Bruin Creek II
Timber Harvest Plan
within
Tr'ondëk Hwëch'in *Traditional Territory*

FOREST MANAGEMENT BRANCH
ENERGY MINES AND RESOURCES
YUKON G OVERNMENT

Prepared: December 2012

Approved by
Director Forest Management Branch

December 19, 2012
Date

Submitted by
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December 19, 2012
Date

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Executive Summary

The Bruin Creek II Timber Harvesting Plan (THP) has been identified as a timber source for commercial woodcutters in Dawson City and area.

The area surrounding Dawson City has had timber harvesting in support of local industrial operations since the early 1900's. Roads in the area, developed for a variety of uses, have been used for access to timber for personal fuelwood and building products during this time period. This has created a situation where the roaded land-base has a minimal supply of timber available for commercial development. The Bruin Creek area has had commercial permits ranging from 50 m^3 to 150 m^3 along with personal fuel wood permits issued in the past 3 years.

The objective of this THP is to provide opportunities for small scale commercial harvesting and provides mitigation to protect identified values (see section 2). The Bruin Creek II THP will support harvesting to meet local needs and current demands for a minimum 5 years. This timeframe will be dependent on the rate of decomposition of the spruce which is infected with heart rot.

This THP identifies two operating units (OU's), with an estimated gross timber volume of 15,000 cubic meters (m^3). After allowances for riparian management, wildlife management, and operational constraints the potential dead wood harvest for the THP is 10,500 m^3.

The *Forest Resources Act* (FRA) requires that commercial timber harvesting licences may only be issued where a THP is in place. The THP sets operational goals and objectives for the issuance of harvesting rights within the planning area.

All applicants for timber harvesting will be required to meet the submission requirements of the *Forest Resource Act* (FRA), Section 19(1)). The applications for harvesting licences require notification to the affected First Nation and public in the area of the application. The First Nation and public may make representations to the Forest Management branch Director on the application for a period of no less than 30 days (FRA, Section 18).

In addition, applications that trigger a Yukon Environmental and Socio-economic Assessment will require submission to the local development office in Dawson City for public review prior to issuance.

1.0 Introduction

1.1 Background

Opportunities to develop harvest areas close to Dawson City and surrounding residential areas are limited due to historical use, natural disturbance patterns and other land use objectives. The Bruin Creek THP II area will provide a wood supply that is close to Dawson City and surrounding residential areas.

The Bruin Creek area has been a traditional harvest area since the 1900's. This THP is designed to provide wood supply opportunities for the Dawson region while ensuring that environmental standards and other values are protected. The majority of the THP area was burned in a 1991 fire. The Bruin Creek area was chosen as the location for this THP due to its fuel wood suitability and history as a fuel wood area.

The *Forest Resources Act,* which came into force on January 31, 2011, requires that a THP be prepared prior to the issuance of commercial timber harvesting licenses and cutting permits. The Bruin Creek THP was developed in 2011 to gauge interest and feasibility. This small THP was permitted and harvested in 2011 and 2012. Due to the demand for fuelwood in the Bruin Creek area, the Bruin Creek II THP was developed to provide further opportunities. This THP adheres to the recommended Dawson Forest Resource Management Plan and follows Forest Resource Regulation (FRR) section 6 that outlines the principals and contents of a THP.

A review of the area and discussions with the Tr'ondëk Hwëch'in First Nation provided direction to develop this area to meet small volume needs for the local communities.

1.2 Eco-region and Drainages

This THP lies in the Boreal Cordillera Eco-zone within the northern extent of the Klondike Plateau Eco-region. It is bounded by Bruin Creek to the west and Mickey Creek to the east, both of which flow in a northerly direction to the Forty Mile River and then into the Yukon River.

Characteristic terrain features include smooth, un-glaciated, rolling plateau topography with moderate to deeply incised valleys and large structural basins composed of level to undulating glaciated terrain.

The THP area is within the 1991 Bruin Creek fire, and consists mostly of fire-killed dry standing and downed white and black spruce stems. Although there are patches of timber that were unaffected by this fire (mostly on north aspects), only the fire killed stems are being targeted for harvest. Slopes in this THP area range from 0 to 40% on ridges and midslopes and 30 to 50% near valley bottoms. As harvest units are developed, only slopes less than 35% will be targeted, therefore most streams and valley bottom features will be outside of the harvest area. Leading species within the region consist of black spruce, white spruce, trembling aspen and white birch. Understory species are generally comprised of suckering species such as willow and aspen regeneration.

The most common natural disturbance is fire, with a return interval of approximately 170 years; therefore early seral communities are most common. Elevations range from 600 to 1100 meters. Most of the harvesting will occur in the mid to higher elevations of this range.

Loamy moraine and sandy fluvioglacial material is dominant in the ecoregion. Much of the ecoregion is covered by a veneer of volcanic ash 2-15 cm thick. Permafrost is discontinuous to sporadic with high ice content associated with fine-textured valley deposits.

Characteristic wildlife includes caribou, grizzly and black bear, moose, beaver, fox, wolf, hare, raven, rock and willow ptarmigan, and golden eagle.

Land uses reflect recreational, tourism, hunting, and trapping values as well as some forestry activities and mining.

1.3 Socio-Economic Considerations

Dawson City is home to approximately 1,300 people. The major economic drivers in the region are tourism and gold mining. The current annual timber demand in Dawson City is approximately 3500m³ for saw log and 1500m³ for fuel wood. The industry consists primarily of one sawmill and numerous commercial fuel wood operators.

The forests in the Dawson City region provide significant ecological and aesthetic values, cultural and heritage values, recreational values, and other non-timber values. Dawson City's forests can sustain a vibrant, small-scale forest industry that provides timber for local markets, energy, economic opportunity, and employment for the region's residents (2009 Draft Dawson Forest Resources Management Plan). Many of the residents of Dawson City rely on fuel wood harvesting as an economical heating alternative throughout the winter.

2.0 Planning Area Identification

The planning area lies north of the Top of the World Highway, between Bruin and Mickey Creek (refer to Appendix A – Overview Map). This area is part of the 1991 Bruin Creek burn and therefore the operating units and subsequent blocks will be targeting dead timber. Two operating units have been identified based on terrain, road accessibility and timber potential. A description of each operating unit is listed below;

Operating Unit A –

Operating Unit A is located in the southern portion of the planning area. This unit will be accessed from the Top of the World Highway. An initial reconnaissance of the area has shown various natural erosional events to the north of the road location. These have occurred in steeper gullies flowing southwest. It is believed that these events were a result of the fire in the area which reduced evapotranspiration and slope anchoring roots.

Operating Unit B –

Operating Unit B will be accessed from the Clinton Creek Road. Timber quality and quantity is poor, consisting of open slopes and low volume stands. This operating unit will be utilized after OU A is finished. Further field reconnaissance is required to assess the wood supply conditions.

2.1 Landscape Issues

2.1.1 Wildlife

The THP area overlaps the Forty Mile caribou herd winter (October to April) key wildlife area. Much of the lichen (*clidina spp.*) on site was burned in the 1991 fire which burned very hot. It is recognized that the caribou herd could use this area for migration during the winter months however this area has been identified by the Department of Environment as low suitability winter habitat. It is expected that as time passes this lichen will regenerate and restore itself as a valuable source of caribou forage. To help monitor wildlife health, the Tr'ondëk Hwëch'in Fish and Wildlife Department requests that the timber harvester report any unique animal sightings while working in the area. Consultation with the Department of Environment highlighted wildlife habitat for:

1. *Cow and calf moose habitat –High suitability late-winter habitat (relative to regions north and south of the harvest block). Whenever possible, the removal of downfall should be minimized.*
2. *Adult moose habitat –Large amount of moderate-high suitability late-winter habitat .*
3. *Forty Mile caribou –THA is within the winter range - low suitability late-winter habitat.*
4. *The creation of new permanent access off the existing Clinton Creek road should be limited.*
5. *Standing trees and snags with occupied tree cavities should be maintained.*

To mitigate these concerns of high ungulate winter range habitat, harvest will be limited to summer and fall months. The closure of the Top of the World highway precludes winter harvest. If this highway is plowed in the future, winter harvest opportunities that do not impact the above values should be assessed, however under the current conditions, there will be no winter harvest. Removal of downfall will be limited to only those stems that have greater than 50 percent soundwood. During operations and site plan layout, should indicators such as wildlife features warrant, mitigation for wildlife concerns shall meet the FMB Planning Standards for Wildlife Features, approved under the new legislation, which may be found at: http://www.emr.gov.yk.ca/forestry/pdf/planning_standards_wildlife_features.pdf

The expected small scale of operations and previous disturbance leads to an expectation that the various species of wildlife will not be significantly impacted by proposed harvesting activity. Cavity nests were identified as a potential concern and where identified within harvest areas, operators will be required to meet the FMB wildlife standards and shall reserve snags and trees with indications of cavity nesting, when operationally safe to do so.

2.1.2 Biodiversity

To maintain landscape level biodiversity over time, both harvest rate and cut/leave pattern was considered. Forest harvesting will emulate the Natural Disturbance Zone (NDZ) regime which is large scale fire in this region. This THP is within the existing Bruin Creek burn. This area experiences frequent stand replacing events from fire, the return interval of these events averages 170 years, and greater than100 hectares in size. Operational concerns and demand will limit the size of harvest openings. Planned retention and reserve areas within patch cutting will best emulate fire disturbance pattern and conserve biodiversity across the landscape.

The Department of Environment identified two rare plants that might occur in the area; Twin-flowered Violet (*Viola biflora)* and Yukon Woodroot (*Posistera yukonensis).* Woodroot may occur on or below rock outcrops in the area. It would not be directly affected by wood-cutting unless activities such as road building occur. Protection measures for these plants will be in the site plan which the licencee signs and adheres to. Field crews and operators will be made aware of these rare plants and instructed to stop operations and consult with Forest Management branch if encountered. If encountered TH and environment will be notified.

2.1.3 Riparian and Water Resources

The THP is bound by Bruin Creek to the west and Mickey Creek to the east and Maiden Creek to the north-east. The operating units are above most riparian features, and outside of most of the riparian management zones as defined in the Forest Management branch Standards and Guidelines found at: (http://www.emr.gov.yk.ca/forestry/pdf/planning_standards_riparian_management.pdf)
Although there may be some non-classified drainages, there is very little

overlap with riparian features. All riparian features that are found will have protective reserves established as defined in the above standards.

2.1.4 Recreation and Visual Impact

The Top of the World Highway, the Clinton Creek Road and the town site of Forty Mile are known tourist travel corridors in the summer months.

This THP is located within a previously burned area and although parts of the THP area may be visible from these roads, the visual impact will be minimal. Irregular boundaries, along with boundaries that follow the natural lines of force and existing disturbance will yield a harvest area that is natural in appearance. The road development is on gentle slopes (<30%), resulting in roads that will have little impact on visual quality. It is expected that both road and harvesting activities will be most visible in the first 3 years, after which time they will be much less visible.

This THP is not visible from the town of Forty Mile. Therefore, there is minimal visual quality impact from harvesting operations on Forty Mile site.

2.1.5 Archaeological and Cultural Values

The Archaeology Branch of the Department of Tourism and Culture performed an overview assessment of the planning area and identified areas with elevated potential (refer to Appendix B – Archeological Overview Assessment Map). A site assessment will be scheduled prior to timber harvesting within these polygons and a sub-surface assessment will be conducted if soil disturbance related to roads or management treatments is required.

There were no cultural values identified in this area.

2.1.6 Other Users

Registered trapping concession 22 overlaps the THP area. The concession holder was contacted on July 6th, 2012 and had no concerns with timber harvesting in the area.

2.1.7 Other Values

The historic town site of Forty Mile is located to the south of this THP. There are currently active mining claims outside of the THP area. Although mining claims exist over the THP area, there are presently no active operations.

Forest Health

There are no major forest health concerns in this area. An outbreak of spruce needle rust (*Chrysomyxa ledicola*) in 2011 infected a larger percentage of spruce across the Top of the World Highway. This turned much of the needles red, however this disease is generally not damaging to the spruce it infects and is of no major concern. Spruce Broom rust (*Chrysomyxa*

arctostaphyli) also commonly infects spruce trees in the area; however this does not result in major loss or damage to the trees. For a more complete list of common pests and diseases, refer to the 2011 Forest Health Report, under zone 3. The Bruin Creek II THP is in a recent burn with a healthy understory and presently shows no forest health concerns.

3.0 Harvesting Section

3.1 Operating Unit Areas and Volume Summaries

Table 1 provides a summary of areas and estimated timber volumes in the two operating units.

Table 1 – Area and Volume Summary for Spruce Leading Stands > 120 yrs.

Operating Unit	Area (ha)[1]		Volume (m^3)[2]	
	Gross	Net	Gross	Net
BRC-A	760.6	90	9000	6300
BRC-B	438.8	60	6000	4200
Totals	**1,199.4**	**150**	**15,000**	**10,500**

1 Net area estimated from removal of riparian, low volume or isolated stands in OU.
2 Gross volumes identified are based on an average estimate of 100m3/ha multiplied by the net area. Net volume is averaged at 30% of the gross volume due to defect and rot.

Operating Unit A –
Operating Unit A is located in the southern portion of the planning area. This unit will be accessed from the Top of the World Highway. This new road will be on gentle ground of slopes less than 35% and have adverse grades of up to 10%. An initial reconnaissance of the area has shown various natural erosional events to the north of the road location. These have occurred in steeper gullies flowing southwest. It is believed that these events were a result of the fire in the area which reduced evapotranspiration and slope anchoring roots. Harvest activities will not be taking place near these areas of natural instability, nor are they expected to have adverse effect on them. New roads built will have drainage structures installed to maintain a natural drainage pattern and will be decommissioned following the completion of harvesting.

Operating Unit B –
Operating Unit B will be accessed from the Clinton Creek Road on 25-30% side slopes and easy but adverse road grades. This operating unit will be utilized only after OU A is finished. A further field reconnaissance is required and may result in this unit being designated as a no harvest area.

3.2 Harvest Scheduling and Season

Harvesting will start in the summer of 2012 or 2013. Unit A will be the first unit to be harvested followed by operating unit B. Both operating units will be

harvested using ground based methods. Ground conditions indicate medium textured soils (> 50% silts) which will enable harvesting during dry soil summer conditions. The site plan that will be developed for each block will adhere to the approved FMB soil standards.

3.3 Silviculture Systems and Reforestation

Natural regeneration is preferred for both operating units. During site plan development, advanced regeneration will be assessed to guide harvest operations to protect advanced regeneration. After harvest is complete, the harvest areas will be assessed to determine regeneration options.

4.0 Access Management

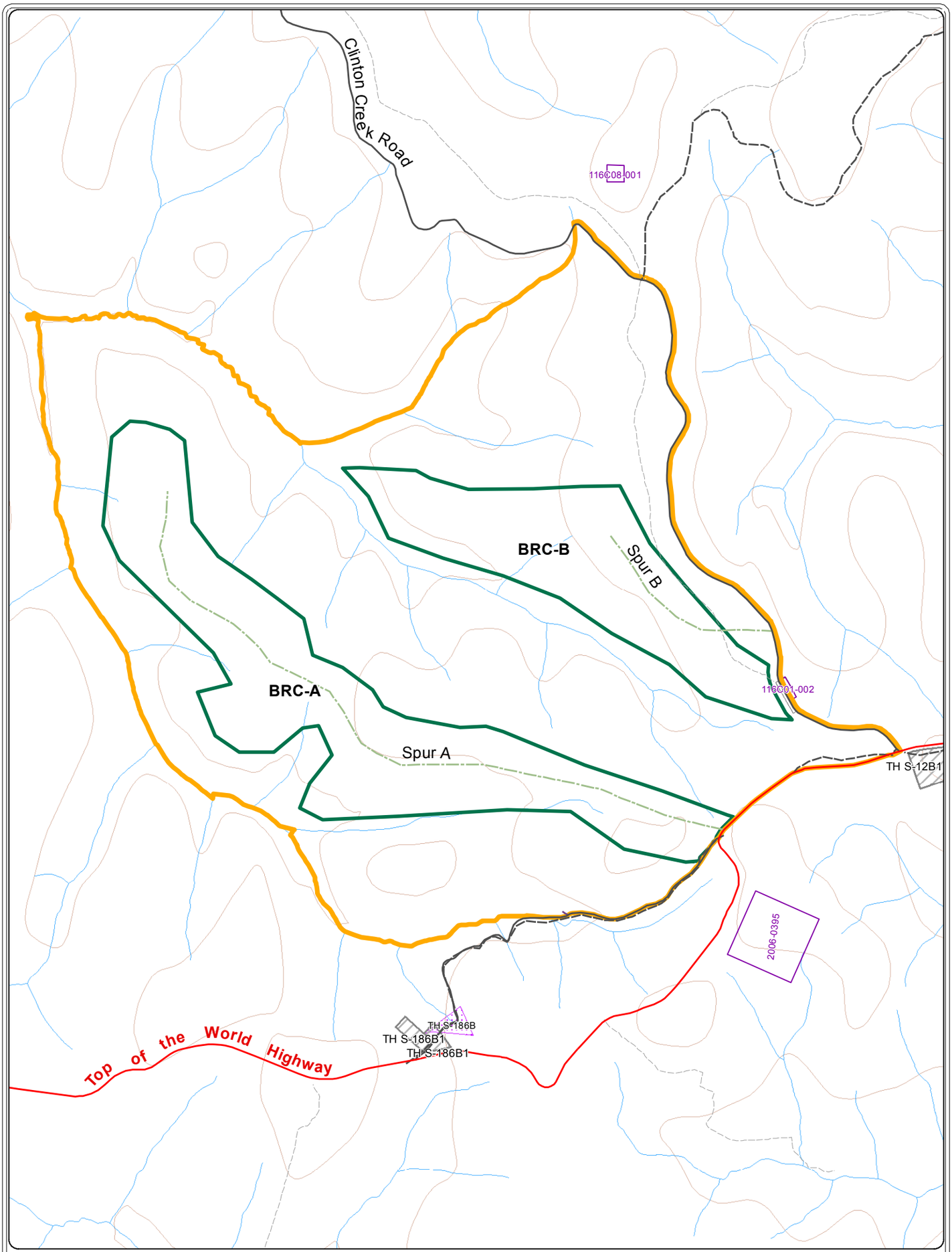
New roads and trails will be required to access areas proposed for harvest. Any new development proposed with forest harvesting applications shall be built to standards recognized by the *Forest Resources Act* for construction, maintenance and decommissioning.

All proposed harvesting will require site plans approved by FMB, which contain standards for soil conservation and disturbance levels within the harvest block. Newly bladed trails, roads and landings used during frost free conditions (summer/fall) may require scarification to reduce compaction and aid in the re-establishment of vegetation within the harvest area following harvesting.

All new road construction will be decommissioned to address erosional concerns and access following completion, unless otherwise stated. Access along newly developed roads may be restricted to timber resource licence holders to reduce negative environmental impacts, for reasons of safety or other considerations.

See the THP map and harvesting section above for the description of access into each operating unit.

Appendix A: 1:50 000 Overview Map



Bruin Creek II
Timber Harvest Plan Area

Dawson

For more timber harvest information
Web: www.emr.gov.yk.ca/forestry
Phone: 1.867.456.3999

Date: August 08, 2012

0 500 1,000 1,500 2,000

Metres

1:50,000

Yukon Albers
NAD 83

Forestry spatial data managed and maintained by the Forest Management Branch, Yukon Government. All other spatial data provided by Geomatics Yukon.

Yukon
Energy, Mines and Resources
Forest Management Branch

Project Specific Features

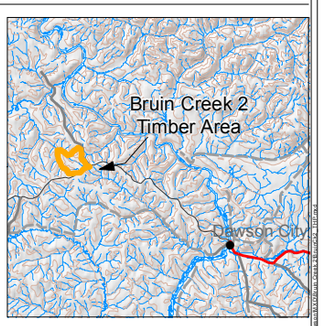
- Timber Harvest Plan
- Operating Units

First Nation Administration

- A: Surface and Subsurface Rights
- B: Surface Rights
- FS: Fee Simple
- Unsurveyed FN Settlement Lands
- Unsurveyed Interim Protected FN Lands

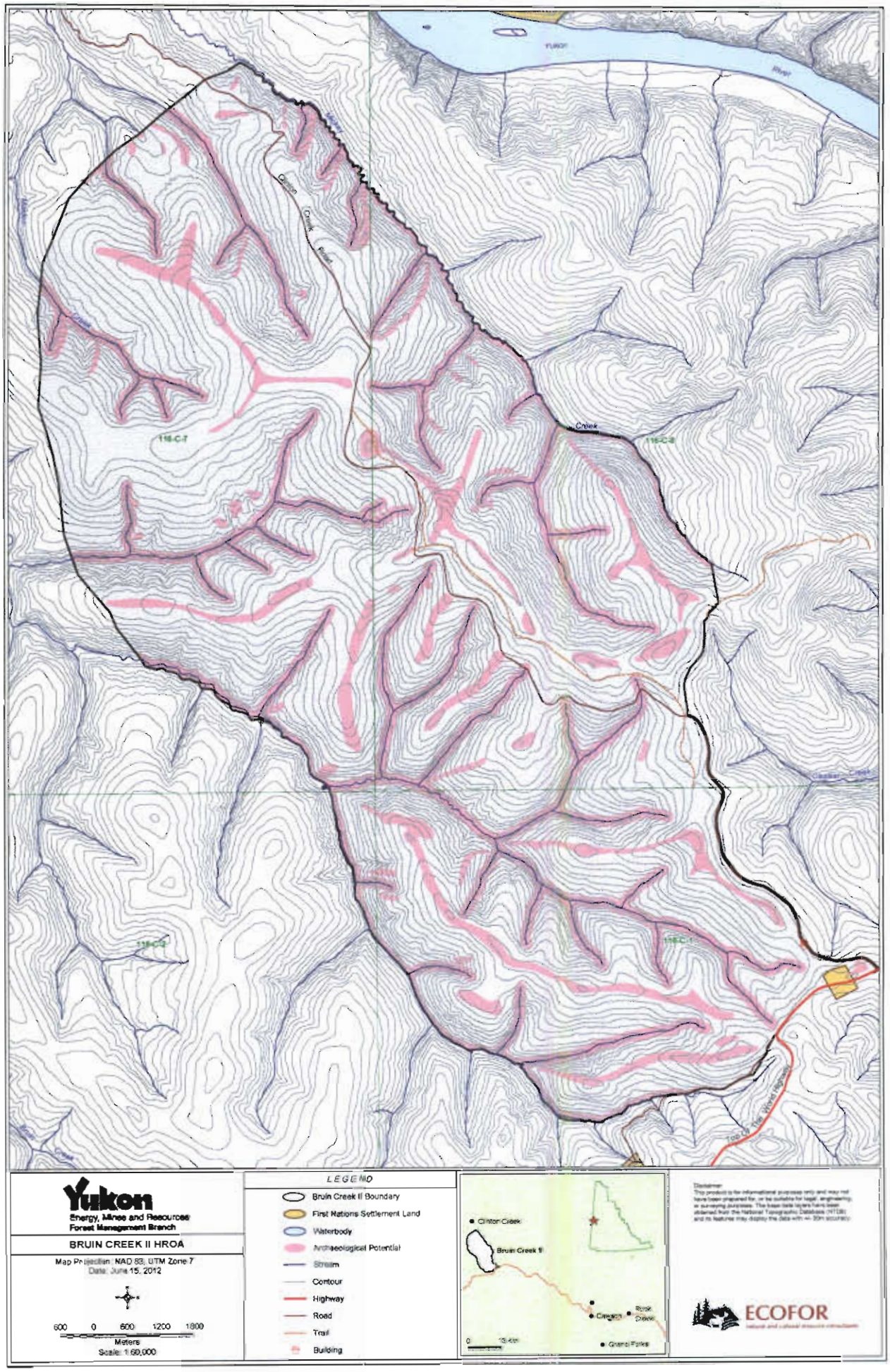
Land Administration

- Agricultural Land Applications
- Agricultural Land Dispositions
- Development Hold Areas
- Active Land Applications
- Land Dispositions
- Land Licenses
- Notations
- Surveyed Easements
- Surveyed Land Parcels



- Highway
- Primary Roads
- Local Roads
- Resource / Recreation
- Alley / Service Lane
- Winter

Appendix B: Archeological Overview Map


Yukon River
Bruin Creek
Clinton Creek
Creek
116-C-7
116-C-8
116-C-2
116-C-1
Top Of The World Highway
Yukon
Energy, Mines and Resources
Forest Management Branch
BRUIN CREEK II HROA
Map Projection: NAD 83, UTM Zone 7
Date: June 15, 2012
600 0 600 1200 1800
Meters
Scale: 1:60,000
LEGEND
Bruin Creek II Boundary
First Nations Settlement Land
Waterbody
Archaeological Potential
Stream
Contour
Highway
Road
Trail
Building
Clinton Creek
Bruin Creek II
Dawson
Rock Creek
Grand Forks
0 13.4 km
Disclaimer
This product is for informational purposes only and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. The base data layers have been obtained from the National Topographic Database (NTDB) and its features may display the data with +/- 30m accuracy.
ECOFOR

Appendix C: Representations

Bruin Creek II Timber Harvest Plan
Prepared: August, 2012

Prepared by: Dawson Area Forester

There were comments received from TH during the notification period on the 2012 Bruin Creek Timber Harvest Plan held from August 10, 2012 to Sept 10, 2012. The following table summarizes their comments:

Organisation	Topic	Mitigation
TH	Rare plants- TH requests we follow Environments direction on these.	This THP follows all of the recommendations from Environment regarding rare plants.
TH	Trappers-contact	TH is pleased that we contacted the trappers. The trappers have no concerns.
TH	Concerns with settlement land nearby.	TH is satisfied that due to the location of the THP and proposed roads that there are no conflicts.
TH	Winter Moose Habitat	Due to closure of the Top of the World highway, TH does not see the THP interfering with Moose habitat.
TH	Roads decommissioned	TH is pleased to see that roads will be decommissioned.