

**VRI Change Management
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Issue ID	Contact Information	Resources Required	Team Recommendation/Discussion
National Forest Inventory			
<p>Mon 1</p> <p>This is a carry over from last year.</p> <p>National Forest Inventory</p> <p>The NFI standards for tree length may be too strict. Currently if any tree in the sample is more than 5% out for length the sample will fail. 10% may be more appropriate with a set length difference for short trees.</p> <p>Priority: Medium</p>	<p>Matt Makar phone: 371-5224 email: matt.makar@gov. bc.ca</p>		<p>Stuff has been sent to Laurence and Chris for review. Action: This should be finalized soon.</p> <p>MON-1 - Part of NFI standards re-write (monitoring 2 from 2004/2005 season) (Matt)</p>
<p>Mon 2</p> <p>Management Unit Monitoring</p> <p>Need standards to exclude the fine woody measurements in CMI projects outside of the NFI program.</p>	<p>Chris Mulvihill</p>		<p>Done, the decision is not to change standards but rather this will be done on a project by project basis.</p>
Compilation			
Ground Sampling			
GS 1	Keith Tudor		Background: Due to recent changes in Interior log grades and

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<p>Ground Sampling - Net Volume Adjustment Factor - Planning</p> <p>1) ground sampling: For interior ground sampling projects please consider the use of the new interior log grades. RB is currently testing a set of interior CGNF standards; support from inventory/planning in further refining these standards, for use by both inventory and revenue will provide added value to timber pricing and forest management business.</p> <p>priority: Low</p> <p>additional comments: thanks for the current support</p>	<p>phone: 387-8357</p> <p>email: keith.tudor@gov.bc.ca</p>		<p>some licensee interest, testing of the Interior log grades has been done in the CFS shelf life, Burns Lake VRI ground sample and Interior hemlock grading studies. No problems were encountered with the application of the new grades. Norm Shaw advised against the use of Interior log grades because they do not well represent end product use. A log grade conversion program should be able to convert VRI alpha grades to the Interior log grades.</p> <p>Recommendations</p> <ol style="list-style-type: none"> 1. The group agreed that Interior log grades should only optionally collected in addition to the regular VRI log grades. 2. Investigate the accuracy of log grade conversions over the 07/08 period. 3. Continue to explore options with Revenue Branch.
<p>GS 2</p> <p>Phase 2 re-measurement protocols need to be developed.</p> <p>Additional comments:</p> <p>Example items to develop protocols on: When is a re-measurement FIA eligible (what type of project and time since last measurement), should samples that have been destructively sampled (NVAF) be re-measured, data to collect, software, changing sample trees, etc.</p>	<p>Matt Makar</p> <p>phone: 371-5224</p> <p>email: matt.makar@gov.bc.ca</p>		<p>Background: VRI ground samples have been remeasured in several VRI projects for the purpose of meeting either growth, mortality or NVAF sample tree selection objectives. In the absence of remeasurement protocols, all attributes associated with TEP or NVAF ground sampling have been captured. This interim policy needs to be evaluated and modified to meet specific sampling objectives.</p> <p>Discussion:</p> <p><u>NVAF sample remeasurement</u>: The presence of trees felled for previous NVAF sampling eliminates any utility the sample cluster has to meet growth and mortality objectives. The auxiliary plots should be able to be used for future NVAF sample selection. Only the IPC plot alone can potentially be used to meet growth and mortality objectives.</p> <p><u>TEP sample remeasurement</u>: Due to documented difficulties in</p>

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			<p>using variable radius plots for long term monitoring, notwithstanding the unproven Critical Height Sampling process, it may be more acceptable to refer to the remeasurement as a redoing of the sample and not compare the original measurement with the new one. The sample should still be able to meet short term monitoring objectives around catastrophic change due to the MPB infestation, fire and other disturbance sources. If so, only selected measurements need be remeasured, such as mortality and forest health attributes. Norm Shaw stated that VRI ground samples were purposefully never meant to be remeasured, but may be able to meet short term change in mortality. Both SST and Norm Shaw recommended a design team be set up to investigate the use of ground samples for monitoring.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Do not use NVAF ground samples for anything other than NVAF sample tree selection. 2. Measure only those attributes necessary to meet short term catastrophic change objectives. 3. Assign to a newly created monitoring design team for resolution over the 07/08 period.
<p>GS 3</p> <p>Tree distance will become in the future an important ground attribute. Right now, tree distance is only collected at IPC. It should be collected at all points.</p> <p>Priority: High</p>	<p style="text-align: center;">Guillaume Therien giom@jstrower.com</p>		<p>This is the “critical height sampling” issue. Discussions with Sam has found that a literature review conducted for FAIB by Dr Margaret Penner was not positive on the use of variable radius plots for long term monitoring purposes. The proposed analysis of the Vanderhoof CHS study may or may not support monitoring and the timing of its advent is unknown.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Adoption of the CHS process to be based on a thorough

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			<p>review of the results of the Vanderhoof CHS pilot and the Penner CHS literature review over the 07/08 period.</p> <p>2. Assign issue to the monitoring design team for resolution over 07/08 period.</p>
<p>GS 4</p> <p>Modify wording in GS Manual to better state the BAF selection process to be used for stands with large amounts of any mortality.</p> <p>priority: High</p>	<p>Will Smith</p>		<p>Background: Interim procedures have been developed, based on an interpretation of the existing procedures, but further clarification is required for field crews.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. To change the wording to “In stands with high numbers of dead trees, it may be acceptable to include dead trees in the average tree count. For example, In Mountain Pine Beetle or fire killed stands where numerous trees are recently dead, but still mostly sound, the BAF selection would result in 4 to 8 live and dead trees. These situations should be discussed with the project manager.”
<p>GS 5</p> <p>Consider the tallying of dead trees in all auxiliary plots. Increased precision is required for dead tree volume due to the change in policy around the use of dead tree volume in AAC determination.</p> <p>priority: High</p>	<p>Will Smith</p>		<p>Background: The move to incorporate dead potential volume in the AAC determination process has led to a re-evaluation of the processes used to capture of dead wood in VRI ground samples. Interim procedures have been tested in 2006 and include the tallying of dead trees in auxiliary plots and the collection of additional dead NVAF trees. Discussions with timber supply staff have indicated that better information on the volume of the dead wood component is required.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Require the tally of dead standing trees at all auxiliary plots and enhance new occurrences of dead tree species. 2. Modify the wording in the GS procedures manual. 3. Modify TIMVEG and ORACLE systems

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<p>GS 6</p> <p>Modify the site tree selection procedures to allow for the selection of dead and live trees in stands with large amounts of MPB mortality. Age and height information should be captured for the new dead tree layer. Site tree criteria for the remaining live tree layer may be modified to meet information needs.</p> <p>priority: High</p>	<p style="text-align: center;">Will Smith</p>		<p>Background: Site tree selection standards apply only to live trees so in stands with high amounts of MPB mortality, the age, height and site index of the dead tree layer is not captured and the live site trees may have undergone a period of suppression. The collection of both dead and live site trees is being tested in the Lakes VRI and the Vanderhoof VRI remeasurement is being analysed to determine the utility of dead site trees and the affects of suppression on the live site trees. Norm Shaw stated that the original VRI design allowed for dead tree selection providing the tree met suitability criteria. The site index of the dead trees could be used to estimate the site index of other species.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Complete the analysis of the Vanderhoof VRI. 2. Change the definition of suitability of live site trees in order to avoid the selection of a suppressed tree. 3. Collect dead site trees in samples with MPB mortality. 4. Determine modifications to TIMVEG and ORACLE.
<p>GS 7</p> <p>Modify site tree selection procedures to allow for an adequate number of site trees to be collected from a ground sample.</p> <p>priority: High</p>	<p style="text-align: center;">Will Smith</p>		<p>Background: A perennial issue in VRI ground sampling and needs to be finally resolved. The X tree process appears to be the best way to break the logjam. SST has been discussing solutions and is currently testing modifications via a census of a 0.5 ha stand and site tree selection simulations to determine the most appropriate X tree selection procedures. Data from a census of all codominant and dominant trees in a 0.5 ha area on the coast was analysed to determine the easiest X tree selection process with the least bias. The suitable tree closest to plot center was found to have the least bias.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Conduct a site tree census in a different stand type. 2. Analyse results and determine best method during the 07/08

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<p>GS 8</p> <p>Replace the auxiliary plots that are dropped due to being outside the polygon. Replace these plots by establishing new plots within the polygon.</p> <p>additional comments: Dropped auxiliary plots compound the problems associated with insufficient site trees and candidates for NVAF sample trees. Basal area for the sample would be more precise.</p>	<p style="text-align: center;">Will Smith</p>		<p>period. Implement in the 08/09 season.</p> <p>Background: The placement of the full compliment of auxiliary plots would provide better information and should not lead to additional sampling costs. Replacement auxiliary plots could be placed 50 m at randomly selected cardinal directions from randomly selected existing auxiliary plots. Site trees selection, basal area estimation and NVAF sample selection would all benefit from the additional auxiliary plots. Both Norm Shaw and SST agreed in principle to the concept of always placing a full contingent of auxiliary plots.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Design an unbiased procedure to replace dropped auxiliary plots for implementation in the 07/08 field season. The replacement plot process selects the closest grid point from the IPC using a grid consisting of one 50 m expansion from the VRI plot cluster at cardinal directions. 2. Make necessary modification to the TIMVEG and ORACLE systems.
<p>GS 9</p> <p>Clarify the policy on the dropping of samples in harvested areas.</p> <p>priority: High</p>	<p style="text-align: center;">Will Smith</p>		<p>Background: Interim procedures have been developed to clarify the determination for sample establishment where any form of harvesting has occurred. If the IPC has been clearcut, the sample is dropped but further clarification is required for selective logging. This is a contentious issue and may contravene the principles of VRI sampling. Norm has advised the establishment of all samples regardless of disturbance. SST has reviewed the item and has recommended the presence or absence of disturbance be captured at each sample in order to indicate suitability for adjustments.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Do not establish samples in clearcuts where the IPC has been proven to be clearcut. 2. Establish samples in all selective logging.

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			3. Indicate sample disturbance for each ground sample.
<p>GS 10</p> <p>Modify the wording in the manual around the navigation and placement of ground samples through the use of tight chain or GPS processes. Encourage the use of higher quality imagery to allow for the use of either process.</p> <p>priority: High</p>	Will Smith		<p>Background: There are two issues associated with this item:</p> <ol style="list-style-type: none"> 1. The navigation section of the ground sampling manual needs to be clarified in the use of GPS to locate ground samples where the map may be wrong. 2. Where the traverse process is used to locate samples, there must be adequate quality imagery given to the sampler. <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Examine issue over the 07/08 period.
<p>GS 11</p> <p>Consider the creation of a new type of plot that would allow for the collection of non-standard VRI data to do with the MPB infestation. Code the sample as a 'B' and ensure that this is incorporated into any TIMVEG updates.</p> <p>priority: High</p>	Roman Bilek		<p>Background: Non standard measurements associated with the MPB special measures have been collected in VRI ground samples. This data may or may not be able to be captured using TIMVEG and stored in ORACLE. The interim procedure is the use of the N (NVAF) plot type which allows for the capture by TIMVEG.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Stick with the ad hoc current process.
<p>GS 12</p> <p>National Forest Inventory - Ground Sampling Appearance codes for dead trees</p> <p>priority: High</p> <p>Currently the TIMVEG validation does not accept appearance codes 1 or 2 for dead trees. Either validation needs to be changed or the VRI/NFI manuals need to be updated.</p>	Matt Makar		<p>Background: Trees that have been recently killed due to insect or other disturbance may still have needles and have a wildlife code visual appearance of category 1 or 2. Currently the Crown condition instructions state to "review the crown condition in relation to a normal live crown". In some cases, there are advantages to classifying the crown of a dead tree in terms of codes 1 (all foliage, twigs and branches present) or 2 (some or all foliage lost and some twigs lost). Timveg currently will not allow a code 1 or 2 for dead trees.</p>

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			<p>Recommendations:</p> <ol style="list-style-type: none"> 1. Allow for the optional assessment of crown using codes 1 or 2. 2. Modify TIMVEG system.
<p>GS 13 business area: - National Forest Inventory - Ground Sampling The manual may give conflicting information on determination of Live or dead on recently killed trees (EG MPB)</p> <p>priority: High Current procedures state the following: Live trees have enough foliage to keep them alive (live cambium is present), and are rooted into the ground. Lack of foliage for some species, of course, is no indication of death during some seasons.</p> <p>Recently killed trees (such as MPB) may have green foliage, but dead cambium. Clarification is needed for field crews.</p>	<p>Matt Makar</p>		<p>Background: Green attack MPB killed PI are normally considered to be alive. But, in some cases where there is some missing bark, it can be readily apparent that the cambium is dead and the tree can be considered to be dead. However, the workload of checking for live cambium in all cases of green attack is thought to be excessive and some bounds need to be placed in this situation to minimize the workload. Norm has advised that the original intent was to classify mortality based on the upcoming two year period; if thought to be dead within two years, then the tree is classified as dead.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Modify the text in the manual to state that if green needles are present, then the tree is considered to be alive – if there is any doubt, then check the cambium. 2. Assess mortality on current state, not assumed over a two year period.
<p>GS 14 National Forest Inventory - Ground Sampling The Timveg software is currently being revised so the word "intended" is allowed for a GPS File ID where actual coordinates were not taken in the field. The crew can then enter the intended</p>	<p>Matt Makar</p>		<p>Background: As per writeup. The capture of the intended GPS coordinates will allow for sample georeferencing.</p> <p>Recommendation: Modify the manual.</p> <p>Action: Matt to modify the ground sampling manual. GS-14 - Done, note sent to John Wakelin Thu 2007-02-01 9:10 AM with revised</p>

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<p>sample coordinates in the IPC coordinate fields. Validation is being re-written so that blank coordinates for the IPC is not allowed (NODATA code in file ID, with blank coordinates).</p> <p>The manual needs to be revised to clarify how to enter the coordinates properly.</p> <p>priority: High Currently the manual says the following. The statement that the handheld will collect "intended" coordinates is not correct (yet), but will need further clarification when the software is modified.</p> <p>Recording the "intended" or target UTM coordinates: Field cards – on the field card record the "intended" UTM coordinates in the comments section on the back of the CL card. Handheld – the handheld program will collect the "intended" UTM co-ordinates.</p>			<p>wording.</p> <p>Hi John, Here's the revised wording for this change management item. This note covers both the NFI and VRI procedures. Laurence and Chris have a read, but I don't think there should be any problems.</p> <p>First the modified VRI Ground sampling Procedures.</p> <p>Section 2.4.3 currently reads :</p> <p>Collect GPS data at the Integrated Plot Centre. When GPS data cannot be collected at the plot centre, move to an area where data can be collected, such as an opening. Measure the distance and bearing from the point where data was collected back to the Integrated Plot Centre. Record these measurements in the appropriate section on the Cluster Layout card.</p> <p>It should be replaced to read:</p> <p>Collect GPS data at the Integrated Plot Centre. When GPS data cannot be collected at the plot centre, move to an area where data can be collected, such as an opening. Measure the distance and bearing from the point where data was collected back to the Integrated Plot Centre. Record these measurements in the appropriate section on the Cluster Layout card. If coordinates can not be collected in the field the Intended coordinates must be recorded on the back of the field card. This data must be keypunched in the handheld using "Intended" as the GPS File ID, and the intended coordinates entered in the "corrected UTM field" on the CL card.</p>
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			<p>Section 3.6 currently reads under GPS Integrated Plot Centre:</p> <p>Handheld – the handheld program will collect the “intended” UTM co-ordinates.</p> <p>This portion should be replaced to read:</p> <p>Handheld - Enter "Intended" as the GPS File ID, and input the intended coordinates in the "corrected UTM field" on the CL card screen .</p> <p>Modified National Forest Inventory Procedures:</p> <p>Section 2.4.3 Currently reads:</p> <p>Collect GPS data at the IPC. When GPS data cannot be collected at the plot centre, move to an area where data can be collected. Measure the distance and bearing from the point where data was collected back to the IPC. Record these measurements in the appropriate section on the Cluster Layout card. If GPS data cannot be collected at this alternate site , enter NODATA for the GPS file ID.</p> <p>It should be replaced to read:</p> <p>Collect GPS data at the Integrated Plot Centre. When GPS data cannot be collected at the plot centre, move to an area where data can be collected, such as an opening. Measure the distance and bearing from the point where data was collected back to the Integrated Plot Centre. Record these measurements in the appropriate section on the Cluster Layout card. If coordinates can not be collected in the field the Intended coordinates must be recorded on the back of the field card. This data must be keypunched in the handheld using</p>
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			<p>"Intended" as the GPS File ID, and the intended coordinates entered in the "corrected UTM field" on the CL card.</p> <p>Section 3.6 currently reads:</p> <p>Handheld – the handheld program will collect the “intended” UTM co-ordinates.</p> <p>It should be replaced to read:</p> <p>Handheld - Enter "Intended" as the GPS File ID, and input the intended coordinates in the "corrected UTM field" on the CL card screen .</p>
Net Volume Adjustment Factor			
<p>NVAF 1</p> <p>The interior forest industry is exploring the option of moving towards a CGNF system. One of the key issues involved is the lack of consistent NVAF data throughout the interior. Support from I/P is further collecting this information or supporting the collection of this data within the planning process will again further support the IP and revenue business.</p>	<p>Keith Tudor phone: 387-8357 email: keith.tudor@gov.bc.ca</p>		<p>Background: Keith has provided clarification for this item. Revenue is attempting to move the cruise to a call grade and net factor basis and the use of NVAF to adjust net merchantable volumes. In order to properly implement the new process, NVAF sampling should be conducted across the province in support of both inventory and revenue applications.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Encourage NVAF sampling. 2. Conduct a needs (gap) analysis in the early part of 07/08 to determine the high priority areas and species to sample for NVAF.
<p>NVAF 2</p> <p>Given the number of dead NVAF trees that are sampled, we may be collecting more NVAF enhanced phase 2 data for dead trees than may be needed.</p>	<p>Matt Makar phone: 371-5224 email: matt.makar@gov.bc.ca</p>		<p>Background: Dead fallen trees are time consuming to call grade and net factor and typically do not have merchantable volumes. Call grading dead fallen trees on a subset of NVAF ground samples may be more efficient and still be statistically valid. Note, that NVAF enhancement of a subset of auxiliary plots is allowed</p> <p>Recommendations:</p>

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<p>Priority: Low</p> <p>Additional comments:</p> <p>Possible solutions are to collect dead fallen only on one aux plot, rather than all aux plots.</p>			<ol style="list-style-type: none"> 1. Modify the NVAF ground sample procedures to allow for an enhancement of dead fallen trees only on a subset of auxiliary plots in NVAF ground samples.
<p>NVAF 3</p> <p>What is the basis for 100 minimum tree sample size. The ground sample size is based on SE%. What is the NVAF sample size based on? Are we going for strata SE or overall?</p>	<p>Chris Mulvihill</p>		<p>Background: The minimum number of sample trees for NVAF has been increased in 2006 to 75 live and 25 dead trees. The increase in the number of sample trees should allow for better stats for major live species and dead trees. The 25 dead tree sample size should allow for sampling errors of < 15%, but it is recognized that the confidence in dead tree volume in many units does not warrant such a large sample size.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Allow for a 100 tree minimum sample size to specify a minimum sample size of 10 trees. 2. Identify the requirements for the NVAF sample up front in the VPIP. 3. Clarify the wording in the NVAF Standards and Procedures document.
<p>NVAF 4</p> <p>Determine the remeasurement utility of ground samples that have had NVAF destructive sampling. Are all the plots within the cluster expendable and can the remeasured sample be used for traditional VRI adjustments? Should the IPC also be used for destructive sampling?</p> <p>priority: High</p>	<p>Will Smith</p>		<p>This item is covered in GS 2.</p>

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<p>NVAF 5</p> <p>According to the NVAF manual, NVAF destructive sampling is only to be done on trees that are greater than or equal to 12.5cm in diameter at 1.3m. (page 70 of the standards under population). In the "NVAF enhancement" section (3.0) of the manual it does not state this limit. As a result some crews have been collecting NVAF enhancement data down to the standard VRI limit of 4cm, with no need. This limit should be clearly stated somewhere in section 3.0</p> <p>priority: High</p>	<p style="text-align: center;">Matt Makar</p>		<p>Background: All trees tallied in NVAF ground samples are enhanced regardless of diameter, and the minimum dbh for eligibility as a NVAF sample tree is 12.5 cm. To date, NVAF ground samples have only been used to select NVAF sample trees, so the enhancement of non NVAF trees appears to have no utility. Trees with a DBH < 12.5 cm do not have a merchantable volume so have no utility for NVAF. Matt is also concerned about the bias that results from a factor applied to the entire population that is built from a sample of a portion of the population.</p> <p>Recommendations:</p> <ol style="list-style-type: none"> 1. Enhance only those trees that have a dbh >= 12.5 cm. 2. Clarify the wording in the NVAF Standards and Procedures document. 3. Ensure plans state clearly that the NVAF does not apply to the entire population.
Photo Interpretation			
<p>PI 1</p> <p>National Forest Inventory - Photo Interpretation - Planning - Analysis and Adjustment - Management Unit Monitoring</p> <p>Description:</p> <p>My suggestion for improvements to the current VRI processes in B.C. include the following: Because BC has many interest groups using it's land base information including VRI, terrain, hydrography, and ecosystem information for integrated resource planning purposes, it would be efficient and more cost effective to develop an</p>	<p style="text-align: center;">Terry Smith P.O. Box 1030 670 11th St. N.E. Salmon Arm, B.C. V1E 4P2</p> <p>phone: 250-832-7360</p> <p>fax: 250-832-1939</p> <p>email: t.smith</p>		<p style="text-align: center;">This issue is currently not being addressed at this time. There have been several meetings on this issue, however a formal proposal is required that fully describes the technical procedures and specific costs over a project area.</p>

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<p>integrated resource inventory that contains all of these data sets that have been collected and developed in an integrated common base approach. The technology and system now exists to carry out this process in a cost effective way and has been demonstrated elsewhere in the country.</p> <p>Priority: High</p> <p>Additional comments: We would be pleased to show examples of how this process works and what has been completed elsewhere.</p>			
<p>PI 2 Photo Interpretation Description:</p> <p>A standard template is needed for contractors to submit digital air and ground call data to the government.</p> <p>Additional comments: Items to submit digitally from each project include coordinates, species comp, basal area, leading and second species age and height, etc.</p>	<p style="text-align: center;">Matt Makar phone: 371-5224 email: matt.makar@gov.bc.ca</p>		<p>The 2007 "Ground Call and Air Call Data Collection Procedures and Standards" are revised to state:</p> <p>For all completed ground calls and air calls, the contractor is required to submit to the Ministry of Forests and Range acceptable data in both digital (if available) and hardcopy format. As part of the deliverables, the Universal Transverse Mercator (UTM) location information for each ground call and air call must also be submitted.</p>
<p>PI 3 More clarification is needed in phase 1 in regards to when 1 or 3 point calls are appropriate.</p>	<p style="text-align: center;">Matt Makar phone: 371-5224 email: matt.makar@gov.bc.ca</p>		<p>The 2007 "Ground Call Data Collection Procedures and Standards" are revised to state:</p>

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<p>Priority: Medium</p> <p>Additional comments:</p> <p>In Ontario crews must put in multiple points if the leading species is less than something like 60%. This may be appropriate in BC as well (possibly as well as an age and height range rule).</p>	<p>bc.ca</p>		<ul style="list-style-type: none"> a. "Three-point ground call would typically be used in complex stand situations such as polygons with complex species composition; polygons with very patchy distribution; uneven-aged or all-aged stands; polygons with multiple layers such as interior Douglas-fir stands; and polygons with a range of ages and / or heights such as mature spruce-balsam complexes. The three point ground call will provide better information on species composition, basal area, density, age, and height in these types of stands. must be used in complex stands including uneven-age or all-age stands; polygons with multi-layers or a wide range of tree heights (such as interior Douglas-fir stands or mature spruce and balsam mix stands); or stands with complex composition. b. "One-point ground call would typically be used in very homogenous polygons with little variation in attributes. Fire origin stands of lodgepole pine or stands of coppice aspen are good examples of where a one point ground call should be used."
<p>PI 4</p> <p>We should look at the standards for establishment of ground calls. I don't think it is always necessary to establish 3 point clusters.</p> <p>If 3 points are established maybe we should only be collecting specific data at the center point and Basal area and species at the other points.</p>	<p>Chris Mulvihill</p>		<ul style="list-style-type: none"> - Collection of all specific data in a 3-point call is necessary for capturing the variability within the immediate area of the calibration point. Dropping of any specific data required under the current procedures would not significantly simplify or benefit the field process. However, since accurate diameter measurements are required only for borderline and sample trees, it is recognized that a separate standard is required for estimated diameters.

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			<ul style="list-style-type: none"> - The following is a 2007 revised minimum standard for estimated diameters: <ul style="list-style-type: none"> o Estimated dbh must be within +/- 15% or 5 cm whichever is greater
<p>PI 5</p> <p>Photo Interpretation Should there be a minimum number of ground and air calls established for maps</p>	Chris Mulvihill		<ul style="list-style-type: none"> - The onus remains with the licensee/proponent to carry out data source analysis during the preparation of the Project Implementation Plan, which supports the estimated number of 1- and 3- point calls recommended in the VPIP submissions. The general guidelines for data source analysis are outlined in Appendix C of the VPIP guidelines. - A general guideline in the VPIP states that “proponents should consider establishing at least 10 ground calls, 10 air calls and 10 observations per full map”. -
<p>PI 6</p> <p>We have to investigate the usefulness of interpreting basal area. Can VDYP& do it more consistently than the interpreters? VDYP7 is very sensitive to changes in BA.</p>	Chris Mulvihill		<p>Tamara is looking into this. This will also be looked at in the photo scale test project that will be undertaken on 07/08.</p>
<p>PI 7</p> <p>At the IPR workshop in Richmond held this May, the issue of providing a new inventory for the</p>	Dick Nakatsu		<p>After discussion with Robert Mitchell (Cassiar); Sam Davis (Mackenzie) ; and Bob Krahn (Ft. Nelson) there is no immediate reason to reduce standards for VRI classification and photointerpretation at this time.</p>

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<p>cassiar and places such as the cassiar (parts of Ft. Nelson & Mackenzie) was raised. The current FIA model isn't working well for places like the Cassiar; vast territory or area with an extremely small timber harvest and subsequent low FIA investment funds available for conducting inventories . In addition the data or inventory completed in such areas dates back 30+ years and the photography used for the interpretation can be even older. Currently no strategic planning for a new inventory is in place or being considered for the Cassiar. The question is how should we address places like the Cassiar for a new inventory. Due to its size ,to carry-out an inventory to conventional VRI standards would be costly and time consuming.(Its not feasible.) For the vast amount of area (non THLB) a vri standard phase 1 inventory may not be required.</p> <p>The purpose of this submission is to investigate and design a Phase 1 (lite version) for areas such as the Cassiar.</p>			<p>The basis for this conclusion is that Mackenzie and Ft. Nelson have fairly recent 1:40,000 TRIM photographs which could be used in softcopy to support photo interpretation. Both districts have considerable VRI Phase 1 completed with significant new area targeted over the next 3 years. The expectation is that the entire district will be completed eventually. It is logical to complete all of the TSA to the same standard.</p> <p>The challenge in Cassiar is much different than Mackenzie and Ft. Nelson.</p> <p>However Cassiar will likely focus its attention to the THLB portion first before addressing the non-THLB areas. The VSIP is in the process of being drafted. If the non-THLB area is to be addressed, it is likely 3 years or more into the future. Perhaps there will be some changes in business reasons in the future that hopefully will provide resources and give priority to the area which is currently outside the THLB.</p> <p>Otherwise we will defer consideration of reducing standards for 2007. I would like to leave it open for Cassiar to re-evaluate next year at this time.</p> <p>Action: Issue deferred to 2007. Update: This is potentially a VIAC issue.</p>
<p>Planning</p>			
<p>PLAN 1</p> <p>A review of planning document requirements is required.</p>	<p>Gary Johansen 250-356-0633 email: gary.johansen@g</p>		<p>Any changes in standards need to be looked at the impacts of the planning documents. (VSIPs and VPIPs).</p>

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priority: Low	ov.bc.ca		
<p>PLAN 2</p> <p>PIP - Phase I</p> <p>Data source analysis must precede submission of PIP to support the number of calibration points prescribed in the plan. Either adjust the PIP - Phase I guidelines to reflect this requirement or once a commitment to carry out data source analysis is made in the plan then review the analysis as part of the quality assurance process. As it stands now the number of calibration points remains to be applied as a function of funding.</p>	Roman Bilek		This is covered in PI5
<p>PLAN 3</p> <p><u>End of Project Documentation for Phase I work</u></p> <p>With delivery of VRI currently in the hands of licences and consultants, there is no requirement to produce any kind of report at the end of a project as a key deliverable. This means there is no historical record for future users of the inventory and leaves gov't with no background information for inventories that it is responsible for as custodian. As MOFR is not (usually) involved in any aspect of the work, including QA, we are left without any internal knowledge of how the reinventory was done or by who, what was</p>	Derek Challenger		<p>Action: Jim Grace to follow up with Derek</p> <p>See below. This is from Jim.</p> <p>Purpose: The purpose of this report is to document and provide a historical reference of the area of interest, personnel and activities associated with the completion of a Phase 1 Photo Interpretation VRI of the XXXX TSA / TFL. Date: _____</p> <p>1) Introduction: Brief description that includes Start up Date and timeframe required to complete this project. Lead Licensee, group or other name, who initiated this project.</p>

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<p>included or excluded on the land base, what issues arose during the project and whether there are unique aspects that gov't and other users of the data should be aware of. Given the likelihood that licensee (or their staff) and consultants will not be around to answer questions 5 or 10 years from now, we need to protect the investment of millions of dollars by having a permanent documented record of the work. A Phase I inventory report should still be a requirement should MOFR regain responsibility for delivery of VRI as a measure to prevent ongoing loss of knowledge as existing staff retire.</p> <p>-----</p> <p>I have an example of such a report here (produced for TFL 25 in 1985) if that would be helpful in the discussion. Let me know if any of this needs further clarification.</p> <p>Derek</p>			<p>Logic for doing a VRI Phase 1 (brief) Contractor Company(s) awarded the contract. Funding through FIA or other source. Reference to the Approved VSIP / VPIP</p> <p>In the event that more than one VRI contractor is awarded a portion of a TSA/District/TFL, then each will complete this report for the appropriate areas.</p> <p>2) Project Description: General description of where the area of interest is located within the Province. Could contain a Map?? Listing of BCGS maps or portions of maps or a reference to an appendix containing a list of all maps or portions thereof, included within the project. Identify photo coverage and format as well as if any areas are lacking photo coverage. I.e. "The objective of this project was to conduct a Phase I VRI of the entire area using 1:20,000 colour digital imagery in preset model (sjs) format.</p> <p>3) Personnel: List all personnel by company involved (with qualifications) and their roles in this VRI Including 3rd Party Q&A.</p> <p>4) Air photo Format: List air photo format: Year, scale or GSD, colour or B&W, preset model format (sjs or other), photo coverage complete for entire area or different scales and years of photo by map. Where holes (maps) are and what was done with holes in photo coverage.</p>
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			<p>5) VRI Assessment: Expand the logic for this VRI project: Could include Recommendation from Chief Forester, Licensee Forest Management issues, Age of pervious inventory, standard it was captured at, etc.</p> <p>6) VRI Phase 1 Photo Interpretation Process 6.1: VRI General: Standard statement that procedures (unless explicitly stated otherwise) conformed to all Provincial VRI Standards. If not, describe changes, whether entire area or only portions and what portions. 6.2: Inventory Base Maps: TRIM base used or not; and any process to prepare this base for VRI in a softcopy environment, etc. . . .</p> <p>6.3: Data Source analysis; What was done to recover / assess historic data sources (XG/AC) and what success was achieved. This would include a statement or table on amount of historic data source transferred or why some was not (could not find, age, etc).</p> <p>6.4: Vegetation Polygon Delineation: - Were private lands, woodlots, etc excluded from delineation and this VRI process? - Were any other inventories (bio-terrain, TEM, etc) used as a base for the VRI delineation. If so, what criteria were used to insert the VRI over this base? - Was there a desired polygon size or number of polygons per map strived for and the logic for this? - Was the project to TSA / TFL boundaries (not necessarily full sheet) and were any maps or portions not delineated because of missing imagery?</p> <p>6.5: Phase 1 VRI Field Data Collection. 6.5.1: Sample Plan: Was a Sample Field Work Plan completed? And</p>
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			<p>signed off by whom?</p> <p>6.5.2: Candidate Stand Criteria: The priority candidate types for sampling included:</p> <p>6.5.3: Data Collection: How was the data collected? All points GPS'ed for location, marked on hardcopy photo, ortho, map, etc for transfer to the digital data base. Attribute data collected on traditional hardcopy forms or digitally?</p> <p>6.5.3.1: Air Calibration Points: Number of air calls completed and data collected at these points. Was Sample Plan followed or reason for any changes.</p> <p>6.5.3.2: Ground Calibration Points. Number of 1 point and 3 point ground call completed. Was Sample Plan followed or reason for any change. Logic</p> <p>6.5.3.3: Casual Air / Ground Observations. Number of data points recorded and data collected.</p> <p>6.5.3.4: Data Description Format: Were all data points transferred to the digital data base? What was the disposition of the data? Where is any hardcopy photo, orthos,maps, forms, etc containing this data and was a digital Field Data list with UTM or lat / long co-ordinates (excel or other format) completed to MoF requirements and delivered to MoF?</p> <p>6.6: Vegetation Cover Descriptions:</p> <p>6.6.1: Final Attribution: “Don't think you need to require a list of all attributes collected?”</p> <ul style="list-style-type: none"> - How was polygon numbering done? - All polygons were attributed with full VRI descriptions, except for those covering private lands, Woodlots, etc. Other discrepancies? VRI Descriptions were entered directly into a digital data base or how? - Final Veg. Attribute database files were converted to MoF MDB or what. Polygons were digitally edge tied and all files were edited for correctness.
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			<p>6.6.2: Silviculture Information: How were silviculture openings handled?</p> <ul style="list-style-type: none"> - External opening boundaries derived from new photography - Internal opening polygon boundaries derived / maintained from existing Inventory update - Internal opening polygon descriptions maintained from existing inventory. - Stands identified as free to grow provide a new VRI description. <p>6.7: Digital Map Production:</p> <ul style="list-style-type: none"> - Version of digital mapping standards used. - Digital Mapping process, including but not limited to: All polygons noded after line transfer. Planimetry and cadastre were updated and annotated with appropriate toponyms and description. New VG1 files were vector and polygon cleaned and then compared to its associated VRI attribute files to ensure a one to one polygon correspondence. All maps are in Single Neat Line Format. Other. <p>7) Quality Assurance. Description of Q&A process used and summary of results by phase. What was done if any work failed and was it corrected and approved.</p> <p>8) Costs Project costs by phase including Delineation / data source transfer, field work, final attribution, final digital mapping costs, Quality assurance.</p>
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			<p>9) Conclusion and Recommendations:</p> <p>Problems / Recommendations associated with start up and availability of data to start the project.</p> <p>Problems / Recommendations with photo quality, scale, different scales, missing photo coverage, etc.</p> <p>Problems associated with doing the VRI project.</p> <ul style="list-style-type: none"> - Changes in staffing - Insufficient field work to assist in forest classification. - Areas where more work might be required. Problem with delineation / attribution in the dry belt fir, etc. <p>Other Recommendations.</p> <p>Attachments: Project List of maps Data Source Analysis Field Work Sample Plan.</p>
Other			
Analysis and Adjustments			
Management Unit Monitoring			
Permanent Sample Plot			

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<p>The following are change issues from 2005 / 2006 the need confirmation of whether they have been completed.</p>			
<p>GS 1 Change the log length associated with the VRI ground sample net factor rule for conk.</p>	<p>Will Smith</p>		<p>This is a major item. We are not going to meet the timeline. We will put together a team to look at this. This will be a one year project. Action: Will Smith will put together a team to look at this. Done. Matt, Chris and Don R. from Revenue Branch are looking at this. Will report out in the next VRI Change Management Cycle (07/08).</p> <p>Status as of Nov 06: The analysis has not been completed.</p> <p>Recommendations: 1. A contractor analysis the NVAF and other decay data to determine the most appropriate net factor rule.</p> <p>Action: Will to contract out the analysis for the conk rule, implement new rule for 07/08 field season. This is deferred. Action: Will to contract out analysis of data for other net factor deduction rules for implementation in 08/09 field season.</p>
<p>GS 2 The ground sample standards should collect interior grade information.</p>	<p>Keith Tudor</p>		<p>Action: Will Smith will test this summer. In progress. Will has worked out a conversion routine. Will report out in the next VRI Change Management Cycle (07/08).</p> <p>This item is covered in GS1.</p>
<p>GS 3 Measure code for figure 4.12 in procedures is</p>	<p>Matt Makar</p>		<p>This is a word processing exercise. Action: Will Smith will look after this. In progress. Matt and Will are</p>

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incorrect.			working on this. A new version will be up on RISC by the new fiscal (06/07). This item has been done.
MON 1 Basal area calculator for the NFI version of TimVeg does not apply the correct per hectare factor when determining species composition.	Matt Makar		Action: This is a SST issue to be resolved 06/07. This issue is tied to the review by SST as to whether small stems should be collected in the NFI program (SST issue 05-14b). Defer fixing software until this decision is made." Done.
PI 1 For stand structure classification, there has been no adequate way to systematically and consistently account for the variety of stand structures. The Cumulative Distribution Approach would rectify this.	Ian Moss forestreet@shaw.ca		We cannot entertain this one at this time as we don't have the resources to undertake and implement. We may revisit this in the future.
PI 2 A gap in the classification exists where a polygon may be vegetated with trees but the crown closure is less than 10%.	Tim Salkeld		This is a known problem but we don't have the resources to undertake this. There are serious ramifications to undertake if we implement.
The following are change issues from 2004 / 2005 the need confirmation of whether they have been completed.			
Sampling 1 The audit standard for stem mapping trees is not rigid enough. The Standard for the measurement of distance should be tightened.	Chris Mulvihill		This one is fairly simple. Action: Laurence, Chris, and Matt to discuss. Done, this needs to be written up and sent to Will. This will be complete on time. This item has been done.
Monitoring 1	Matt Makar	Word	Done

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There appears to be an error in the NFI QA standards for age / height tree selection.		processing assistance.	
Monitoring 2 The NFI QA should be based on a points system.	Matt Makar		Action: Matt will do this. This will be looked at in 06/07 fiscal. In regards to Monitoring 6, I think this item will have to be done for next fiscal. It's not crucial for us as we won't be doing any NFI this year. The standards could possibly be used for some MPB work, but we can live with what we have for now. Update from Matt, March 9 th , 2006. Update: This is tied to Mon 1 06/07. Monitoring 2 from 2004/2005 (Monitoring 2 - The NFI QA should be based on a points system) - Underway, 1st draft sent to Laurence and Chris for review and second cut being worked on. (Matt)
Photo 1 The ground calibration procedures may need revision.	Chris Lauder clauder@triathloninc.com 250-652-7077		Action: Laurence will look into. This is deferred.
Photo 2 The air calibration procedures may need revision.	Chris Lauder clauder@triathloninc.com 250-652-7077		Action: Laurence will look into. This is deferred.
Photo 3 The photo interpretation procedures may need revision.	Chris Lauder clauder@triathloninc.com 250-652-7077		Action: Laurence will look into. This is deferred.
Photo 4 The process to create sampling plans for photo interpretation field calibration may need to be reviewed.	Chris Lauder clauder@triathloninc.com 250-652-7077		Action: Laurence to manage. A paragraph is needed in the planning document. This is related to PLAN 5. Will be done by end of 06/07 fiscal. This is being address this year (2006/07) In progress.