Chinook Comfor Limited Partnership

REQUEST FOR PROPOSAL (RFP)

Establishment & Measurement of Change Monitoring Inventory

CHINOOK LIDAR PLOT PROJECT

Chinook Comfor LP
Box 969
Burns Lake, B.C. V0J 1E0
Phone: 1-250-692-0630
Ken.Nielsen@chinookcomfor.ca

RFP ID: 2018-05-07
Prepared By: Ken Nielsen
Date: May 7, 2018

REQUEST FOR PROPOSAL
CHINOOK LIDAR PLOT PROJECT
Burns Lake, B.C.

RFP ID: 2018-05-01
SUBMISSION DEADLINE: May 31, 2018, 4:00 pm
QUESTION SUBMISSION DEADLINE: May 25, 2018

Questions may be submitted in written form no later than May 25, 2018, to:

RFP Contact Name:	Ken Nielsen
Contact Address:	Box 969 Burns Lake, V0J 1E0
Telephone Number:	1-250-692-0630
Email Address:	Ken.Nielsen@chinookcomfor.ca

INTRODUCTION

Chinook Comfor LP invites and welcomes proposals for their Chinook LiDAR Plot Project. Based on your previous work experience, your firm has been selected to receive this RFP and is invited to submit a proposal. Please take the time to carefully read and become familiar with the proposal requirements. All proposals submitted for consideration must be received by the time as specified above under the "SUBMISSION DEADLINE."

BIDDERS SHOULD NOTE THAT ANY AND ALL WORK INTENDED TO BE SUBCONTRACTED AS PART OF THE BID SUBMITTAL MUST BE ACCOMPANIED BY BACKGROUND MATERIALS AND REFERENCES FOR PROPOSED SUBCONTRACTOR(S) – NO EXCEPTIONS.

PROJECT AND LOCATION

The bid proposal is being requested for Chinook LiDAR Plot Project which is or shall be located at Lakes TSA, Burns Lake, BC. Box 969 V0J 1E0.

PROJECT MANAGER CONTACT INFORMATION

For questions or information regarding Planning, contact the following individual(s):

Name: Ken Nielsen
Title: General Manager
Phone: 1-250-692-0630
Email: Ken.Nielsen@chinookcomfor.ca
OR

Name: Daniella Oake
Title: Operations Manager
Phone: 250-691-1271
Email: daniella.oake@chinookcomfor.ca

PROJECT OBJECTIVE

The objective and ultimate goal for this project is to collect ground data that in turn can be used to produce a high resolution inventory solution (HRIS).

PROJECT SCOPE AND SPECIFICATIONS

Project Scope and Specifications are detailed on an attached document.

SCHEDULED TIMELINE

The following timeline has been established to ensure that our project objective is achieved; however, the following project timeline shall be subject to change when deemed necessary by management.

MILESTONE	DATE
Start :	June 4, 2018
Detailed Update:	July 1, 2018 August 1, 2018 September 1, 2018
Completion Date:	September 15, 2018

PROPOSAL BIDDING REQUIREMENTS

PROJECT PROPOSAL EXPECTATIONS

Chinook Comfor LP shall award the contract to the proposal that best accommodates the various project requirements. Chinook Comfor LP reserves the right to award any contract prior to the proposal deadline stated within the "Scheduled Timeline" or prior to the receipt of all proposals, award the contract to more than one Bidder, and refuse any proposal or contract without obligation to either Chinook Comfor LP or to any Bidder offering or submitting a proposal.

INTENT TO SUBMIT PROPOSAL

All invited Bidders are required to submit a "Letter of Intent" no later than May 18, 2018, informing Chinook Comfor LP of their intent to either submit or decline to submit a proposal.

DEADLINE TO SUBMIT PROPOSAL

All proposals must be received by Chinook Comfor LP no later than 4:00 pm on May 31, 2018, for consideration in the project proposal selection process.

PROPOSAL SELECTION CRITERIA

Only those proposals received by the stated deadline will be considered. All proposals submitted by the deadline will be reviewed and evaluated based upon information provided. In addition, consideration will be given to cost and performance projections. Furthermore, the following criteria will be given considerable weight in the proposal selection process:

- Proposals received by the stipulated deadline in the correct format;
- Bidder's asserted performance effectiveness regarding the project objectives of Chinook Comfor LP;
- Bidder's performance history and asserted ability to timely deliver proposed services;
- Bidder's ability to provide and deliver qualified personnel who have the knowledge and skills required to effectively and efficiently execute proposed services;
- Overall cost effectiveness of the proposal;
- See attached Chinooks Tendering Policy.

Chinook Comfor LP shall reserve the right to cancel, suspend, and/or discontinue any proposal at any time they deem necessary or fit without obligation or notice to the proposing bidder/contractor.

PROPOSAL SUBMISSION FORMAT

The following is a list of information that the Bidder should include in their proposal submission:

Summary of Bidder Background

- Bidder's Name(s);
- Bidder's Address;
- Bidder's Contact Information (and preferred method of communication);
- Legal Form of Bidder (e.g. sole proprietor, partnership, corporation);
- Date that the Bidder's Company was Formed;
- Description of Bidder's company in terms of size, range, and clientele as well as the types of services offered.
- Bidder's principal officers (e.g. president, chairman, vice president(s), secretary, chief operating officer, chief financial officer, general managers, etc.) and length of time each officer has performed in his/her field of expertise;
- Evidence of legal authority to conduct business (e.g. business license number);
- Evidence of established track record for providing services and/or deliverables that are the subject of this proposal;

- Organizational chart showing key personnel who would provide services to Chinook Comfor LP.

Financial Information

- State whether the Bidder, or its parent company (if any), has ever filed for bankruptcy or any form of reorganization under the Bankruptcy Code;
- State whether the Bidder, or its parent company (if any), has ever received any sanctions or is currently under investigation by any regulatory or governmental body.

Proposed Outcome

- Summary of timeline and work to be completed.

Equipment or Service

- List any and all equipment or services required for this proposed project and the quantity of each;
- Detailed estimated cost for each piece of equipment or service;
- List any equipment or services required of a subcontractor, along with a brief explanation;
- List any accommodation, services, or space required from Chinook Comfor LP, along with a brief explanation.

Cost Proposal Summary and Breakdown

- An inclusive price per plot; travel/room and board/utility vehicles;
- A detailed list of any and all expected costs related to the proposed project;
- North of Francios Lake Plots; approximately 51 plots;
- South of Francios Lake Plots; approximately 55 plots;
- May bid on North or South;
- May bid on all.

Licensing and Bonding

- Provide details of licenses and bonds (if any) for any proposed services that the bidder/contractor may plan on providing for this project.

Insurance

- Details of any liability or other insurance provided with regard to the staff or project.

References

- Provide 2 references

Bidder agrees that Chinook Comfor LP may contact all submitted references to obtain any and all information regarding Bidder's performance.

A Proposed High Resolution Inventory Solution (HRIS) Sampling Protocol

Tesera Systems Inc. [1]

The purpose of this document is to identify a broad sample plan and plot establishment protocol for the Chinook Community Forest, Fraser Lake Community Forest, and the Stellat'en First Nations Woodlot License (Figure 1). The area contained within these locations is approximately 120,000 ha. The goal is to use the ground samples to estimate attributes of areas dominated by trees, and to also facilitate the production of localized growth curves in the forested areas (using PrognosisBC). It is recommended that 120 plots be established within this area with to primary objectives:

- That at least a substantial portion of the plots (~80 plots) are established to be representative of the population as a whole.
- That a smaller proportion of the plots (~40 plots) be utilized to ensure that the plots cover the range of variation (i.e. the extremes).

It is recommended that the population be defined as:

- all those areas that are forested (i.e. not non-forested) according to standard Vegetation Resource Inventory (VRI) definitions, and
- if in areas that have been previously cutover, or otherwise disturbed and reforested, have at least been declared free growing, or are otherwise estimated to be adequately stocked with the dominant layer being greater than or equal to 2 m in average height.

To begin with the existing VRI plus disturbance history data will be used to establish the population boundaries. It is proposed that a photo plot grid will be established with up to 1200 (1 plot per 100 hectares) grid points for the purpose of representing both forested and non forested areas. Plots will then be selected within the forested area with the goal of obtaining 80 plots using principles of random sampling. This will be used to establish the locations of plots specifically designed to be representative of the population as a whole.

The initial grid (approximately 1200 points) will then be used to provide a photo sample using the newly acquired imagery, particularly for the purpose of land cover classification[2], and so too for the purpose of identifying outliers relative to the initial sample selection to represent the range of variation. LiDAR and CIR attributes can also be utilized to further investigate the potential for outliers.

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[1] Prepared for by: Ian Moss, Phd, RPF, Tesera Systems Inc., Victoria, BC. Phone: 250-391-0975 email: ian.moss@tesera.com
August 18, 2017.

[2] https://www.for.gov.bc.ca/hfd/library/documents/bib107006_2002.pdf

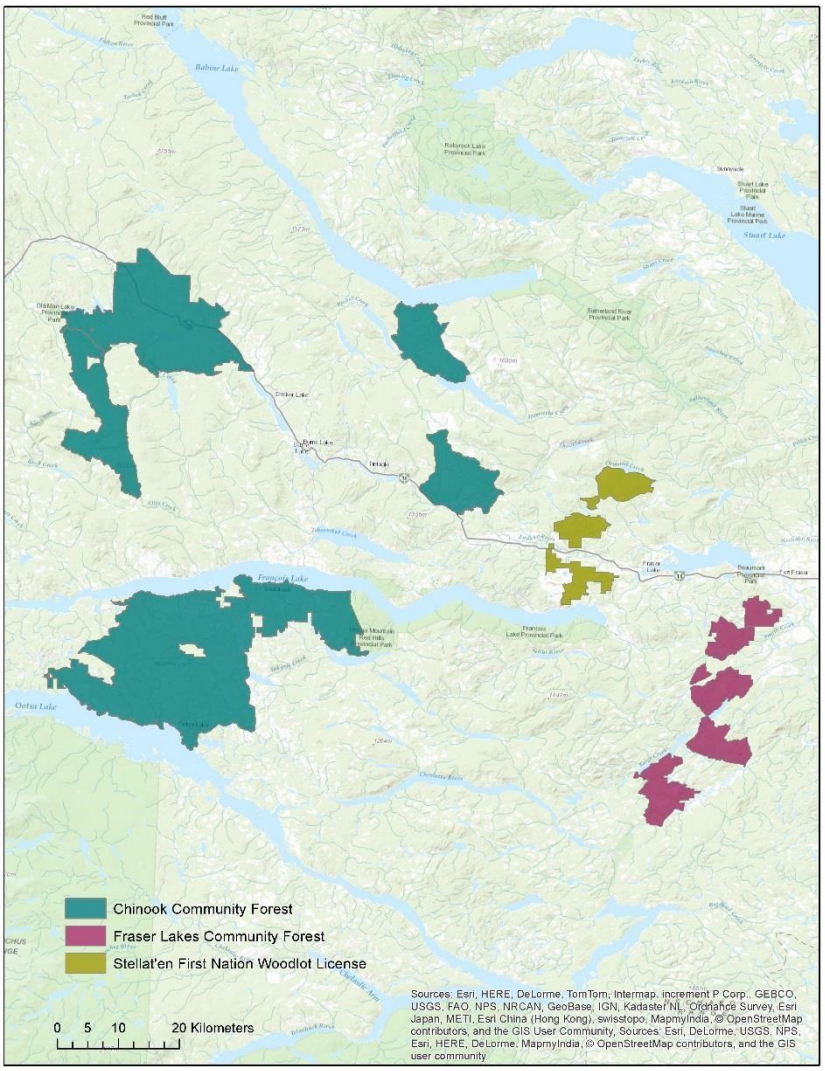

Figure 1. Forest areas of interest.

Plot Design

It is proposed that the Change Monitoring Inventory (CMI) protocol be used as the primary basis for establishing ground and measuring plots with some modification (FLNRO, 2017[3,4]). The rationale for pursuing this route is in part, due to the fact that there are contractors who have been trained in the establishment and measurement of CMI plots.[5] The ground plot data can be collected using the following forms listed in the CMI appendices (footnote 4; the Appendices):

- Sample header card (Figures A.1 & A.2)
- Vegetation Resources Inventory Compass Card (CP; Figures A.3 and A.4)
- Vegetation Resources Inventory Tree Details (TD; Figures A.10 and A.11) ○ Modification: 10 m radius plots (instead of 11.28 m) with all trees measured down to 4 cm dbh.[6]
    - Tree number ○ Species ○ Live/Dead
    - Standing/Fallen (for both Live and Dead)
    - DBH plus M or E
    - Tree Length > 1.3 cm plus M or E
    - Crown Class ○ Height-to Live Crown
    - Broken Top Diameter & Projected Height
    - Sector
    - Modification: Trees should be numbered but do not have to be tagged as per the CMI protocol.
- Worksheet
    - Data for estimating tree heights (Figure A. 11)
- Vegetation Resources Inventory – Tree Loss Indicators Card (TL; Figures A.12) ○ Tree Number
    - Stem Mapping (Azimuth, Distance) for borderline trees that should be measured

- Tree Age Class and Tree Class 1 to 9 Declaration (from Cruise Manual; p. 4-35)[7].
- Vegetation Resources Inventory – Small Tree, Stump and Site Tree Data (TS; Figure A. 13) ○ Small Live Tree By Length Classes in a 2.5m radius plot established at plot centre.
    - Height and Age Information for Top Height Trees (5.64 m radius plots as per protocol), including growth increment data (cores should be collected, stored in a straw, labelled, and evaluated using a microscope in the office, preferably with a double counting procedure with one of the counts being a field count).

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[3] https://www.for.gov.bc.ca/hts/risc/pubs/teveg/cmi_sampling_procedure_2017/CMI_Ground_Sampling_Procedures_2017.pdf

[4] https://www.for.gov.bc.ca/hts/risc/pubs/teveg/cmi_sampling_procedure_2017/CMI_Ground_Sampling_Appendices_2017.pdf

[5] For certified VRI contractors see: https://www.for.gov.bc.ca/hts/vri/contractinfo/rpt_vri_company.pdf [6] In the standard CMI protocol an 11.28 m radius plot is used with measurement of trees down to 9 cm dbh (400 m^2). For trees < 9 cm dbh and > 4 cm dbh a 5.64 m radius plot (100 m^2). The latter is thought to be too small to provide reliable information in relation to LIDAR. As a result, it is recommended that the main plot radius be reduced to 10 m, and that all trees down to 4 cm dbh be measured. Another reason for pursuing this option is that there may be cases where the smaller tree component remains intact while much of the remaining overstory has been severely impacted by Mountain Pine Beetle (MPB). There is concern that this smaller tree component may be highly variable and better characterized over a larger area, using the CMI plot segmentation approach.

Note that the CMI protocol includes a much more extensive set of measurements relative to what is outlined above, including:

- Coarse woody debris (Figures A. 8 & A.9)
- Additional tree level details ○ Log grades, lengths & % sound (Figure A. 10) ○ Tree wildlife codes (Figure A. 10) ○ Residual tree identification (Figure A. 10)
  - Tree loss indicators (Figure A. 12; in addition to requirements listed above) ○ Stump data (Figure A. 13)
- Ecosystem description ○ Site and vegetation description (Figures A. 14 to A. 21) including soils data ○ Stand structure and succession (Figure A. 22, 23)

The proposed plot establishment protocol is as per the CMI procedures, subject to the limitations and modifications outlined above. These have not been included in the list in part to contain plot measurement costs, but if some or all of the attributes are desired then these can be added to the list. Please indicate if there is a desire to include additional attributes.

If the time to establish and measure a plot can be reduced to less than half a day, or more specifically to establish and measure 2 or more plots in a day (including travel time) then there may be an opportunity to establish additional plots in nearby locations as a means of making better use of crew time. And capturing the range of variation. This would also help with reducing the per plot costs.

[7] 1. Tree Classes: 1. Older immature (61-120 years old), 2. Older immature suspect (61-120 years old), 3. Olderimmature dead potential (61-120 years old), 4. Dead useless (all ages), 5. Mature (> 121 years old), 6. Live useless (all ages), 7. Mature dead potential (> 121 years old), 8. Younger immature (< 60 years old), 9. Younger immature dead potential (< 60 years old). Suspect trees are living trees that bear one or more of the following external indicators of decay, on or immediately adjacent to the trunk of the tree (within limits specified in Appendix A.4.1.): conks, blind conks, scars, forks or pronounced crook, frost crack, mistletoe trunk infections, rotten branches, dead or broken top. Path remarks should be included as well as damage codes (insect, fire, down tree), and live-dead.