8	1,77,79		2.2	2.2		\$21.(93-33	184
	1,70	0,00	8,70	50	5.6	29	19915	3.8	1,77,79		17.4	17.4		#2L093-33	181
	1.01	0,00	1.60		31.7	10	1994	0.7	1.11		1.6	1.6		#2L/993-34	190
	187.89	163.89	24,00	Sub-totab.											

Residual

Projection Date: Total Sub-basis Area (km<sup>3</sup>): 2001

12.3

Page ) of 3 Date: Jan 2000

Comments	Total ECA	ECA Below H60	ECA Ahove H60		Projected Canopy Height	Average Leader Growth	anopy	Main (	Year Harvested	Area Belon Hito	Arca Above 1860	Total Area	CV/Block	Mapsheet/Opening Number	GIS Mep Ref.¥
	(hu)	(ha)	(ha)	٩.	(==)	(cm)	Ref. Year	Height (m)		(ba)	(he)	(60)			
Sub-totala from page 2	187.89	163.89	24.00												
Will be planed in 1999	1.10	0.00	1.10	- 0	1.3	20	1999	6,3	1.98		1.1	- 314		#21,093	183
Will be planted in 1999.	0,29	11,00	11,20		1.3	20	1998	0.5	198		30(2)	0,2		821,093	180
	1:02	11.00	1.09	90	12.06	14	1993	10.8	1.01		10.9	10.9		821.093-32	172
	8.64	0.00	8.68	90	14.36	1.4	1985	11	1.28		86.8	36.8		121.093-30	1.58
Airphnio Interpretation, 1994	11.947	11.00	0.301	50	.19	20	1994	17	L			8		12L/913	171
	0.25	0.00	11.25	90	14.36		1980	- 11:	1.59		2.5	2.3		621.093-30	109
	0.01	1.00	10.0	.90	14.36	14	1980	(H)	1.9		30.1	0.1		121,003-30	167
	0.02	41.00	11.02	90	1).4	ţu.	1980		1,58		0.2	0.2		\$21,023-30	ten
burn, airphoto interpretation 1994, site visit 5	1.15	0.00	1.15	71	7	611	1998	3.4	1160		7.4	7.4		321,093-00	154
						_									
			_												
										-	_	_			-
	201.89	163,89	38.00	Sub-cotals			-				-				

## APPENDIX D

Γ

Licensed Water Users on Corning (Lee) Creek and Fraser Brook

Daga	
Page	3 4
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# British Columbia Ministry of Environment, Lands & Parks

Water Licences Report

Scroll to bottom of page for unique count of licences found in your search

Licence No	WR Map or Points Code	Stream Name	Purpose	Qty	Unit	Qty Flag	Rediv Flag	Licensee	District/Precinct	Licence Status	Process Status	Priority Date	Issue Date
C030298	3600 S (PD48171)	Corning Creek	Domestic	500	GD	Т	N		VANA ADANIC	Current	Not Applicable	19640617	0
C040282	3600 Q (PD48172)	Corning Creek	Domestic	500	GD	Т		Mcivor Kenneth D 4812-122 "A" STREET EDMONTON AB T6H3S7	KAM - ADAMS RIVER	Current	Not Applicable	19640205	0
C040283	3600 Q (PD48172)	Corning Creek	Domestic	500	GD	Т		Fedorak William J & Jessie 971-7TH STREET KAMLOOPS B C V2B2W7	KAM - ADAMS RIVER	Current	Not Applicable	19640205	0
C046337	3600 V3 (PD48169)	Corning Creek	Domestic	500	GD	Т	N	Denis Joseph A RR 1 COMP 16 SITE 10 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19751114	0
C049272	3600 V3 (PD48169)	Corning Creek	Domestic	1000	GD	Т	N	Carter James H & Marie E RR 1 COMP 11 SITE 10 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19741220	0
C050780	3600 Q (PD48172)	Corning Creek	Domestic	500	GD	T	N	Chadney Arnold P & Wilma A 7144 205 ST	KAM - ADAMS RIVER	( irrent	Not Applicable	19770712	0

	(PD48172)	Creek				1		LANGLEY BC V2Y1T1	RIVER		Applicable	
C055438	3600 V3 (PD48169)	Corning Creek	Domestic	500 G	D	г	N	Paulson Ronald E 496 COLLINGWOOD DR KAMLOOPS BC V2B6B3	KAM - ADAMS RIVER	Current	Not Applicable	19751210 0
C058181	3600 V3 (PD48169)	Corning Creek	Domestic	500 G	D	Г	N	Mowatt John Kenneth RR 2 COMP 4 SITE 2 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19770426 0
C058182	3600 V3 (PD48169)	Corning Creek	Domestic	500 G	D	r	N	Bak Veronica M ADAMS LAKE HOLDING RD SITE 6 BOX 11 RR 2 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19770804 0
C058183	3600 V3 (PD48169)	Corning Creek	Domestic	500 G	D .	Г	N	Smith Gaye J & Martinovsky Emil 529 LINDON AVE KAMLOOPS BC V2B2N5	KAM - ADAMS RIVER	Current	Not Applicable	19780609 0
C058184	3600 V3 (PD48169)	Corning Creek	Domestic	500 G	D	Г	N	Rexin Philip A & Lois A SITE 10 COMP 28 RR 1 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19780626 0
C058185	3600 V3 (PD48169)	Corning Creek	Domestic	500 G	D ,	г	N	Wyett William R & Harbidge Wendy E SITE 9 COMP 5 RR 1 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Ap Kicable	19751210 0
C058186	3600 V3 (PD48169)	Corning Creek	Domestic	500 G	D .	Г	N	Ellis Merv L & Carol M SITE 10 COMP 21 RR 1 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19751210 0

								Martinovsky Ivan				
C067102	3600 V3 (PD48169)	Corning Creek	Domestic	500	GD	Т	N	Palmer Garry F & Rebecca K RR 1 COMP 10 SITE 10 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19880505 0
C064967	3600 V3 (PD48169)	Corning Creek	Domestic	500	GD	Т	N	Huene Ted & Kay SITE 10 COMP 12 RR 1 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19850528 0
C059912	3600 V3 (PD48169)	Corning Creek	Domestic	1000	GD	Т	N	Carter James H & Marie E RR 1 COMP 11 SITE 10 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19830126 0
C059911	3600 V3 (PD48169)	Corning Creek	Domestic	500	GD	Т	N	Mowatt John Kenneth RR 2 COMP 4 SITE 2 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19830512 0
C058190	3600 V3 (PD48169)	Corning Creek	Domestic	500	GD	Т	N	Mcintyre Joan Marigold RR 1 SITE 11 COMP 65 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19770803 0
C058189	3600 V3 (PD48169)	Corning Creek	Domestic	500	GD	Т	N	Mclelland James Campbell SITE 10 COMP 25 RR 1 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19770426 0
2058188	3600 V3 (PD48169)	Corning Creek	Domestic	500	GD	Т	N	Mclellan James RR 1 COMP 25 SITE 10 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19770426 0
2058187	3600 V3 (PD48169)	Corning Creek	Domestic	500	GD	T	N	Sutton Paul E RR 1 COMP 10 SITE 8 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19770426 0

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1.644				2

C067199	3600 V3 (PD48169)	Corning Creek	Domestic	500	GD	T	Ν	SITE 1 COMP 2 RR 2 PRINCE GEORGE BC V2N2H9	KAM - ADAMS RIVER	Current	Not Applicable	19751210	0
C104241	3600 S4 (PD48185)	Corning Creek	Domestic	500	GD	Т	N	Copeland Douglas S Et Al RR 1 COMP 97 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not M0plicable	19880803	19950412
C109491	3600 S4 (PD48185)	Corning Creek	Domestic	500	GD	Т	N	Gaw Margaret RR 1 SITE 11 COMP 57 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Under Appeal	19880803	19950412
C109492	3600 S4 (PD48185)	Corning Creek	Domestic	500	GD	T	N	Mcintyre Ken RR 1 SITE 11 COMP 1 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Under Appeal	19880803	19950412
C109493	3600 S4 (PD48185)	Corning Creek	Domestic	500	GD	T	N	Rawn Roger RR 1 SITE 11 COMP 13 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Under Appeal	19880803	19950412
C109494	3600 S4 (PD48185)	Corning Creek	Domestic	500	GD	Т	N	Cosby Rebecca RR 1 SITE 11 COMP 48 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Under Appeal	19880803	19950412
C109495	3600 S4 (PD48185)	Corning Creek	Domestic	500	GD	Т	N	Guiffrida Cris C/O R.MACDONALD PO BOX 83 CELISTA BC V0E1L0	KAM - ADAMS RIVER	Current	Under Appeal	19880803	19950412
C109496	3600 S4 (PD48185)	Corning Creek	Domestic	500	GD	Т	N	Knowlton Stephen R RR 1 COMP 81 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Under Appeal	19880803	19950412

C109497	3600 S4 (PD48185)	Corning Creek	Domestic	500	GD	T	N	Holland Mark RR 1 COMP 61 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Under Appeal	19880803	19950412
C109498	3600 S4 (PD48185)	Corning Creek	Domestic	500	GD	Т	N	Cosby Calvin & Rebecca RR 1 COMP 48 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Under Appeal	19880803	19950412
C109499	3600 S4 (PD48185)	Corning Creek	Domestic	500	GD	Т	N	Bastien Judith RR 1 COMP 50 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Under Appeal	19880803	19950412
C109500	3600 S4 (PD48185)	Corning Creek	Domestic	500	GD	Т	N	Rawn Robert RR 1 COMP 22 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Under Appeal	19880803	19950412
C111377	3600 V3 (PD48169)	Corning Creek	Domestic	500	GD	Т	N	Trueman Tess RR 1 COMP 13 SITE 10 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19751210	19961015
F019848	3600 Q (PD48172)	Corning Creek	Domestic	500	GD	Т	N	Harris Kenneth P & Ellen M 2423 SUNSET DRIVE KAMLOOPS B C V2C4K1	KAM - ADAMS RIVER	Current	Not ApKAMable	19640205	0
F019849	3600 Q (PD48172)	Corning Creek	Irrigation	37.2	AF	Т	N	Simpson Charles S Jr 1121 VALOIS AVE SW CALGARY AB T2T1L4	KAM - ADAMS RIVER	Current	Not Applicable	19100817	0
F019850	3600 Q (PD48172)	Corning Creek	Domestic	500	GD	т	N	Fisher Allan & Diane RR 1 COMP 10 SITE 9 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19640205	0
								Knudsen Patricia					

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		and the second sec	 5 m m m m m m m m m m m m m m m m m m m	5 million 100 mill			h		- A	the second se	- A	And and a second se

F019851	3600 Q (PD48172)	Corning Creek	Domestic	500	GD	Т	Ν	K 31-1100 56TH ST DELTA BC V4L2N2	KAM - ADAMS RIVER	Current	Not Applicable	19640205 0
F019852	3600 Q (PD48172)	Corning Creek	Domestic	500	GD	Т	N	Clark Hannelore M RR 1 COMP 26 SITE 9 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19640205 0
F019853	3600 Q (PD48172)	Corning Creek	Domestic	500	GD	Т	N	Mccully Gerald W Et Al 355 RICHMOND ST NEW WESTMINSTER BC V3L4B9	KAM - ADAMS RIVER	Current	Not Applicable	19640205 0
F019854	3600 Q (PD48172)	Corning Creek	Domestic	500	GD	Т	N	Cochrane Jacqueline V BOX 384 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19640205 0
F019856	3600 Q (PD48172)	Corning Creek	Domestic	500	GD	Т	N	Little Michael V & Elizabeth J SS 1 BOX 8 SITE 21 CALGARY AB T2M4Z3	KAM - ADAMS RIVER	Current	Not Applicable	19640205 0
F019896	3600 Q (PD48172)	Corning Creek	Domestic	500	GD	Т	N	Schmidt Allen E & Catherine E 630 SIERRA MADRE CRT SW CALGARY AB T3H3M5	KAM - ADAMS RIVER	Current	Not Applicable	19640205 0
F019978	3600 Q (PD48172)	Corning Creek	Domestic	500	GD	Т	N	Simpson Charles S Jr 1121 VALOIS AVE SW CALGARY AB T2T1L4	KAM - ADAMS RIVER	Current	Not Applicable	19670213 0
F041002	3600 Q (PD48172)	Corning Creek	Domestic	2000	GD	T	N	Simpson Charles S Jr 1121 VALOIS AVE SW	KAM - ADAMS RIVER	Current	Not Applicable	19700127 0

	(PD48172)	Creek					CALGARY AB T2T1L4	RIVER	T.	Applicable	
Z102775	3600 V3 (PD48169)	Corning Creek	Domestic	500 GD	Т	N	Huene Ted & Kay SITE 10 COMP 12 RR 1 CHASE BC V0E1M0	KAM - ADAMS RIVER	Acti B Appl.	Applic- Cleared	19901113 0
Z103746	3600 V3 (PD48169)	Corning Creek	Domestic	500 GD	Т	N	Simard Suzanne BOX 1232 CHASE BC V0E1M0	KAM - ADAMS RIVER	Active Appl.	Applic- Cleared	19911105 0
Z109611	3600 E5 (PD70827)	Corning Creek	Domestic	500 GD	Т	N	Knowlton Stephen R RR 1 COMP 81 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Active Appl.	Applic- Cleared	19950503 0
Z111416	3600 V3 (PD48169)	Corning Creek	Domestic	500 GD	Т	N	Simpson Charles S Jr 1121 VALOIS AVE SW CALGARY AB T2T1L4	KAM - ADAMS RIVER	Active Appl.	Applic- Cleared	19960820 0
Z111600	3600 G5 (PD72722)	Corning Creek	Domestic	500 GD	T	N	Malmsten John & Sharon 6231 240 ST RR 8 LANGLEY BC V2Y2G3	KAM - ADAMS RIVER	Active Appl.	Applic- Cleared	19961008 0

Total number of Licences and/or Applications found is  ${\bf 50}$ 

Page 7

## British Columbia Ministry of Environment, Lands & Parks

## Water Licences Report

Scroll to bottom of page for unique count of licences found in your search

Licence No	WR Map or Points Code	Stream Name	Purpose	Qty	Unit	Qty Flag	Rediv Flag	Licensee	District/Precinct	Licence Status	Process Status	Priority Date	Issue Date
C038719	3602 Y (PD48247)	Freeman Brook	Domestic	1000	GD	Т	N	Lamb Herschel A 6782 DORCHESTER RD NIAGARA FALLS ON L2G5T9	KAM - ADAMS RIVER	Pending	Apportionment Pend	19700817	0
C054344	3602 CC (PD48246)	Freeman Brook	Domestic	500	GD	Т	N	Cooperman James B RR 1 COMP 2 SITE 10 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19740225	0
C056450	82.L.093.1.4 B (PD55310)	Freeman Brook	Domestic	2500	GD	Т	N	Lutjen Larry D RR 1 BOX 12 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19761008	0
n		Freeman Brook	Irrigation	20	AF	Т	N	Lutjen Larry D RR 1 BOX 12 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Current	Not Applicable	19761008	0
C109396	3602 UU (PD70776)	Freeman Brook	Domestic	500	GD	Т	N	Poliak Harry & Amy Huppler- Poliak RR1 SITE 11	KAM - ADAMS RIVER	Current	Not Applicable	19740225	1995091

	(PD70776)	Brook						COMP 23 CHASE BC V0E1M0	RIVER		Applicable	
Z102764	3602 QQ (PD48245)	Freeman Brook	Domestic	8000 G	D	r	N	Cooperman James Et Al RR 1 CHASE BC V0E1M0	KAM - ADAMS RIVER	Active Appl.	Applic- Cleared	19870513 0
Z104614	82.L.093.1.4 D (PD66076)	Freeman Brook	Storage	20 A	F.	r	N	Lutjen Larry D RR 1 BOX 12 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Active Appl.	Applic- Cleared	19920421 0
Z104738	3602 CC (PD48246)	Freeman Brook	Irrigation	4 A	.F	E.	N	Cooperman James B RR 1 COMP 2 SITE 10 CHASE BC V0E1M0	KAM - ADAMS RIVER	Active Appl.	Applic- Cleared	19920513 0
н	n	Freeman Brook	Storage	4 A	JF '		N	Cooperman James B RR 1 COMP 2 SITE 10 CHASE BC V0E1M0	KAM - ADAMS RIVER	Active Appl.	Applic- Cleared	19920513 0
Z106191	82.L.093.1.4 D (PD66076)	Freeman Brook	Irrigation	160 A	F	P	N	Lutjen Larry D RR 1 BOX 12 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Active Appl.	Applic- Cleared	19930205 0
.19	.11	Freeman Brook	Storage	160 A	F,		N	Lutjen Larry D RR 1 BOX 12 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Active Appl.	ApplM - Cleared	19930205 0
Z106339	3602 TT (PD67515)	Freeman Brook	Domestic	1000 G	iD .	0	N	Thomas Kent J J RR 1 COMP 62 SITE 11 CHASE BC V0E1M0	KAM - ADAMS RIVER	Active Appl,	Applic- Cleared	19930311 0

## APPENDIX E

1:20,000 Watershed Map (accompaniment)

## APPENDIX F

Corning Creek Mainstem Profile



AVERAGE REA	ACH GRADIENT				
Reach #	Average Gradient				
1	5.6%				
2	7.6%				
3	14.4%				
4	22.5%				
5	6.7%				
6	6.8%				
7	9.6%				

## APPENDIX G

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Field Notes

13/4/99 CORNING CRIBER SITE 0 ROAD FOLLOWING RANTIA -MAN CROBER TO CUTBLOUK ON GLOWD SUITCHATCH GRASSED ROAD MOSRY AND NO SEDIMOTE, HONOUSK Serma PURUS WATER MAS SCOURD RUTS MONG TING TARCUS - MANDRESES C ROOM CONSIDERATE HUSION Pal TOIL DISMANCES SITE gomm CSP CRAEN CROSSING CRACK SMBLE HOWEVER APPORTS Too CLEMN - PPSSIBLY USED AS KKIDTAL ONCE. BAUUS , Loh ALDUNCD CIP OF IND AMOUNT NO SIGNE OF SCOULD PLOKE INCILOASOD CREEK (MANSRM) Folders SITE 2 ROAD FOR MONGSIDE 100 m (FROM SWITCH IN ROAD TO DEACTIVATED XING olas HEAVY INSMEMI ALVOR GROWTH SNABLE - US OF DENCT XING SLOPE INCRONSES SHARAY TO BEDROCK CONTINUED STEET LWD FUNCTION - GOOD CASCINE 1 Canil

	Som BISD STR ME	(Cont) COMO M SBP, BU MAL HU HACH	ISM IL -1	TUS, M	EAINS 055 JONLE
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S,	BISD S TR ME OF	LOND M SBP, BU MAL HU HUGH	ISM IL -1	TUS, M	EAINS 055 JONLE
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-	and the second
	CORNING CROXU CC10 13/7/98
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	and DRAW GOD mm CSD
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	TO UNDERSIZED CULLERT - 4450
	ponnary searas Dis
	Possible (NCALASID FLOWS TRAN ONFLOSS ADMIN 350 SRAN
	ON COAS ADON DE DRAN

CC11 13/7/99 CORNICK CROTH SITE 8 500 CSP NOW CROSSING Same Common - MULTICHAMMED ULS OF CROSSING-SOME DIFLY FLOWS DIRECTED INTO STROAM LUSS FLOW TITAN SIDE 4 DIS STABLE, WELLALOGUE CUMME SITEM · COND CROSSING 300 85P MAIN DRAW BUT MINOR FLOW (LESS NHAN SITE 4 COLUNT UNDONSIZOD -110105 ENDONCO DE OVOLTOPANC PMAMMY BLOCHED @ DIS END - CHAMABL US + DIS METHODING LOW GRADIENT-WILL USGONMOD CMBLE ALPINE LIKE SMOAM SHID MAIL SITE 10 - SUNFING FLOWS INTROPAD BY SUID MAL AND CARRIED Hotol ACROSS SLOAD FOR LONG DISTANCES - SINGLE KOITH NOAA END DIVENDIVE FLARS TO MOTH CULLORT RESTORE NOURA DRANALE SITE II - UNOMUTILIZED CULVERT IN DRAW LOVE TO DIVERTED 11104.05 FLOWS ABOVE 112

13/2/29 CORNING CREEK CC12 AB SITE12 ROAD CROSSING - CSP 1200 12010 HAS OVERTOPPED, PARTALY MODED FILLSLANG CAUSINE DefoSITION ) DIS Somo HIGH FLOW - NONTAK STILL BUT CLEAR - RECENT ROPARS? VIS OF CULVERT FIRM OHO195 SPLITS - INST TRIB MAJOR WI HAH FLOW CREEK APPOINTS TO GAMOLE IT OK - NO BEDCOND OR SCOUR - CASCADES IN WELL DETAND DRAW - GOOD LWD NO DEPOSITION US 9F COLUMNT - PAR 3/4 EVIL STABLE CHANNER BUT LATS OF WMBE - RECARS to SINE 4 DIS REIMULY LOW GRADISNI SITE13 ROND CLOSSING 600+3000SP BUASHOUT, HOWEVER RECENTY REPARED - LOB OF HID 01-1019 COMINCE FROM ABOUG + DITURINE - CONNELTS TO 5,6 (SITE 3. now chossing 500 cap SITEIY GOOD FLOW - STAFLE HOTOS ROATINELY LOW GRADIENT -TRAGE FALLEN OUR NOW

CORMUC CROCK (MIVILS ALONA) AB/50	CORNING CROEVE (C) 3/11/99 AB/50
0+000 @ SHUSWAP LAKE - DRY	04.100(cm1)
STARP COBBLY FAM DROPS	LUD LIMOLY CLEMED
OFF INTO LANG - SOME	BY LOCALS TO PROVENT
AND + FING GRAVE DOPOSITS	BANUL CROSIAN + AVULSIAN.
PHOTO -TYPICAL OF BUTKH - NO	AUTO I-bUSULR - ALLOWS REGULAR
INCREME NOTED AT CROEK	(PLANT BED MOUSMENT. CORBLE
MATH - MEW BEDG PUMMED	CREMANE ARE AT HOUSE
FOR LB - NO RIPALIAN UBL	1011, DUOSTRATES TILL COSE, OTOMOSA
AND ADDOD RIPRAP	OCI. SCOUR + Defos TON. LO
0 to 50 B/ Veh LINE - BEGIN	WEDGES DE TO NO CUD
PLUTO & WALL DEFINE CHAMMEL	D90 - 40cm
PLATE 3m Drep - 6-8m WIDE	acc. Scoul on BANUS EXASSING
300 SLOPE Dgo bocm	ROOTS ETC BUT NOT MEC. LECENT
ACC. CUT STUMP ON BANK	- Q+150 SLIGHT RIGHT BOND -
PIP90 E/CUAREDIAND 9,0 46	OUTSIDE LB SCOURDON BUT
OCT. ExposeD Soil on Banks	HELD BY THOSES FOR NAW
But antracise SMARLE	(QUOTO) CHANNEL DUP TH ROWARD TO 2M.S.
LIPTS OF OLD, LANGE BONT	(13) WIDTH 4-5 m
WEBES INDICATING. ADDIMANUS	BANN SMUCTURE Appende to
OF BANUS - KEASANABLY	illus in of soil over
WELL INSCIODINGS FAN	COBOLES, (EAN WASE)
BUT LITTLE STRUCTURES	0+20g SMAL LOG TAM - OR. OLD
IN CHANNEL - NO FINES	(14019) SCOURUS TUNDACE IN FLOODRAIN (000)

3/11/28 CORMINE CROOK Cer GRACEARINY ABLOD RE CLUARED LAND WITH 07250 SINCLE ROLD OF CHINNES + CTTNWD 512070 VURY STURP BANKS 15,16 2.5m DUSP × 4 m WIDS UNDORMINOD FUNCE LING (000) 07350 BIG OLD BUILT THOUS AUSMONT TO SNOWAM - FALLIN QUP1 18 CEDAR WRSC LOG LOTS OF CUT STUMPS 0+450 MANR (REMEV. - LEPET TURN) 011079 Arong FEAKE LINE 19,20 0+500 HWY BRIDGE . CONK. DEEK WI TIMBER PILL AND 4X/6 QUANTO LUMBER CRIB WALL ABUT. 11 6m-7n will x 2,5m that 01550 LARGE LUMP OF ASPHAULT DUMPED TO PROTECT LB-BRAS 814070 (QUO ROM ASONS) - SOME MOSS ON ROLUS ON UPPOR LOGIS OF CHAMMAN -

O+600 OLO ROM BRIDENO APPO		18/30
BRIDEND APPO		
BRIDEND APPO		ing .
Quaranter 1	ANS RECU	
FONDOUSV +	RD DEAL	TIVATED
(BHOTO 23/ Some Son/	GRAME LOI	TIN
CREWK - OT	Horzunsis E	BANKS
APASAR SM	BLE - 1-0	Lowforme M
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WOOD		
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pitoto 27/ WI Some Co	one och	SLITPL
+760 LB Belome	STECP -	No
(Horn) Contain FA	レークク	10m
35 Jann CCZ		
0+800 LUFT BAND	LAUDSLID	6
Ritoro LS years of	1 - DEEL	is Pice
(1,2) w cherry		
Sasille -	Some FILES	IN OLEEU
CHANNEL WIL	nt - 3.5m	
OUPTH I.D.		
PHOTO SLOPE = 4		

cce 3/11/28 COLMING CROOK ABADD 01850 LB - LARGE FAILURS PARTY OLD, PARTLY STILL ALTING - VERY STOUR, WERL ASKING SCIRP-014010 BILLDING AT TOP - MA, 35 REVACTUATOR BY WURGHBOD LB SOUR ON CORNER CLOBUL LEMALS STUD SSADE FLOODPLAIN (FAN) ON GATHSIDAS 0+900 CLANNEL WIDTH INCLONSES FARGELINE - SOME LB Diferos SCOUR + acc. SWD JAMS ATU CROSSING - OLD ROND 0+959 -LOWBY EXTENT OF FLOW STEEP RIGHT VINLEY WILL gitot 0 15 FAILING - CLOWLOD ABOUS RUL 01 980 INTAVIE - ROCK WIGH W/ Queofo, ABS PIPE TO VERTLER CONC. WELL - PUMP LING? POSSIBLY BURNED Some CLEMMAND OF LB CLOW. HAS SAME LWD CAMU LAGS OR.

Corninh	Calabil	C <i>C2</i>	3/n/48
		0 1 600	AB)50
14000		PIN - Cop	
		( MODINO	
	WI DUBRS	s JAM - i	Spins
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	HEAD) -	SPULCIVILE	15

3/11/48 COENING CRIDOK cc2 LANGER SULL (Con+) 18/50 BACKFILLD WI STUDS + GRAVELS SOME COBBLUS - RB IS STABLE MOSSY - NO ENJUSIVES OF TORROTS OR HUGH FLOWS. LITTLE FINE SEDIMENT BEITIND DAM (PHOTO 19) DEBRIS JAM IN CANYON - 0-D +230 + MOSSY - SOME DOPOSITION 1+300 STEVING RECENSOR WELL BESIDE CLOUR - 2 M ABOVE AUL OUN9 IN CANYON - MASIY WALL 22 1+370 Zun Matt DEBLIS JAM W CROVE AT ENTRANCE TO BROCK CANTON . BALL FREED WI SAND, GRAVEL, COBBLE TO TOP - GAND GAR WI HORSENAL 11010 blowing ds uls citavinat is LESS CONTANED - LOTS OF LAD GTAGLE BANKS WI SOME EROCH 12ND SURUBY No worknes of that Finds OR EXTREME AUDAN

13/11/9: CORNING CROOK CCB ABLSD FOLLOWED SCOURED (NOT MATURAL) PITCH TUST GUYOND UND OF SWITCH BACK - SWINKS DOWN AND CLOSSES OLD TRAIL - SEVERA OVERTALPALL POINTS - LOLLOW LANGEST POSTAL SCALD SUST BEDW LOND - SADWY - WELL DETEINED SCONRED WIC DOWN SLOPE . SEEK ARMOURED - OPENS INTO STR. FALME SM WIDE ND. SLAPS - RECONCENTRATES AND SCOURS 60 - 1007 SLAC STEERER SECTIONS EXPASED GERACO - FAULS INTO CROWN OVER BUDROCH FACE - GG SED Souther DIS (30m) IS FAILED GULLY MAY BE REVAILD TO ONTER OVERPIONE @ ROAD - Gu WINT BY 45mn that - TROPS IN CREEV. @ SUDIMONT WOLD US DE DEBRIS TAM 240105 1-24

13/11/98 Column Clith CCZ AdSD EAST FORK ONTHE LANER SECTION OF EXIST FORK NEAR CIF W MIS APRIMS STABLE, SAME EVIDENCE DE BANK SCOR BUT GOOD LUDF TAND COPELE/BOLLOR SUBSTILLERE BEDISAD. PLOTO 25 OCC. NACY OLD CUT SEDAN STUP ONUT 60 cm 0. CHANNEL SPLITS AROMO 0175 SWD JAM - Calible Bolling 1100 WEDGE - OMMELLISE FIOSELY STABLE - MORE ( IN STORY 01/24 SMALIOXION 128 FACARE (HOTO) DODALS IN SIDE OF CREEK CARANCUY MAT .- QUORS SAM Q+185 - MINOR (ALLUNG (CMMU) ON RB - Some SIGNS IL SMUSS - 2m HALH DEBRIS JAM 0+238 OTTO 3132 BACKMUED W/ COEDLES BIG LIAMANNE THER

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13/4/98 CORNING CROWL CC3 4 ABISD @ CONFLUENCE W/ MAST FORK MIS ~ 4 × LARCOR - MIS QOKD IS AGARATUD (SED WEDGES DIS - BANKS SUGARY SCARED RECENTLY DOPOSITOD GAMERS PHOTOS 34, 35,36 MON FILM CC4 - BELIN SULLEY US MILS 0+041 - LOG SAM W/COBLE DEPISION THRUAT PHOTO 12 INCL SAND PATCH (PHOID3) MUKINGHENRA CONTAG 07097 ON LB - STILL A2+ PARTALY DEWATER PHOTO Y 9-191 Um that LOG TIM AGANST BEDROCH LINOB-BACKFILLED W/ COBRE PHOTOS CHANNEL Dewarder ABOUR PHOTOS A236 SOME FLOWS RE APPENAR NUMBERS TALEN MOLS US 15-20 year OLD BONT COURTS TOE OF 9/102 (Access) (Plinings-1-25) LUI SED LINDLE

Blick CCY CORNINE COLORAL ABISD BEDROCK WASherke 01370 Assa with water they 24050 Forcarbo From Top Cherck Affring, Morie STABLE US 340/08 - Sprie MOSS ON COBRUSS PHOTO SLIGHTLY ACCOUNTS BEDADCU CONTROL IN 0+514 VITO TO CHANNEL - MOSSY BLOCUS APRIANS MORE STMBLE . SULLINU SCALED BANUS NUMBRAK FALLEN MUSO? 01562 1 CODRE/GRAVE SED LEDGE Cito 9 TO 1.5m - PATCH OF WINDFALS ON LB ROSSIBLE SOIL INSMBILTY - DRUKEL MAS TRIO GULLEY ON RB 77611 NO FLAN BUT CU. NOWLE OF HIGHNA PLANS + SCOUR al. SEDIMENT SOURCE SMALL (AN - BIG TREES VALLEY APONS SLIGHTLY-LOSSOORCH 0+712 COBLE WORK/ POBLIS FLOOD OBPOSIT ON LO (PHOTO 13)



CCY 13/11/58 CORNAL CREEK AB/SD OLD (APPARIAN) DESRLS 0+747 FLOW LOBE - RMARD JAG ON LO - SUMMUS Guildes Rendemment - others up to unless Duposit MB OF JAM - LOB OF JUNDALE CEDM, ER 0+803 DEBRIS JAM - W/ ELGUATED PILLONOID MID (144 MAL 2 BR LARGE FAILURE SITE ON RB 01897 17070 - 16-25) - OLDON LAICURE SUCIENTY 0/5 - PART CONGOD SIG. SED SOURCE - CORY SANDY LARM - PARALINK UNSTABLE LIP - TENSION CRACUS. - CUT STUP @ Tap? - FLAT AREA 6 TOP OF SLIDE (BEN(1) FLOW - OT GO MMORDONS DIRECTIONS - FARLON GULYUP TO WELL OSKIND JANRA 4010 GULT. NATURAL ROUTE CHANGE , LIVIET NATURAL SLIDE

CQ4 13/4/94 CORNING: CREEK ABISD +2000 N 2nd FALLING - SHALLOW SURFACE SUDE IN CLAYEY TILL - LITTLE SURFACE ARANLING TREES LEADING ACCRESS CRUSH LILLET TO CONT. Rhelling 3 NAWRA - POSSIBLY UNDERCIT (PHOTO 28, 29, 30, 31) BANK 1+036 - Conflutario witht WHIL DEKINGE DAME ON RB - AFREARS SMOLE NO FLOW , NO SCOUR 1= D57 Derlis FLOW LOBE ANTS (20-150 years 000 (PHD 32 LOGO SMALL BANK FACING 9N LB - LOXIZM - TREE, in estorn) CLICH , CBBUG UNDE BEDASON RE CONTROL/ CASE +134 -180- CRIER WIDONS- POSSIBLE PHOND BY DISTUS FLOW DERIT MICH CREEN APPEARS MOSTLY 1460 STABLE - OCC. WEDLE - MINIMAL GANK MOSION - CLIMBOUT E/SULUSY

$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Sub-bas Reach:	Contra de la contr	CORNIJ YFTFR		MAIN FORK	Date: 9% Crew: A	0/50	
Station     Wa (m)     d (cm)     s (%)     D (cm)     (Figure 5)       04000     7,5     60     10     35     SP 600       04000     7,5     65     11     30     SP 600       04000     7,5     60     10     37     SD 600       04000     7,7     60     10     37     SD 600       04000     7,7     60     10     37     SD 600       04000     7,7     60     10     37     SD 600       010     37     50     60     10     37     SD 600       010     37     50     60     10     37     SD 600       010     37     60     10     37     SD 600     10       0100000000000000000000000000000000000						Weather: V	The MANIN	0110
0+030     9.5     6.5     11     3:0     5P     6W       0+040     5.7     60     10     .37     5D     6W       Modal marphological type     Modal marphological type     Modal type     Modal type <th>Station</th> <th>Wat</th> <th>m) d</th> <th>(cm)</th> <th>s (%)</th> <th>D (cm)</th> <th>Marphalogy fra (Figur</th> <th>m nomogran e 5)</th>	Station	Wat	m) d	(cm)	s (%)	D (cm)	Marphalogy fra (Figur	m nomogran e 5)
0+030     9.5     6.5     11     3:0     3P     6.0.00       0+040     5.7     60     10     37     50     6.0.00       Modal marphological type     Modal marphological type     Modal type     Modal t	01000	7.0	5 6	0	10	35	SP 6W	35
Q4049 5.7 60 10 37 50 600   Madal marphological type Madal marphological type Madal marphological type Madal marphological type   Distance (m) Bank type Channet type and level St S2S3 S4 S5 C1 C2C3 C4 C5 B1 B2 B3 D1 D2 D3 roll & frained Pholo roll & frained   0 t000 N Z [3] St 600 C1 C2 C3 C4 C5 B1 B2 B3 D1 D2 D3 Pholo roll & frained	And in case of the local division of the loc	and the second se			11	30		
Distance (m] Channet hype and disturbance (m] Channet hype and disturbance (m] Check any field indicators present hype Photo roll & Iran   0 (fields N Z   2 Closed A Clo			76	0	10			
Distance Bank Channet type and disturbance level Check any field indicators present st s2 s3 s4 s5 c1 c2 c3 c4 c5 b1 b2 b3 c1 b2 c3 rell 5 frame   • t000 N Z 3 Shout A7 Ode S9 Ode S9 Ode S9		_						
Distance (m) Bank type t Channel hype and disturbance level Check any field indicators present \$1 \$2 \$3 \$4 \$5 \$C1 \$C2 C3 \$C4 \$C5 \$B1 \$E2 \$B3 \$D1 \$D2 \$D3 roll \$6 frain   0 ± 0000 N Z Z Z L_0 A73 Cost \$B1 \$B2 \$B1 \$C1 \$C2 \$C2 \$C1 \$C2 \$C2 \$C2 \$C1 \$C2 \$C2 \$C2 \$C1 \$C2						marphological		
			type and disturbance		Check : 3 54 55 C1	any field indicator C2C3 C4 C5 B1	s present	Photo roll & frame
	01000	1.000.100	Shu AP					
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	1			000	ם מסנ	0000 0	00 000	
	_					Contra de la contra de la contra de la contra de	a francisco de la constance de	

#### Channel Assessment Procedure Field Guldebook

Dislance (m)	Bank typet	Channel type and disturbance level	Check any field Indicators present \$1 \$2 \$3 \$4 \$5 \$1 \$2 \$3 \$4 \$5 \$1 \$2 \$3 \$1 \$2 \$3 \$1 \$2 \$3	Photo roll & frame
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S1     Homogeneous bed texture       S2     Sediment tingers       S3     Sediment wedges       S4     Extensive bars       S5     Extensively scoured zones	C1 Extensive rifles or cascades C2 Minimal pool area C3 Elevated mit channel bars C4 Multiple channels or braids C5 Disturbed stone lines	B1 Abandoned channels B2 Eroding banks B3 Avulsions D1 Smill wnody debris D2 LWD function D3 Recently formed LWD jams
†A (Erodible): 1 = silt, 2 = sand,	I = gravel, 4 = cobble, 5 = boulder (A4/5 =	Alfuvial, gravel over boulder)
N (Non-erodible): 1 = Till, 2 = ca	luvium, 3 = bedrock (see WAP Appendix 1	11 for bedrock types)

Field Form 1. Field data.

## APPENDIX H

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Site Photographs and Photodocumentation



Photo Plate 1. Reach 1. Corning Creek at outlet into Shuswap Lake.



Photo Plate 2. Reach 1. Typical channel conditions. Note lack of LWD in creek.

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Photo Plate 3. Reach 1. Landslide scarp along edge of creek. Note building on top of slope. (S2)

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Photo Plate 4. Reach 1. Landslide associated with access road to water intake site. (S3)



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Corning Creek



Photo Plate 5. Reach 3. Aggraded channel sections upstream of confluence with east tributary.



Photo Plate 6. Reach 3. Sediment wedge captured behind debris jam.

Coming Creek IWAP


Photo Plate 7. Reach 3. Dewatered section of aggraded channel



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Corning Creek



Photo Plate 8. Reach 3. Slope failure (S4) where water has been concentrated along lower edge of block.



Corning Creek



Photo Plate 9. Reach 3. Gully (Failure S5) related to upslope drainage problems. (Note bedrock near lower end.)

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Photo Plate 10. View of failure S6 from stream edge.





Photo Plate 11. Reach 3. Enlarged bank failure. (S7)



Photo Plate 12. Reach 3. Slope failures S8 and S9 photographed from above.

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Photo Plate 13. Reach 5. (Site 4). Road washout at 1200 mm diameter culvert crossing following the 1999 freshet. Inadequate cover likely caused the culvert damage shown in photo plate 15.



Corning Cleek

Coming Creek IWAP



Photo Plate 14. Reach 5. (Site 12) 1200 mm diameter culvert overtopped during 1999 freshet, leaving eroded road surface and fillslope.



Corning Creek

Corning Creek IWAP



Photo Plate 15. Reach 5. (Site 4) Damaged 1200 mm diameter culvert on mainstem resulting in reduced capacity (see photo plate 13).



Photo Plate 16. Tributary channel to Reach 3. Evidence of overtopping at 1200 mm diameter culvert crossing. (Site 3)





Photo Plate 17. Tributary to Reach 4 (Site 13). Two culverts (600 mm and 300 mm diameter) overtopped in 1999 freshet.



Photo Plate 18. Tributary to Reach 4 (Site 13). Two culverts (600 mm and 300 mm diameter) overtopped in 1999 freshet.







Photo Plate 20. Site 7. West tributary. Bedrock and wood controlled cascade into lower valley.



Reach 4. Site 2 mainstem. Bedrock controlled cascade into lower valley.

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Photo Plates 21 (upper) and 22 (lower). Reach 5 tributary Site 10. Old disused road intercepting and redirecting drainage several hundred metres across the plateau.



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Photo Plate 23. East sub-basin. Site 6. Sand and gravel deposits upstream of the road crossing.

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Freeman Brook



Photo Plate 24 (above). Freeman Brook water intake structures where surface flows emerge.

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Photo Plate 25 (right). Steep access following Freeman Brook up to storage ponds. Note scoured channel.

Coming Creek IWAP



Photo Plate 26 (above). Berm constructed to create storage ponds at the top of Freeman Brook. Note waterlines.

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Photo Plate 27 (right). Culvert section used as overflow from ponds into upper Freeman Brook.

Freeman Brook



Photo Plate 28. Natural (dry) draw connecting storage ponds to Corning Creek mainstem (unmapped).



Photo Plate 29. Natural (dry) draw connecting storage ponds to Corning Creek mainstem (unmapped).

Corning Creek IWAP

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## CHANNEL ASSESSMENT - PHOTO DOCUMENTATION

Survey Date	Watershed Name	Watershed Code	Agency	Crew	Roll #	Frame #	Reach #	Sub - Reach	Chainage	LRAP	Map # TRIM	Photo Direction	Focal Length	Scale Item Comments
			0128	AB/JD	CC1	7		#	0+000	NO		Up	(mm) Std.	- Confluence with Shuswap Lake.
98/11/03	Corning Creek		C138 C138	AB/JD AB/JD	CC1	8			0+050	NO		Up	Std.	- Dry channel.
98/11/03	Corning Creek		C138	AB/JD	CC1	9			0+100	NO		Up	Std.	- Dry channel. Note cut stumps and foot bridge.
98/11/03	Corning Creek		C138	AB/JD	CC1	10		<u> </u>	0+100	NO		Dn	Std.	- Dry channel with no LWD.
98/11/03	Corning Creek		C138	AB/JD	CC1	11	<u> </u>		0+100	NO		Xs	Std.	- Scour line on bank.
98/11/03	Corning Creek Corning Creek		C138	AB/JD	CC1	12	1		0+100	NO		Up	Std.	- Dry channel with no LWD.
98/11/03 98/11/03	Corning Creek		C138	AB/JD	CC1	13	1		0+150	NO		Dn	Std.	- Dry channel with no LWD. Note cut stumps.
98/11/03	Corning Creek		C138	AB/JD	CC1	14		1	0+200	NO		Xs	Std.	- Small LWD jam.
98/11/03	Corning Creek	••••••••••••••••••••••••••••••••••••••	C138	AB/JD	CC1	15			0+250	NO		Xs	Std.	- Old overbank deposition noted.
98/11/03	Corning Creek		C138	AB/JD	CC1	16			0+250	NÔ		Xs	Std.	Tree farm (cleared land) on right bank with undermined fence line.
98/11/03	Corning Creek		C138	AB/JD	CC1	17			0+350	NO		Up	Std.	- Bent trees adjacent to stream.
98/11/03	Corning Creek		C138	AB/JD	CC1	18	ļ		0+350	NO		Up	Std.	- Bent trees adjacent to stream.
98/11/03	Corning Creek		C138	AB/JD	CC1	19	L		0+450	NO		Dn	Std.	- Scoured bank along fence line.
98/11/03	Corning Creek		C138	AB/JD	CC1	20	L		0+450	NO		Up	Std. Std.	Dog Scoured bank along fence line. Note cut stumps.
98/11/03	Corning Creek		C138	AB/JD	CC1	21	<b></b>		0+500	NO NO		Up Up	Std.	Bridge Highway bridge     Asphalt in channel to protect left bank.
98/11/03	Corning Creek		C138	AB/JD	CC1	22			0+550	NO		Xs	Std.	Asphale in claime to protect ten bank.     Old bridge crossing recently removed and road deactivated.
98/11/03	Corning Creek		C138	AB/JD	CC1	23			0+600	NO		 Dn	Std.	Slightly widened section with some cobble deposition.
98/11/03	Corning Creek		C138	AB/JD	CC1 CC1	24 25			0+760	NO		Dn	Std.	Dog Left bank becomes steep.
98/11/03	Corning Creek	·····	C138	AB/JD		25		<u> </u>	0+700				0.0.	
			C138	AB/JD	CC2	1			0+800	NO		Up	Std.	Landslide on left bank. <5 years old with debris pile in channel.
98/11/03	Corning Creek	·····	C138	AB/JD	CC2	2			0+800	NO		Xs	Std.	- Landslide on left bank. <5 years old with debris pile in channel.
98/11/03	Corning Creek		C138	AB/JD	CC2	3	1		0+800	NO		Dn	Std.	- Representative.
98/11/03	Coming Creek		C138	AB/JD	CC2	4	h		0+850	NO		Xs	Std.	- Failure on left bank.
98/11/03 98/11/03	Corning Creek Corning Creek	· · · · · · · · · · · · · · · · · · ·	C138	AB/JD	CC2	5	1		0+850	NO		Xs	Std.	- Failure on left bank.
98/11/03	Corning Creek	,	C138	AB/JD	CC2	6	1	1	0+850	NO		Xs	Std.	- Failure on left bank.
98/11/03	Corning Creek		C138	AB/JD	CC2	7		1	0+900	NO		Dn	Std.	Dog Channel width increases. Bank scour noted.
98/11/03	Corning Creek		C138	AB/JD	CC2	8			0+900	NO		Up	Std.	- Channel width increases. Bank scour noted.
98/11/03	Corning Creek		C138	AB/JD	CC2	9			0+900	NO		Dn	Std.	- Channel width increases. Bank scour noted.
98/11/03	Corning Creek		C138	AB/JD	CC2	10			0+950	NO		Xs	Std.	- Right valley wall slumping. Cleared of trees above.
98/11/03	Corning Creek		C138	AB/JD	CC2	11	L		0+950	NO		Xs	Std.	- Right valley wall slumping. Cleared of trees above.
98/11/03	Corning Creek		C138	AB/JD	CC2	12	<u> </u>		0+980	NO		Dn	Std. Std.	Water intake with rock weir.     Old overbank deposition noted.
98/11/03	Corning Creek		C138	AB/JD	CC2	13	<u> </u>	<u> </u>	0+980	NO NO		Xs Up	Std.	Old Overdank deposition noted     Representative.
98/11/03	Corning Creek		C138	AB/JD	CC2	14			1+020 1+050	NO	h	Up	Std.	Dam Major inteke structure. Avulsion on left bank.
98/11/03	Corning Creek		C138 C138	AB/JD AB/JD	CC2 CC2	15 16		<u> </u>	1+050	NO		Up	Std.	Bedrock caryon upstream of concrete structure.
98/11/03	Corning Creek	<u></u>	C138	AB/JD AB/JD	CC2	17	h		1+200	NO		Xs	Std.	- Major intake structure. Avulsion on left bank.
98/11/03	Corning Creek		C138	AB/JD	CC2	18			1+200	NO	1	Dn	Std.	Dam Major intake structure.
98/11/03	Corning Creek		C138	AB/JD	CC2	19	-	h	1+200	NO	<u>  </u>	-	Std.	Book Backfilled with sands/gravels and cobbles.
98/11/03 98/11/03	Corning Creek		C138	AB/JD	CC2	20	1	· · · · ·	1+200	NO	1 - 1	Dn	Std.	Dam Major intake structure. Backfilled with substrates.
98/11/03	Corning Creek		C138	AB/JD	CC2	21		i i	1+300	NO		Up	Std.	- Bedrock canyon.
98/11/03	Corning Creek		C138	AB/JD	CC2	22			1+320	NO		Up	Std.	- Debris jam at canyon entrance.
98/11/03	Corning Creek		C138	AB/JD	CC2	23			1+320	NO		Up	Std.	Debris jam at canyon entrance backfilled with sand, gravel and cobble.
98/11/03	Corning Creek		C138	AB/JD	CC2	24			1+320	NO		Up	Std.	Debris jam at canyon entrance backfilled with sand, gravel and cobble.
98/11/03	Corning Creek		C138	AB/JD	CC2	25		ļ	1+320	NO		Dn	Std.	- Stevens recorder 2 m above PWL in canyon.
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## CHANNEL ASSESSMENT - PHOTO DOCUMENTATION

,	Survey Date	Watershed Name	Watershed Code	Agency	Crew	Roll #	Frame #	Reach #	Sub - Reach #	Chainage	LRAP	Map # TRIM	Photo Direction	Focal Length	Scale It	em Comments
	98/11/13	Corning Creek	· · · · · · · · · · · · · · · · · · ·	C138	AB/SD	CC3	1		<u> </u>		<u> </u>		UP	(mm) 35	PERSO	DN Scoured ditch just beyond end of switchback road.
:	98/11/13	Corning Creek		C138	AB/SD	CC3	2		1	1			UP	35	-	Scoured ditch just beyond end of switchback road.
· [	98/11/13	Corning Creek		C138	AB/SD	CC3	3						DN	35	PERSC	N Scoured ditch just beyond end of switchback road.
[	98/11/13	Corning Creek		C138	AB/SD	CC3	4						DN	35	PERSC	DN Scoured ditch just beyond end of switchback road.
1	98/11/13	Corning Creek		C138	AB/SD	CC3	5						DN	35	-	Scoured ditch just beyond end of switchback road.
	98/11/13	Corning Creek		C138	AB/SD	CC3	6			L			DN	35	-	Scoured ditch just beyond end of switchback road.
,	98/11/13	Corning Creek		C138	AB/SD	CC3	7						-	35	PERSC	DN Ditch swings down and crosses old trail.
	98/11/13	Corning Creek		C138	AB/SD	CC3	8		L				UP	35	PERSC	N Ditch opens into 5m wide failure then reconcentrates.
:	98/11/13 98/11/13	Corning Creek		C138 C138	AB/SD AB/SD	CC3 CC3	9	L			<u> </u>		ŲΡ	35	PERSC	N Heavily scoured sections on 60 - 100% slope. Steeper sections, exposed bedrock
	98/11/13	Corning Creek Corning Creek		C138	AB/SD AB/SD	CC3	10 11						UP	35	PERSC	N Heavily scoured sections on 60 - 100% slope. Steeper sections, exposed bedrock.
'	98/11/13	Corning Creek		C138	AB/SD AB/SD	CC3	12						UP	35		IN Ditch continues downstream.
ŀ	98/11/13	Corning Creek		C138	AB/SD	CC3	13		<u> </u>				UP	35 35	·	
T I	98/11/13	Corning Creek	· · · ·	C138	AB/SD	CC3	14		ł				DN DN	35		Exposed bedrock.
	98/11/13	Corning Creek	······································	C138	AB/SD	CC3	15						DN	35	FERSU	N Ditch nearing Corning Creek.
'	98/11/13	Corning Creek		C138	AB/SD	CC3	16						UP	35		Ditch falls into creek over bedrock face. Significant sediment source.
ł	98/11/13	Corning Creek		C138	AB/SD	CC3	17						UP	35		Ditch falls into creek over bedrock face. Significant sediment source. Ditch falls into creek over bedrock face. Significant sediment source.
[ ]	98/11/13	Corning Creek		C138	AB/SD	CC3	18		Mainstern		<u> </u>		DN	35		N 30 m downstream - sediment wedge caused by trees in creek.
1	98/11/13	Corning Creek		C138	AB/SD	CC3	19		Mainstem				UP	35		30 m downstream - sediment wedge caused by trees in creek.
See.	98/11/13	Corning Creek		C138	AB/SD	CC3	20		Mainstem				UP	35		N Downed trees causing debris jam, sediment wedge caused by another 6 m x 45 m failure.
[	98/11/13	Corning Creek		C138	AB/SD	CC3	21		Mainstem				UP	35		-
1	98/11/13	Corning Creek		C138	A8/SD	CC3	22		Mainstem				UP	35	-	-
	98/11/13	Corning Creek		C138	AB/SD	CC3	23		Mainstem				DN	35	-	-
' I	98/11/13	Corning Creek		C138	AB/SD	CC3	24		Mainstem				UP	35	-	
-	98/11/13	Corning Creek		C138	AB/SD	CC3	25		East Fork	0+040			UP	35	PERSO	N Lower section of east fork near confluence with mainstem.
ſ	98/11/13	Corning Creek		C138	AB/SD	CC3	26		East Fork	0+075			UP	35	PERSO	N Channel splits around SWD jam - cobble/boulder wedge, otherwise mostly stable.
ł I	98/11/13 98/11/13	Corning Creek		C138 C138	AB/SD AB/SD	CC3	29		East Fork	0+124			-	35	PERSO	N Small 10 x 10 m right bank failure. Debris in creek causing debris jam.
· F	98/11/13	Corning Creek Corning Creek	<u></u>	C138	AB/SD AB/SD	CC3 CC3	31 32		East Fork	0+238			UP	35	PERSO	N 2 m high debris jam backfilled with cobbles.
ŀ	98/11/13	Corning Creek		C138	AB/SD AB/SD		33		East Fork East Fork	0+238 0+238			UP	35		2 m high debris jam backfilled with cobbles and large, leaning tree.
1	98/11/13	Corning Creek		C138	AB/SD	CC3	34		Mainstem	0+236			UP	35 35	-	2 m high debris am backfilled with cobbles.
1 1	98/11/13	Corning Creek	0 i i	C138	AB/SD	CC3	35	•	Mainstern	0+000			UP	35	FERSO	At confluence with east fork. Mainstem is 4x larger.     Mainstem is aggraded with sediment wedges.
	98/11/13	Corning Creek		C138	AB/SD	CC3	36		Mainstem	0+000			DN	35		Downstream banks slightly scoured. Recently deposited gravels.
. 1	1															Demisural danks signay scalled. Recently deposited gravels.
	98/11/13	Corning Creek		C138	AB/SD	CC4	1		Mainstem	0+041			UP	35	PERSO	N Log jam with cobble/boulder deposition throughout.
[	98/11/13	Corning Creek		C138	AB/SD	CC4	2		Mainstem	0+041		r	UP	35	PERSO	N Log jam with cobble/boulder deposition throughout.
(	98/11/13	Corning Creek		C138	AB/SD	CC4	3		Mainstem	0+041			UP	35	PERSO	N Sand patch found in debris jam deposition.
1	98/11/13	Corning Creek		C138	AB/SD	CC4	4		Mainstern	0+097			UP	35	PERSO	N Confinement increasing. Bedrock on left bank. Channel still A2 and partially dewatered
.	98/11/13	Corning Creek		C138	AB/SD	CC4	5		Mainstem	0+191			UP	35	PERSO	V 4 m high log jam against bedrock knob backfilled with cobble.
:	98/11/13	Corning Creek		C138	AB/SD	CC4	6		Mainstem	0+191			UP	35	PERSO	V Channel dewatered above log jam.
ł	98/11/13 98/11/13	Corning Creek		C138 C138	AB/SD	CC4	7		Mainstem	0+370				35		Bedrock waterfall associated with water track followed from top.
, ł	98/11/13	Corning Creek		C138 C138	AB/SD AB/SD	CC4 CC4	8		Mainstem	0+430			UP	35	-	Creek appears more stable upstream. Slightly aggraded some moss on cobbles
	98/11/13	Corning Creek Corning Creek		C138	AB/SD AB/SD	CC4 CC4	9 10		Mainstem	0+514			UP	35	PERSO	V Bedrock control in channel - mossy blocks. Channel more stable, slightly scoured banks
	98/11/13	Corning Creek		C138	AB/SD AB/SD	CC4 CC4	10		Mainstem Mainstem	0+562 0+611			UP	35	PERSO	N Numerous fallen trees with cobble/gravel sediment wedge to 1.5m. Patch of windfall on left back
ł	98/11/13	Corning Creek	····	C138	AB/SD AB/SD		12		Mainstern	0+611				35 35	PERSO	Indutary guily on right bank. No flow but evidence of higher flows and scour. Occasional sediment source
, ł	98/11/13	Corning Creek		C138	AB/SD	CC4	13		Mainstern	0+712			DN	35	PERSO	Small fan. Big trees, valley opens slightly - less bedrock.
t I	98/11/13	Coming Creek		C138	AB/SD	CC4	14		Mainstern	0+747			DN		PERSON	Cobble wedge/debris flow deposit on left bank.
t 1	98/11/13	Corning Creek		C138	AB/SD	CC4	15		Mainstern	0+747				35	PERSON	V Old debris flow lobe. Rafted jam on left bank. Juvenile conifers revegetating.
ŀ	98/11/13	Corning Creek		C138	AB/SD	CC4	16		Mainstern	0+803				35		Opens up to large deposit upstream of jam. Lots of juvenile cedars revegetating.     Debris jam with elevated mid-channel bar.
; t	98/11/13	Corning Creek		C138	AB/SD	CC4	17		Mainstern	0+877			UP			V Toe of large failure.
i t	98/11/13	Corning Creek		C138	AB/SD	CC4	18		Mainstem	0+877					PERSON	Older failure - partly revegetated. Significant sediment source. Clay/sandy loam raveling.
L [	98/11/13	Corning Creek		C138	AB/SD	CC4	19		Mainstem	0+877	-		-	35	PERSON	Older failure - party revegetated. Significant sediment source. Clay/sandy loam raveling.     Older failure - party revegetated. Significant sediment source. Clay/sandy loam raveling.
ľ	98/11/13	Corning Creek		C138	AB/SD	CC4	20		Mainstem	0+877			•	35	-	Older failure - party revegetated. Significant sediment source. Clay/sandy loam raveling.
, [	98/11/13	Corning Creek		C138	AB/SD	CC4	21		Mainstern	0+877				35	-	Failure with unstable lip.
[	98/11/13	Corning Creek		C138	AB/SD	CC4	22		Mainstem	0+877				35	-	Failure with unstable lip.
÷ [	98/11/13	Corning Creek		C138	AB/SD	CC4	23		Mainstem	0+877			-	35	-	Failure.
[	98/11/13	Corning Creek		C138	AB/SD	CC4	24		Mainstem	0+877				35	•	Flat area at top of slide. Flow can go in numerous directions.
; [	98/11/13	Corning Creek		C138	AB/SD	CC4	25		Mainstem	0+877			-	35	-	Flat area at top of slide. Flow can go in numerous directions.
	98/11/13	Corning Creek		C138	AB/SD	CC4	26		Mainstern	0+877			-	35	-	Follow failure up to well-defined, natural gully.
۱ I	98/11/13	Corning Creek		C138	AB/SD	CC4	27		Mainstem	0+877			. •	35	-	Follow failure up to well-defined, natural gully.
ŀ	98/11/13	Corning Creek		C138	AB/SD	CC4	28		Mainstem	1+000				35	-	2nd failure - shallow surface slide in clay till, little surface armouring. Trees leaning across creek.
. L	98/11/13	Corning Creek		C138	AB/SD	CC4	29		Mainstem	1+000			1	35	-	2nd failure - shallow surface slide in clay till, little surface armouring. Trees leaning across creek.
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## CHANNEL ASSESSMENT - PHOTO DOCUMENTATION

98/11/13 Corni 98/11/13 Corni 98/11/13 Corni 98/11/13 Corni 98/11/13 Corni 98/12/18 Corni	ming Creek		C138 C138 C138 C138 C138 C138 C138 C138	AB/SD AB/SD AB/SD AB/SD AB/SD AB/SD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD	CC4 CC4 CC4 CC4 CC4 CC4 CC5 CC5 CC5 CC5	30 31 32 33 34 35 5 6 7 8 9 9 10 11		Mainstem Mainstem Mainstem Mainstem Mainstem - -	1+000 1+000 1+057 1+090 1+180 1+460	No No No No			35 35 35 35 35 35 35 35 Std. Std. Std.	PERSON PERSON	2nd failure - shallow surface slide in clay till, little surface armouring. Trees leaning across creek. Failure causing trees to lean across creek. Debris flow lobe on left bank 20 - 50 years old. Small bank failure on left bank - 10 x 12 m. Trees in crrek, cobble wedge. Creek widens - possible debris flow deposit area. Creek appears mostly stable - occasional wedge - minimal bank erosion. Freeman Brook intake. Freeman Brook intake.
98/11/13 Corni 98/11/13 Corni 98/11/13 Corni 98/11/13 Corni 98/12/18 Corni	ming Creek		C138 C138 C138 C138 C138 C138 C138 C138	AB/SD AB/SD AB/SD AB/SD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD	CC4 CC4 CC4 CC5 CC5 CC5 CC5 CC5 CC5 CC5	32 33 34 35 5 6 7 8 9 10		Mainstem Mainstem Mainstem Mainstem	1+057 1+090 1+180 1+460 	No No No		DN UP -	35 35 35 35 5td. Std. Std.	PERSON PERSON PERSON	Failure causing trees to lean across creek. Debris flow lobe on left bank 20 - 50 years old. Small bank failure on left bank - 10 x 12 m. Trees in crrek, cobble wedge. Creek widens - possible debris flow deposit area. Creek appears mostly stable - occasional wedge - minimal bank erosion. Freeman Brook intake. Freeman Brook intake.
98/11/13 Corni 98/11/13 Corni 98/12/18 Corni	ming Creek ming Creek		C138 C138 C138 C138 C138 C138 C138 C138	AB/SD AB/SD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD	CC4 CC4 CC5 CC5 CC5 CC5 CC5 CC5 CC5 CC5	33 34 35 5 6 7 8 9 10		Mainstem Mainstem Mainstem - - - -	1+090 1+180 1+460 - - - -	No No No		UP	35 35 35 Std. Std. Std.	PERSON PERSON PERSON	Debris flow lobe on left bank 20 - 50 years old. Small bank failure on left bank - 10 x 12 m. Trees in crrek, cobble wedge. Creek widens - possible debris flow deposit area. Creek appears mostly stable - occasional wedge - minimal bank erosion. Freeman Brook intake. Freeman Brook intake.
98/11/13 Corni 98/12/18 Corni	ming Creek ming Creek		C138 C138 C138 C138 C138 C138 C138 C138	AB/SD AB/SD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD	CC4 CC4 CC5 CC5 CC5 CC5 CC5 CC5 CC5 CC5	34 35 5 6 7 8 9 10		Mainstem Mainstem - - - - -	1+180 1+460 	No No No		UP 	35 35 Std. Std. Std.	PERSON - PERSON	Creek widens - possible debris flow deposit area. Creek appears mostly stable - occasional wedge - minimal bank erosion. Freeman Brook intake. Freeman Brook intake.
98/12/18 Corni 98/12/18 Corni	ming Creek ming Creek		C138 C138 C138 C138 C138 C138 C138 C138	AB/SD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD	CC4 CC5 CC5 CC5 CC5 CC5 CC5 CC6 CC5	35 5 6 7 8 9 10		Mainstem - - - - -	1+460 	No No No		-	35 Std. Std. Std.	PERSON - PERSON	Creek widens - possible debris flow deposit area. Creek appears mostly stable - occasional wedge - minimal bank erosion. Freeman Brook intake. Freeman Brook intake.
98/12/18 Corni 98/12/18 Corni	ming Creek ming Creek		C138 C138 C138 C138 C138 C138 C138 C138	AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD	CC5 CC5 CC5 CC5 CC5 CC5 CC5 CC6 CC5	5 6 7 8 9 10				No No No			Std. Std. Std.	PERSON	Freeman Brook intake. Freeman Brook intake.
98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni	rning Creek		C138 C138 C138 C138 C138 C138 C138 C138	AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD	CC5 CC5 CC5 CC5 CC5 CC6 CC5	6 7 8 9 10				No No No			Std. Std.		Freeman Brook intake
98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni	rning Creek		C138 C138 C138 C138 C138 C138 C138 C138	AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD	CC5 CC5 CC5 CC5 CC5 CC6 CC5	6 7 8 9 10				No No No			Std. Std.		Freeman Brook intake
98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni	ming Creek ming Creek ming Creek ming Creek ming Creek ming Creek ming Creek ming Creek ming Creek		C138 C138 C138 C138 C138 C138 C138 C138	AB/JD AB/JD AB/JD AB/JD AB/JD AB/JD	CC5 CC5 CC5 CO6 CC5	7 8 9 10				No No			Std.	-	
98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni	ming Creek ming Creek ming Creek ming Creek ming Creek ming Creek ming Creek ming Creek		C138 C138 C138 C138 C138 C138 C138	AB/JD AB/JD AB/JD AB/JD AB/JD	CC5 CC5 CO6 CC5	8 9 10				No				-	
98/12/18         Corni           98/12/18         Corni	ming Creek ming Creek ming Creek ming Creek ming Creek ming Creek ming Creek		C138 C138 C138 C138 C138 C138	AB/JD AB/JD AB/JD AB/JD	CC5 CO6 CC5	9 10				<u> </u>	I				Freeman Brook access road. Possible avulsion route.
98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni	ming Creek ming Creek ming Creek ming Creek ming Creek ming Creek		C138 C138 C138 C138 C138	AB/JD AB/JD AB/JD	CO6 CC5	10							Std.	-	Freeman Brook road crossing.
98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni	rning Creek rning Creek rning Creek rning Creek rning Creek		C138 C138 C138	AB/JD AB/JD	CC5		1			No		-	Std.	-	Freeman Brook spring.
98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni 98/12/18 Corni	rning Creek rning Creek rning Creek rning Creek		C138 C138	AB/JD		T 11 T		1		No		-	Std.	-	Freeman Brook road crossing.
98/12/18 Corni 98/12/18 Corni 98/12/18 Corni	rning Creek rning Creek rning Creek		C138			1		- 1		No		-	Std.		Freeman Brook.
98/12/18 Corni 98/12/18 Corni	rning Creek			40/10		12			-	No			Std.	DOG	Freeman Brook. Scoured channel out of natural channel.
98/12/18 Corni	rning Creek		1 0120	AB/JD	CC5	13		- 1	-	No		-	Std.		Freeman Brook. Scoured ditch. No natural channel.
				AB/JD	CC5	14		·		No			Std.	PERSON	Berm/dyke for storage pond at top of Freeman Brook.
38/12/18 Com	ming Creek		C138	AB/JD	CC5	15		-	-	No		-	Std.	-	Overflow 1/2 culvert on berm/storage pond for overflow into Freeman Brook.
			C138	AB/JD	CC5	16		-	-	No		<u> </u>	Std.		Natural draw heading toward Coming Creek from Freeman Brook ponds.
98/12/18 Corni	ming Creek		C138	AB/JD	CC5	17				No			Std.	PERSON	Clearing in draw betrween storage ponds (Freeman) and Corning Creek.
98/12/18 Corni	ming Creek		C138	AB/JD	CC5	18			-	No		-	Std.	DOG	Draw connecting to Corning valley from storage ponds.
	ming Creek		C138	AB/JD	CC5	19		-	-	No		-	Std.	PERSON	Draw connecting to Corning Creek from storage ponds.
	ming Creek		C138	AB/JD	CC5	20				No		-	Std.		Draw connecting to Corning Creek from storage ponds.
	rning Creek		C138	AB/JD	CC5	21				No			Std.		Draw connecting to Corning Creek from storage ponds.
	ming Creek		C138	AB/JD	CC5	22				No			Std.		Corning Creek fan.
	ming Creek		C138	AB/JD	CC5	24				No			Std.		Corning Creek from across Shuswap Lake.
98/12/18 Comi	ming Creek		C138	AB/JD	CC5	25				No			Std.		Corning Creek from across Shuswap Lake.
				AB/JD		<u> </u>									
	ming Creek		C138	AB/JD	CC0	2		·	-	NO			Std.		Corning Creek fan.
	ming Creek		C138	AB/JD	CC0	3			· ·	NO		· · · · · · · · · · · · · · · · · · ·	Std.		Corning Creek fan.
	ming Creek		C138	AB/JD	CC0	4				NO			Std.		Lower cutblock on right bank of Corning Creek.
	ming Creek		C138	AB/JD	CC0	5				NO			Std.		Blurry slide photo.
	ming Creek		C138	AB/JD	CC0	6				NO			Std.		Blurry slide photo.
	ning Creek		C138	AB/JD	CC0	-7-				NO	ł		Std.		Blurry slide photo.
	ming Creek		C138	AB/JD	CC0			+		NO			Std.		Blurry slide photo.
	ming Creek		C138	AB/JD	CC0	9				NO			Std.		Blurry slide photo.
	ming Creek		C138	AB/JD	CC0	10				NO			Std.		Blurry slide photo.
	ming Creek		C138	AB/JD	CC0 CC0	11				NO			Std.		Slide along Corning Creek mainstem.
	ming Creek	······	C138	AB/JD		12				NO			Std.		Slide along Corning Creek mainstem.
	ming Creek		C138 C138	AB/JD AB/JD	CC0 CC0	13				NO			Std.		
	ning Creek		C138 C138	AB/JD AB/JD	CC0 CC0	14	<u></u>			NO NO			Std.		Channel above main confluence.
	ming Creek				CC0 CC0						ł		Std.		
	ming Creek		C138 C138	AB/JD AB/JD	CC0	16			-	NO NO			Std.		Scotch Creek fan.
	ming Creek				CC0 CC0				· · · ·				Std.		Scotch Creek.
	ming Creek		C138	AB/JD		18				NO			Std.		Scotch Creek.
98/11/09 Comi	ming Creek		C138	AB/JD		19				NO			Std.		Scotch Creek.

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