

Forests For Tomorrow
Work Plan
2005 – 2006

PROJECT TERMS OF REFERENCES



Ministry of Forests and Range
Forest Practices Branch

June 2005

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Forests For Tomorrow
Project Terms of References
2005-2006

Forest Practices Branch

Forest Practices Branch

RESULTS Updates and Queries

Project No. & Title	11. RESULTS – Updates and Queries	
Project Lead	Name: Paul Rehler	Phone No. 387-8908 E-mail: paul.rehler@gems9.gov.ca
Objective(s)	<ol style="list-style-type: none"> 1. Provide a baseline from which further field confirmation can be conducted. Assess accuracy of RESULTS. 2. Provide a starting point to direct the program to potential candidate areas. 3. Create silviculture based reports to meet key performance indicators for the FFT. 4. Provide business support to ensure other wildlife and MPB updated/mapping work is integrated into RESULTS. 5. Support Teams 4 (PM & Reporting), 6 (Silv Strategy), and 7 (Inventory). 	
Background Situation	The Reporting Silviculture Updates and Land status Tracking System (RESULTS) tracks silviculture information on harvested openings. Regulations obligate licensees to report silviculture information and activities. The relevance of the information is limited to the last reported event. An aggressive harvesting program has occurred in many, but not all MPB impacted areas.	
Method/Actions	<ol style="list-style-type: none"> 1. Review impacted forest analysis updates (Types I and II) and identify stand types of interest. 2. Extract information from RESULTS. 3. Train regional FFT staff on the use of RESULTS. 	
People (e.g. project team, who to consult etc.)	Mei-Ching Tsoi Consulting - Phone No. 361-3626 E-mail: mtsoi@shaw.ca	
Other (e.g. related initiatives or considerations of note)		

Resources	FTE:	Budget: \$22,800
Approval	Name:	Date:
Comment:		

Forests Analysis Branch

REGION/BRANCH/SECTION: Forest Analysis Branch

Provincial MPB Forest Analysis

Project No. & Title	1. Provincial MPB Forest Analysis	
Project Lead	Name: Albert Nussbaum	Phone No. 953 - 3631 E-mail: Albert.Nussbaum@gems3.gov.bc.ca
Objective(s)	<p>To examine the implications of the MPB on provincial timber supplies for the purpose of reviewing existing policies and potentially developing new strategies for managing the current and future forests in BC's interior. The project will examine the following issues/components:</p> <ul style="list-style-type: none"> - impact of current and alternative timber supply management, including harvest uplifts, shelf life and larger cut-blocks, - study and inform forest-related mitigation strategies, - forest practices such as increased retention levels for stewardship values, - wildlife and species at risk, - use of fire - prioritizing post-attack and post-salvage reforestation and forest productivity activities (timing, cost, choice of stands to reforest), including net return to the crown, - minimize future timber losses, including the potential for shorter rotations, management of species and age composition, - analysis of risk to Crown of declining value of the pine forest resources - industry's response, such as suppression and salvage priorities. 	
Background Situation	The chief forester has requested an examination of the implications of the MPB infestation and the associated management strategies and forest planning, particularly for the lodgepole pine forests in BC's interior.	
Method/Actions	<p>Consultation with stakeholders, data compilation, development of computer models, completion of numerous analyses, reporting out results, and necessary communications.</p> <p>The analyses will be completed at the regional and management unit level, which may include about 18 TSAs and 5 TFLs. The project will study the quantifiable factors of the dynamics of the infestation and the forest resources. These factors include alternative management of lodgepole pine, and past and future</p>	

	<p>spread of the infestation, looking at various spread rates and levels of potential mortality. Other factors are shelf life, utilization levels, silviculture, non-timber values, operability, road structures, riparian management, biodiversity, cut block patterns, as well as others yet defined. The analysis will be based on spatial modeling as much as possible.</p> <p>The term of the project will be three years, with deliverables in each year.</p> <p><u>First year</u></p> <ul style="list-style-type: none"> - High-level analysis of the provincial timber supply impacts (non-spatial), showing general mitigation opportunities and alternative timber supply management strategies, <p><u>Second and third year</u></p> <ul style="list-style-type: none"> - Aspatial and spatial analysis of all aspects of current and alternative timber supply management (as noted above under objectives).
People (e.g. project team, who to consult etc.)	Core team: Dave Waddell, Christine Fletcher, Tim Bogle, Marvin Eng, Adrian Walton, and two new staff: an analyst and inventory specialist. Advisory members Guy Newsome, Ralph Winter, Sinclair Tedder, Mike Falkiner, Fern Schultz, and Colene Wood. Colleagues – forest industry, academia and stakeholders.
Other (e.g. related initiatives or considerations of note)	<p>Some field work will be required to study changing stand structure, levels of mortality, rates of deterioration, harvesting patterns, etc.</p> <p>Collaborate with other teams or individuals with related studies and research projects undertaken, such as UNBC, UVIC, PFC, FORREX and others.</p>

Resources	FTE: 2	Budget: \$282,000 excludes salaries
Approval	Name: Melanie Boyce	Date: April 25, 2005
Comment:		

Research Branch

PROJECT TERMS OF REFERENCE TABLE 2005/06

REGION/BRANCH/SECTION: Research Branch

MPB Research Strategy

Project No. & Title	1. MPB Research Strategy	
Project Lead	Name: Gord Nigh	Phone No. 387-3093 E-mail: Gordon.Nigh@gems5.gov.bc.ca
Objective(s)	Develop a strategy for addressing MPB stewardship-related research issues.	
Background Situation	Many MPB-related research projects have been done or are underway. There is no coordination within the Ministry to ensure that work is not being duplicated or that funds are being put towards high-priority issues in an efficient manner. The research strategy will allow funds to be directed efficiently to high priority projects.	
Method/Actions	<ol style="list-style-type: none"> 1. Identify MPB stewardship-related research issues 2. Identify projects underway/completed 3. Determine gaps in our knowledge 4. Prioritize issues 5. Produce strategy 	
People (e.g. project team, who to consult etc.)	Gord Nigh, Louise de Montigny, Marvin Eng. The team will consult with many people in developing the strategy.	
Other (e.g. related initiatives or considerations of note)	<ol style="list-style-type: none"> 1. This project is not tied directly to other projects or initiatives, but the development of the strategy requires us to identify projects and consult with people leading initiatives. 2. This project was started in 04/05 and was funded by FIA in that year. 	

Resources	FTE: 0	Budget: \$25,000
Approval	Name:	Date:
Comment:		

REGION/BRANCH/SECTION: Research Branch/ Ecology & Earth Sciences

BEC Refinements to Support Silviculture and Reforestation

Project No. & Title	2. BEC Refinements to Support Silviculture and Reforestation	
Project Lead	Name: Del Meidinger	Phone No. 387-6688 E-mail: Del.Meidinger@gems2.gov.bc.ca
Objective(s)	Provide BEC information and forest management tools to apply BEC to fire and beetle area planning and reforestation.	
Background Situation	BEC is used in forest management to determine site quality and formulate management prescriptions for reforestation, biodiversity management, and other non-timber management. Field practitioners require current BEC information to make the best forest management decisions. In this project, BEC data will be collected, maps updated, and new field guides and reports prepared.	
Method/Actions	<ol style="list-style-type: none"> 1) Update biogeoclimatic map series for central and southern interior Districts – update 19 maps – complete Oct 05. 2) Field sampling to revise mapping in Vanderhoof, Quesnel, and Kalum Districts – digital BEC map update – complete Mar 06 3) Seral developmental sequences for major site series in two biogeoclimatic units in the central interior – prepare 2 field guide inserts – complete Mar 06 4) Contribute to field guide revisions through field sampling in Invermere area – 4 field guide inserts – complete Mar 06 5) Compile ecological management information for Sub-Boreal Spruce zone – prepare 1 zone report – complete Mar 06 6) Correlate field data for Kamloops, Cascades, Okanagan-Shuswap, Headwaters and Rocky Mountain Districts – update correlation tables – complete Mar 06 7) BEC plot reassignments for central and southern interior BC – update BEC Master database – complete Mar 06 8) Develop disturbance ecology summary for each biogeoclimatic zone – compile on web site – complete Mar 06 	
People (e.g. project team, who to consult etc.)	Del Meidinger (4, 5, 6), Will MacKenzie (3, 4, 6, 7), John Parminter (5,8), Ray Coupé (2, 4), Dennis Lloyd (4), Adrian Walton (1), Craig DeLong (2), Allen Banner (2).	

Other (e.g. related initiatives or considerations of note)	
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Resources	FTE: 0	Budget: \$210,000
Approval	Name:	Date:
Comment:		

PROJECT TERMS OF REFERENCE TABLE 2005/06

REGION/BRANCH/SECTION: Research Branch

MPB Policy Support

Project No. & Title	3. MPB Policy Support	
Project Lead	Name: Gord Nigh	Phone No. 387-3093 E-mail: Gordon.Nigh@gems5.gov.bc.ca
Objective(s)	<ol style="list-style-type: none"> 1. Finalize interior lodgepole pine silviculture publications 2. Provide ecological and earth sciences support for post-MPB planning. 	
Background Situation	There are many knowledge gaps in how to manage the MPB infestation, including post-MPB stands. Best available information will be required until the necessary work is done to fill these knowledge gaps. Funding is required to complete some publications that will help fill these gaps and to provide policy advice and support.	
Method/Actions	<ol style="list-style-type: none"> 1. Publish relevant manuscripts. 2. Provide advice and policy support as required. May require travel, attending workshops, etc. 	
People (e.g. project team, who to consult etc.)	Gord Nigh will be the lead contact. Wayne Johnstone will be producing a publication(s). The lead contact will consult with specialists in Research Branch to provide advice and support as necessary.	
Other (e.g. related initiatives or considerations of note)	This project is not tied directly to other projects or initiatives.	

Resources	FTE: 0	Budget: \$50,000
Approval	Name:	Date:

**PROJECT TERMS OF REFERENCE TABLE 2005/06
RESEARCH BRANCH - TECHNICAL COMMUNICATIONS SECTION**

Information acquisition, access and indexing

Project No. & Title	4. Information acquisition, access and indexing	
Project Lead	Name: Susanne Barker	Phone No.(250) 387-2169 E-mail: susanne.barker@gems7.gov.bc.ca
Objective(s)	<p>Make available key materials related to forest health, catastrophic disturbance and its consequences</p> <p>Make available long and short term research information assets , related to species and locations vulnerable to beetle predation</p> <p>Index and protect Interior Research Installations</p>	
Background Situation	Sound science based decision making requires prompt access to materials created both outside and inside the agency.	
Method/Actions	Acquire related materials created outside the agency, catalogue and push the information to MoF, MoE and MAL. Where possible make it available electronically. Index long and short term research, related to species and locations vulnerable to beetle predation, created inside the agency and make that available. Create shape files for Interior Research Installations in preparation for uploading them to the Map Layer in the LRDW	
People (e.g. project team, who to consult etc.)	Susanne Barker, Marilyn Blache, Les Peterson, Keith Thomas Co-operative placements	
Other (e.g. related initiatives or considerations of note)		

Resources	FTE: 0	Budget: \$95,000
Approval	Name:	Date:
Comment:		

**PROJECT TERMS OF REFERENCE TABLE 2005/06
REGION/BRANCH/SECTION:**

LP Provenance tests, re-measurement of 35 yr old stand

Project No. & Title	5. 35 year re-measurements of EP 657.06 lodgepole pine provenance tests	
Project Lead	Name: Alvin Yanchuk	Phone No. 387-3338 E-mail: Alvin.Yanchuk@gems4.gov.bc.ca
Objective(s)	Assess the 60 test sites for growth, disease (needle casts) and pest attack (terminal weevils, MPB), to update seed transfer guidelines and superior provenance ratings in lodgepole pine, and re-analyze impacts of climate change on optimum seed transfer.	
Background Situation	EP 657.06 represents one of the largest provenance trials in the world. It also has been the main data set and experiment used in defining seed transfer in B.C. for PI, as well as the main experiment for mitigation strategies for reforestation in the face of climate change. The data we are using is 20 yr ht and survival which needs to be updated with performance over the last 15 years, which has experienced the largest climatic shifts!	
Method/Actions	Develop assessment criteria for 35 year ht, diameter, survival, disease and pest incidence and contract out	
People (e.g. project team, who to consult etc.)	A. Yanchuk, M. Carlson (Kalamalka), Greg O'Neill	
Other (e.g. related initiatives or considerations of note)	Lots; e.g., C-CIARN /Forest Genetics Council large scale population study of interior spruce and climate change; Center for Forest Gene Conservation Climate Change research program.	

Resources	FTE: 0	Budget: \$120,000
Approval	Name:	Date:
Comment:		

PROJECT TERMS OF REFERENCE TABLE 2005/06

REGION/BRANCH/SECTION: Research Branch; Strategic Analysis Group

Calibrating Pine Mortality Estimates

Project No. & Title	6. Calibrating Pine Mortality Estimates Based on the Provincial Aerial Overview	
Project Lead	Name: Marvin Eng	Phone No. 387-2710 E-mail: marvin.eng@gems5.gov.bc.ca
Objective(s)	To determine the accuracy of estimates of pine mortality that are based on five years of data from the Provincial Aerial Overview of Forest Health. In particular, this project will be focused on verifying estimates of mortality in severely infested areas	
Background Situation	Provincial-level projections of the current mountain pine beetle (MPB) outbreak are based on estimates of pine mortality derived from manipulation of five years of data from the Provincial Aerial Overview of Forest Health. With limited exceptions these estimates have not been verified. This results in an unacceptable level of uncertainty regarding estimates of current and projected mortality.	
Method/Actions	<ol style="list-style-type: none"> 1. Planning 2. Collect photography 3. Interpret photography 4. Collect Field Data 5. Re-interpret photography 6. Analysis and reporting 	
People (e.g. project team, who to consult etc.)	Marvin Eng will lead. Advice and assistance as needed and available from Malcolm Gray, Tim Ebata, Mike Wulder (CFS PFC).	
Other (e.g. related initiatives or considerations of note)	This project will be used to verify estimates produced by the "Provincial-Level Projection of the Current MPB Outbreak"; funded for the last 2 years by MPBI and now subsumed by the Forest Analysis Branch "Provincial Mountain Pine Beetle Analysis Project" funded by FFT	

Resources	FTE: 0	Budget: \$100,000
Approval	Name:	Date:
Comment:		

Tree Improvement Branch

REGION/BRANCH/SECTION: Tree Improvement Branch

Seed Planning and Analysis

Project No. & Title	Project No.: 1 Seed Planning & Analysis	
Project Lead	Name: Leslie McAuley	Phone No. 356-6208 E-mail: Leslie.McAuley@gems9.gov.bc.ca
Objective(s)	<p>The Seed Planning & Analysis project is critical to meeting the goals & objectives of the FFT program. Key objectives are:</p> <ul style="list-style-type: none"> • Development of land based Seed / Gene Resource Management (GRM) plans for each FFT priority area to achieve timely & effective delivery of seed to areas where it is most needed. • Development of standards, methodologies and protocols to support updateable seed needs analyses. As new areas are identified through FFT surveys, seed needs estimates should be revised accordingly through integrated data management & update protocols. • Development of seed mitigation strategies for consideration and decision support in Strategic Silviculture Strategies (SILV Regimes), FFT Research (MPB Strategy, species deployment), FFT policy requirements, FFT Timber Supply Analyses (Type II) and FFT effectiveness evaluation. 	
Background Situation	<p>Land based Seed (GRM) Plans, developed through GIS-based seed needs analyses, are required for FFT Wildfire & MPB priority areas. Existing FGC species plans, seed needs reports and strategies (Silv regimes, Timber supply analyses - Type II) require updating. Linkages with MPB & Fire disturbance / forest & stand level seed requirements and seed inventories are currently inadequate.</p> <p>Seed needs analyses and mitigation strategies are required to address:</p> <ul style="list-style-type: none"> • Potential seed supply gaps (seed collection, procurement, utilization), • Encourage best practises (ramping up of genetic gain), • Develop strategic silviculture plans (SILV regimes); • Conduct timber supply analyses (Type II); and, to incorporate 'best available science' and adaptive management principles for effectiveness evaluation & monitoring (species diversity, genetic diversity, forest productivity & health). 	
Method/Actions	<ul style="list-style-type: none"> • Develop standards, methodologies & protocols for GIS-based FFT priority area seed needs analyses. Data inputs include: 	

	<p>provincial FGC species plans, land resource data sets (SILV - OP, MPB, Fire, SPZ, SPU, BEC), seed inventories (SPAR), seed use (RESULTS, SPAR) and FFT surveys.</p> <p>Deliverables include: Benchmark of land-based seed inventories, Seed Needs Analyses, gap analyses, Options for seed mitigation, strategic SILV plans, timber supply analyses & species deployment.</p> <p>Fiscal 05/06: FFT – SIFR wildfire areas highest priority.</p>
People (e.g. project team, who to consult etc.)	<p>FFT- SEED Project Team: Chair (Brian Barber), TIB HQ (Leslie McAuley), TIB TSC (Heather Rooke), FOR REG (Mike Madill, Gord Dow)</p>
Other (e.g. related initiatives or considerations of note)	<p>Linkages: FFT Silv. Strategy, Research (Species Deployment), Inventory & Timber Supply committees/projects; FREP Timber Value (Genetic Diversity); FGC Gene Resource Information Management.</p>

Resources	FTE: TIB HQ contract admin	Budget: \$25k (FFT)
Approval	Name:	Date:
Comment:		

PROJECT TERMS OF REFERENCE TABLE 2005/06

REGION/BRANCH/SECTION: Tree Improvement Branch

Improving Lodgepole Pine Seed Utilization

Project No. & Title	2. Improving Lodgepole Pine Class A Seed Utilization	
Project Lead	Name: David Reid, RPF Manager, Seed Production, Tree Improvement Branch	Phone No. (250) 652-2453 E-mail: david.reid @gems5.gov.bc.ca
Objective(s)	<ol style="list-style-type: none"> 1. Improve lodgepole pine Class A seed utilization 2. Increase seedling production per kg of seed 3. Development of method for grouping seed crops from orchard's parents for better germination and emergence 	
Background Situation	The use of genetically improved seedlings is a principle of FFT. Availability and utilization of improved lodgepole pine (Pli) seed is limited due to orchard capacity and current nursery practices. Increasing seedling yields from Pli orchard seed will increase the amount of improved seed available for FFT and, subsequently, enhance timber supply.	
Method/Actions	Germination characteristics of seed from a number of Pli families will be determined through laboratory and nursery trials over a 2-year period. Recommendations for seed collection, handling and storage, and nursery sowing and culling practices will be determined based on results of these trials.	
People (e.g. project team, who to consult etc.)	David Reid – Contract manager ForGen Consulting Ltd. – Contractor	
Other (e.g. related initiatives or considerations of note)	This project is supported by the FFT Seed Working Group. Seed is already in storage, so the project can be started by June 1, 2005 if given timely approval. The estimated budget completing this project in the second year (2006/07) is \$58k. See attached Project Plan for more details	

Resources	FTE: 0	Budget: Year 1 2005: \$60,000
Approval	Name:	Date:
Comment:		

Project Title: Improving Lodgepole Pine Select (Class A) Seed Utilization

Project Lead: David Reid – Manager, Seed Production

Tree Improvement Branch

Phone: (250) 652-2453

e-mail: david.reid@gems5.gov.bc.ca

Objectives: 1) Improve lodgepole pine orchard produced seed utilization
2) Develop protocols for increase seedling production recovery

Background:

The deployment of genetically desirable seedlings is one of the principles of sustainable forest management principles considered by the *Forest For Tomorrow* initiative. The deployment of fast growing, high quality wood, and pest resistant seedlings maximizes the chances for regeneration success. Improved seed availability is an essential prerequisite for the fulfilment of this goal. Seed orchards are the main source for improved seed. At present, the majority of BC lodgepole pine seed orchards have not reached their maximum production potential and small- to medium-size crops are being produced. Thus any incremental improvement of seed utilization (defined as the conversion rate from seed to seedling) would result into increased seedling production and ultimately increased area planted.

The Forest Genetics Council of BC business plan considered a utilization factor of 65% for lodgepole pine orchard produced seed. This utilization factor translates to the production of 169,652 seedlings per one kilogram of seed. Considering the Tree Improvement Branch's (TIB) lodgepole pine seed inventory alone, improvement in seed utilization / recovery rate of 10 to 20% is expected to yield additional seedlings for planting 1,887 to 3,774 ha from the same amount of seed (Table 1).

Three factors contribute to this low utilization namely: 1) seed germination rate (% germination), 2) culling rate (elimination of "sub-standard" seedlings), and 3) nursery over-sow factor (production of additional seedlings for meeting sowing request). Lower seed germination is commonly overcome by multiple sowing. When seed germination rate is high, nursery growers seldom apply multiple sowing and single seed sowing is commonly practiced, this is the case with lodgepole pine in BC. The germination rate of the TIB's seed inventory is very high (weighted average = 95%; range: 90 to 98; number of seed lots = 29), thus germination rate is not a factor. Culling rate is unpredictable and can only be assessed at the end of the growing season (during seedling lift). Nursery growers usually compensate for any possible production losses, caused by either culling or low germination, through the practice of over-sow. Uneven seed germination is one of the main factors causing the production of sub-standard seedlings.

In the nursery setting, seed are treated with one uniform seed-pre-treatment for breaking dormancy and the crop is grown under one uniform cultural regime. Differences in seed dormancy, germination rate, and speed of emergence have been proven to be under genetic control for most conifers, including lodgepole pine, and these differences are the

main cause for the production of seedling crops with various sizes, hence culling. If orchard produced lodgepole pine seed is grouped into subsets of uniform germination behaviour, the production of sub-standard seedlings will be reduced and ultimately the over-sow factor will be adjusted accordingly, resulting in improved seed utilization.

This proposal is designed to characterize the germination behaviour of BC’s orchard produced lodgepole pine seed to improve seed utilization. Table 1 demonstrates the impact and magnitude of improved seed utilization on seedling recovery, presented in increments of 5%. When improvement in seed utilization is converted to additional area planted, the results are impressive (Table 1 represents improvement of seed utilization for the TIB seed inventory). It is noteworthy to mention that every 5% improvement in seed utilization is associated with expected 7.7% increase in seedling recovery (Table 1).

Table 1. Expected increase in seedling production as a function of improved seed utilization.

Conversion Rate	Seedlings/kg	# of ha	TIB seedlings	ha	Improvement rate (%)	Additional ha
65%	169,650	106.0	19,623,076	12,264	N/A	N/A
70%	182,700	114.2	21,132,543	13,208	107.7	943
75%	195,750	122.3	22,642,011	14,151	115.4	1,887
80%	208,800	130.5	24,151,478	15,095	123.1	2,830
85%	221,850	138.7	25,660,945	16,038	130.8	3,774
90%	234,900	146.8	27,170,413	16,982	138.5	4,717
95%	247,950	155.0	28,679,880	17,925	146.2	5,661

It should be pointed out that once the first phase of the proposal is completed, two major initiatives must be considered to further validate the proposed approach and assist in extrapolation to other orchards and maybe other species. These are:

- 1- **Year-to year variability:** If family germination behaviour is characterized based on single-year results, the presence of year x dormancy interaction could compromise the results value. Thus, the impact of genotype x environment interaction should be tested and evaluated. To successfully address this point, seed from subset of similar parents collected from more than one year will be tested. Future cone collections will also be done by individual parents where possible. This will lead to some higher seed extraction costs that are difficult to predict prior to knowing the harvest volumes, so an estimated extraction cost is used.
- 2- **Nursery implication:** Once the lab germination results are finalized, an extension phase should be implemented. In this phase the resulting seedlot groupings will be sown and grown in a container nursery under an operational setting to validate the practical implications of this work.

PROJECT BENEFITS:

Understanding and collecting individual parent seed information is expected to:

- 1) maximize the effective utilization of the seed through the development of universal seed pre-treatment that reduces germination differences among families,
- 2) reduce culling due to the sowing of seed with homogenous germination behaviour, and
- 3) reduce over-sow factor

The net effect of the above 3 results will be to make significantly more Lodgepole pine seed available to meet the increasing needs of reforesting MPB attacked NSR area.

Procedure:

This project will be implemented in five phases:

- 1) individual family seed germination characterization,
- 2) formation of up to three homogenous custom seedlots based on the above germination characterization,
- 3) custom seedlots germination verification,
- 4) specific family upgrade, and
- 5) testing recommended specific-family upgrade treatment on custom seedlots.

This project is developed to test the applicability of this approach (“proof-of-concept”) on one of the Tree Improvement Branch’s lodgepole pine seed orchard (# 230). While this orchard does not fall within the MPB zone, the availability of seed that has been collected, extracted, and stored by individual parents for the last few years allows for the immediate utilization and testing the validity of this project/approach.

Once the proof-of-concept phase is completed and results verified, the other Lodgepole pine seed orchard owners will be contacted to see if they would be willing to apply this concept for their orchard parents. There are a total of **21** Lodgepole pine seed orchards in British Columbia. Some of these orchards are still too young to produce seed and thus would not be applicable. The Pli orchard operators and their orchard numbers are :

Vernon Seed Orchard Company # 218, 219, 222, 234, 236, 237;

Pacific Regeneration Technologies # 308, 311, 313, 337, 338;

Riverside Forest Products # 310, 339;

Kettle River Seed Orchards # 238;

Sorrento Nurseries # 241 and

Ministry of Forests # 220, 223, 228, 230, 307, 340

Budget:

Year	Professional @\$1,000/month	Technical \$3,000/month	Equipment (Germinator & Incubator)	Supplies (Consumables)	Seed Extraction Charges	Total
Year 1 start June 1	\$10,000	\$30,000	\$10,000	\$5,000	\$5,000	\$60,000
Year 2	\$12,000	\$36,000	---	\$5,000	\$5,000	\$58,000

Timeline:

Project year one could be started as soon a germinator is acquired (are readily available) which is now considered t o be June 1, 2005 and would be completed by March 31, 2006.

People:

David Reid – Manager, Seed Production, Tree Improvement Branch

Phone: (250) 652-2453

e-mail: david.reid@gems5.gov.bc.ca

Staff resources needed to conduct this project cannot be provided by this section, thus the project would be contracted to ForGen Consulting Ltd. of Victoria, B.C.

Southern Interior Forest Region

PROJECT TERMS OF REFERENCE TABLE 2005/06

REGION/BRANCH/SECTION: Southern Interior Forest Region

Chilcotin Fires

Project No. & Title	Chilcotin Fires Project 1 – 4.	
Project Lead	Name: Consultant	Phone No. E-mail:
Objective(s)	To complete surveys, treatment prescriptions, results updates, financial analysis, and long term plans on 17,500 hectares of 2003/04 wildfires in the Chilcotin District.	
Background Situation	The wildfires in the Chilcotin District have not had any work done on them to date.	
Method/Actions	An implementation contract (\$25,000) could be direct awarded to get this project started as our field season is upon us. The implementation contractor will administer the contracts that will deliver all the objectives as identified above for an estimated cost of \$175,000	
People (e.g. project team, who to consult etc.)	Consultant will be the implementation contractor. Brian Raymer is branch contact. Al Randall and Mike Madill are regional contacts	
Other (e.g. related initiatives or considerations of note)	Note that this survey work will generate sowing requests for this fall. This survey work will form the basis for a long term plan to deal with these wildfire areas.	

Resources	FTE:	Budget:
Approval	Name:	Date:
Comment:		

PROJECT TERMS OF REFERENCE TABLE 2005/06

REGION/BRANCH/SECTION: SIFR, Quesnel Central Cariboo

Silviculture Investment Analysis, Backlog and Impeded, Fertilization

Project No. & Title	Projects 1, 3, 6,7, 9 Strategic Silviculture Investment Analysis, Backlog NSR and Impeded Stands, Assessment of Forest Fertilization in 100 Mile TSA, Monitoring High Density Pine Stands in Chilcotin, and FFT Project Managers.	
Project Lead	Name: QDU,DCC,DCH,RSI(WL) and District Licensees	Phone No. E-mail:
Objective(s)	As described in the above table for FFT work to be done on the Quesnel, Williams Lake, and 100 Mile TSAs.	
Background Situation	These 3 TSAs are heavily impacted by the MPB so any good projects we can complete here will help to offset the falldown in timber supply for these 3 TSAs.	
Method/Actions	At this stage most of the effort is being directed towards doing aerial and ground surveys and identifying where to best spend the dollars available under FFT.	
People (e.g. project team, who to consult etc.)	These 3 TSAs feel that they should hire a FFT project manager to help in the delivery of all projects within each of the TSAs.	
Other (e.g. related initiatives or considerations of note)		

Resources	FTE:	Budget:
Approval	Name:	Date:
Comment:		

PROJECT TERMS OF REFERENCE TABLE 2005/06

REGION/BRANCH/SECTION:SIFR Wildfires

Kamloops, Headwaters, Okanagan Wildfires

Project No. & Title	Proejcts 1, 3 Kamloops, Headwaters & Okanagan Shuswap Fires	
Project Lead	Name: Mark Falisweski	Phone No.374-5432 E-mail: mark_trebiz@telus.net
Objective(s)	To complete surveys, treatment prescriptions, results updates, financial analysis, and long term plans on 19,800 hectares of 2003/04 wildfires in the Kamloops, Headwaters, & Okanagan Shuswap Districts.	
Background Situation	The wildfires in the Kamloops District have had more work done on them to date so the survey work will start on these areas: Headwaters, Okanagan, Shuswap will be moved to next as these wildfires have not had the same amount of work completed on them.	
Method/Actions	An implementation contract (\$25,000) has been direct awarded to get this project started as our field season is upon us. The implementation contractor will administer the contracts that will deliver all the objectives as identified above for an estimated cost of \$196,234	
People (e.g. project team, who to consult etc.)	Mark Faliszewski is the implementation contractor. Brian Raymer is branch contact. Al Randall and Mike Madill are regional contacts	
Other (e.g. related initiatives or considerations of note)	Note that this survey work will generate sowing requests for this fall. This survey work will form the basis for a long term plan to deal with these wildfire areas.	

Resources	FTE:	Budget:
Approval	Name:	Date:
Comment:		

Ministry of Agriculture and Lands

PROJECT TERMS OF REFERENCE TABLE 2005/06

Resource Information Branch – Vegetation Update, Ortho Photos

Project No. & Title	3-2 Ortho Photos production for 150 BCGS mapsheets for 2004 MPB air photos	
Project Lead	Name: Paul Quackenbush	Phone No. 250 387-9338 E-mail: Paul.Quackenbush@gov.bc.ca
Objective(s)	Complete the Ortho Photo production 150 mapsheets from 2004 MPB air photo project	
Background Situation	Base Mapping and Geomatic Services of Land Information BC was able to complete Ortho Photos on all but 150 mapsheets for the 2004 MPB air photo project. Ortho Photos are geo-referenced to the TRIM base and utilized by land and resource managers as a tool in managing the MPB areas to assist in strategic and operational planning decisions.	
Method/Actions	Utilize existing colour photo for the production of image base maps (ortho photos) Geo –reference the ortho photo to the corporate base map (TRIM) meet corporate specification for the production of the ortho photos. Make products available to clients and stakeholders	
People (e.g. project team, who to consult etc.)	Paul Quackenbush	
Other (e.g. related initiatives or considerations of note)	The product links to the Inventory FFT project 3-1, production of AT Control which is utilized in by MoF/MoE operational planning for MPB strategic and operational decision making.	

Resources	FTE: 0	Budget: \$27,000
Approval	Name:	Date:
Comment:	The cost could potentially go to \$32,000 based on the bid price.	

PROJECT TERMS OF REFERENCE TABLE 2005/06

Resource Information Branch/Vegetation Update – Remote Sensing

Project No. & Title	3-5 Making Remote Sensing Products available to clients	
Project Lead	Name: Rostam Yazdani	Phone No. 250 387 9323 E-mail: rostam.yazdani@gov.bc.ca
Objective(s)	Make remote sensing products available to clients and stakeholders	
Background Situation	Forest For Tomorrow and other initiatives are or will be funding the purchase and processing of several imagery products (Ortho photos, satellite images, etc) covering the MPB affected areas. These products are used by many clients and stakeholders across a wide spectrum of resource values as both hard copy and digital products. Land Information BC has established the Digital Image Management (DIM) project where many of the digital products from remote sensing are stored. This is an efficient way to make these kinds of products available to the clients and stakeholders. Once the products have been screened for quality and standards staff of LIBC will copy these products to the DIM project.	
Method/Actions	<ul style="list-style-type: none"> • Identify and prioritize remote sensing products • Quality Assure remote sensing products • Load products to the digital image warehouse • Communicate to clients that products are available 	
People (e.g. project team, who to consult etc.)	Rick Baker: Project Sponsor Ann Morrison (RIB), Graeme Weir (RIB), Dave Minty (BSB), Malcolm Gray (BSB), Paul Quackenbush (BMGS) stewardship responsibilities.	
Other (e.g. related initiatives or considerations of note)	The cost associated with this project is staff time. This project is tied into the DIM Project for loading of government imagery to the Image Warehouse, managed by Mark Sondheim (BMGS) .	

Resources	FTE:	Budget: \$0
Approval	Name:	Date:
Comment:		