CSA Community Advisory Group
To Western Forest Products
February 19, 2018
Western Forest Products Boardroom

Attendance

Present	Absent
Jane Cameron - Chair	Russ Parsons
Dave Hodgins	Karen Skadsheim
Andy Payne	Ben Berukoff
George Illes	Rory Maitland
Colin Palmer	Bill Maitland
Barry Miller	
Paul Goodwin	
Mark Hassett	
Mark Anderson	
Joseph McLean	
Tom Koleszar	
Wayne Brewer	
Doug Fuller	
Geoff Matheson, TFT -WFP	
Darwyn Koch - WFP	
Val Thompson – Facilitator/Secretary	

6:00 pm: Meeting called to order
Quorum met.

Safety Review
Facilitator noted fire exits and first aid attendants in case of emergency. Meeting place in case of emergency was noted.

Code of Conduct
Code of Conduct for Community Advisory Group was reviewed.

Review and Acceptance of Agenda
Agenda was amended and accepted.

Review and Acceptance of Minutes
Minutes were accepted.

Welcome and Introductions
Chair welcomed group.

Correspondence
Copies of recent correspondence was provided and reviewed
Emails to First Nations
Letter to PRPAWS
FRPA email
Questionaire feedback
WFP purchases US capacity email

Company Update
In January WFP announced that they purchased a processing and sorting facility in Washington. It is 18 acres with 170 square feet of covered storage. It is well positioned with rail line nearby. They will be able to store lumber there and ship it wherever they want in the states more conveniently. It also has a planer mill and two kilns. It needs work so WFP will invest in that facility to bring it up to speed. It might be a really good fit for doing some specialty cutting. This will give the company a little more of a foothold in the USA.

Question: Is this new business for the company or a transfer of business from North to South? Is it replacing something that already exists on this side of the border?

No. It is a distribution centre. It is covered so lots of lumber can be stored there.

Question: Does it provide any protection from the softwood lumber dispute?

The only way it would is if we had the planer running and we had rough lumber down there to process. This is not the intention. The intention is for special re-cut. The dimension lumber will be cut on Vancouver Island to supply it but mostly it will be a sorting and distribution centre because it is right next to the rail line.

Operational Information Map Update

New blocks on the Map

New Blocks

On January OIM: ST-349, ST-346, ST-353, ST-156, ST-289, & ST-408.

On February OIM: ST-086, ST-271, ST-278, ST-118, ST-200, & ST-207.

Current Activities

Harvesting – ST-286, GI-134 (postponed), EL-702 (postponed), ST-028 (postponed), WL-948 (postponed), ST-132, TM-274, TM-264, CH-030, CH-032, CH-305, CH-553, PL-004, ST-082, ST-288, and ST-087.

Road Construction – ST-055 (postponed), PD-528 (postponed), UL-831, ST-069, ST-341, and WL-024.

Sunshine Coast Trail

ST-249 Block Harvesting: Harvesting Completed.

FH-044 Block Harvesting: Harvesting Completed.

ST-288 Road construction: Road construction Completed. Harvesting Started. Trail re-routed.

Fires/Slides/Spills (YTD):

No New Fires.

No New Spills.

Slide in PD-466.

December 8th, 2017. This slide was reported to C&E on January 10th, 2018. This slide was discovered on December 8th last week while Fred Westarp and Jack Whittles were completing a post construction assessment of these roads. The Geo Tech report arrived today - see attached. The event likely happened a few weeks ago when we experienced several days of rainfall over a short period of time. There were no snow accumulations on the site and Powell Daniels has been inactive since the middle of November. There is no equipment in Powell Daniels at the moment. This road was built in 2017 and the block is planned for harvest in April of 2018.

Safety Stats (YTD):

2017 Year End Safety Stats for Stillwater:
#of recordable incidents = 0. MIR = 0.00.

Stillwater Contractors as of December 31, 2017:

#of recordable incidents = 5. MIR = 4.

Harvesting Stats (YTD):
As of December 31, 2017 the total amount harvested from the TFL (YTD) is 414,023 m3.
As of January 31, 2018 the total amount harvested from the TFL (YTD) is 28,448 m3.

LiDAR Presentation – Geoff Matheson
LiDAR stands for Light Detection and Ranging. You can imagine it as shooting lasers at the ground and calculating how fast they come back. There are three scales of LiDAR. There is ground based, which can be as simple as a two man traverse crew with a total station machine used for bridge site plans. This is a guy with a pogo stick going around taking all of the points and another guy that shoots the laser beam from the central spot. Self driving cars use LiDAR to figure out what is around it. The airborne version of LiDAR is at a larger scale. You can shoot far more lasers and cover a much larger area more quickly. Space based LiDAR is at an even bigger scale. It uses the same principle but the time delay between when the laser hits the ground versus when it comes back to the sensors is different. All of these depend on light so if you can see it there is no obstruction so you can record it. On the ground with a two person traversing crew is the most accurate version of LiDAR and it gets less accurate the further out you go. This is not to say it is inaccurate.

For forestry applications LiDAR is collected from the air. A company will have either a plane or helicopter fly through the are it wants to sample shooting a whole bunch of lasers at the ground. They are very fast shots of light. It is not one continues beam like you'd see in a Star Trek episode. It is actually lots of different shots. It could be up to a million shots per second from each point of impact. When we are dealing with light detection we mean the speed of light. LiDAR is different from traditional remote sensing technologies where air photos were taken. It was entirely based on the light coming from the sun reflecting off the canopy which could be seen. That is called passive data collection. LiDAR is active data collection. They are shooting the light at the object they want to sample. The width of the beam ranges between a pin head and a Loony. It is a really fine beam of light but because it has some width it doesn't necessarily hit the same object on the way down with the entire beam of light. It will hit part of the canopy on the way down so that a single laser pulse can hit the same tree in multiple places and you can get more data on the same tree from the same shot. The only problem with this is in areas with heavy canopy cover and very steep ground, like we have here, you sometimes can't see the ground as well. This is the reason the coastal areas have been one of the last places to get LiDAR. It is really difficult to get the conditions to use a fly in such as a nice sunny day and this area has a much more closed canopy ecosystems than in the Interior. They have had LiDAR in the Interior for quite some time. Relatively speaking WFP is fairly late to the game but they have caught up in a big way. When WFP went out for their data acquisition they out did the forestry standard of LiDAR collection where instead of getting 3 to 4 points per square metre WFP made sure their contractor gave them 12 points of information per square metre.

Geoff showed the group graphs of raw data showing points that have x, y, and z coordinates. X and y are longitudinal and latitudinal and z being how high up off the ground the point is. The graphs look like dots of light creating a forest and ground. The height is relative to the plane and they use a GPS space station and some aviatronics within the airplane to determine how high that point is to the ground. The beam of light can be split up and hit multiple points on its way down. The first point it hits is called the first return and the beam of light continues on and another section of branch could be hit becoming the second return and it continues going until the entire laser beams has come back. Because it goes at the speed of light and because they can account for how fast the plane or helicopter is moving they can figure out where each of those points returned was in space.

Question: Is any of the beam absorbed by the canopy?

Some of it is. I' don't know the exact amount of reflectance versus absorption of each tree. I know you can use the information from how intense the reflectance of each surface is and there have been initial studies to see if the reflectance of each tree species could be used to determine just from the LiDAR what species it is but it is still in the academic stage. For our purposes at this point we are just interested in where each point is in space.

Question: Does the light beam have any effect on birds and critters?

It shouldn't. I have not heard of any issues. It is a good question. LiDAR caught some logging equipment with people around it and we didn't receive any complaints.

The LiDAR x, y and z variables or points can be stratified into up to 14 different categories which is done with computer algorithms. They use a bunch of factors for vegetation and ground to determine which point belongs in which category. There are 3 stratifications of vegetation: low, medium and high vegetation. Once those have been stratified out a digital elevation model can be made. It basically draws a line between all of the points that are classified as ground and says this is what your ground profile looks like. The same thing is done with the digital surface model where you figure out the shape and size of trees.

How accurate is LiDAR? In ideal circumstances your position can be within 10 cm on a hard flat surface and about 30 cm absolute accuracy for length, width and height. The numbers are based on flying through something like a farm field which would be the best case scenario. Stillwater is definitely not the best case scenario. They had to do it in two passes in the area. Part of the collection was done in 2016 and part was done in 2017 partly due to the weather and partly due to weird data higher up in the bluffy areas.

The plan is to have 1.5 million hectares of LiDAR flown. When they get the data they get all of the x, y and z plus the stratifications. As it stands now they have 400 billions individuals points. Geoff showed an amazing colourized image created by the data. Some of the LiDAR products they can derive from the points they are given are contours, train models, elevation models used for 3-D viewing, canopy surface model, hill shade, tree top analysis, tree segmentation, hydrological modelling and tree species identifier (different than the reflectance idea talk about earlier). For stream modelling, because it is able to see all of the draws in the hillside the computer can pick up where the water will be coming from and take the highest point and the lowest point and based on the soil absorption rate (which is a constant that is set in the computer) calculate how much flow is coming down each of the draws then cross reference this with each reach within the stream and predict fish bearing stream breaks based only on office work. When doing a foundational draft of your block before you even hit the ground instead of going manually creek by creek you can work for 4 to 10 minutes in the office and predict fish presence and not waste time in an area where you know you will be restricted.

Question: Could you use that for potential erosion problems as well?

Absolutely. You can see where fans and cones are and where slides have happened in the past. You can interpolate this with the hydrological modeling to project where it might happen in the future.

Question: Do you use that to look for hazard areas that could happen after the forest cover is removed?

Yes. When we send geotechnical engineers to do slip stability assessments before we release a cutblock we now include maps with all of this data and they can make their decisions based on that.

Geoff showed a LiDAR graph coloured in with green, orange and red. Green shows slopes up to 35% which is essentially a ground based operation, 35% to 70% is orange and 70% to 99% is red and 100% is black. Black is essentially vertical. When they are doing total chance planning of an area they are interested in harvesting they can see exactly where the major bluffs are going to be. Typically, in the past they would have taken the maps done with the old software and would have searched through the bush trying to trace what is really out there on the map. Now they sit in the office looking at the maps and they can tell where they aren't going to be able to work. It gives them the opportunity to look way further ahead then they ever could have done practically in the woods. WFP has started a project to block the entire land base.

If you take the canopy surface model and subtract the ground model you are left with the height of the trees. Tree top analysis allows you to pick up each individual tree in the forest by taking the 'mountains' of the canopy height model, flips them and asks the model where all of the water will pool and it gives points it various points. This is useful for planning variable retention analysis where typically the traverse crew would say the trees here are 35 metres and they would make that an average for 25 or 30 metres until they had different data. Now they can buffer every single tree and get an actual measure of how much area will be under the influence of standing canopy after harvesting is concluded. The computer can tell which points belong to which tree and they are moving towards managing the forest at a tree level instead of a stand level. It is still in early stages but it is getting there. It uses the tree species identifier which isolates all of the points from a tree, calculates the shape of the tree and decides which tree species it most resembles. The computer predicts the individual piece size of each tree ranging from half a cubic metre to over 10.

Question: So that would give you the volume?

Maybe.

Comment: It would give you a good indicator of what the volume would be without even going out there.

Yes.

Geoff showed a canopy height model of Beartooth. It shows tree heights for individual trees. The model shows that the stand can be harvested by cable and is hemlock balsam. They have projected different types of roads based on terrain. The model is colour coded to show what is too steep to be logged, cable harvest areas, areas suitable for ground based harvesting and heli logging areas. They started this project in December and plan to have completed 22000 hectares of age class 5 and higher. All of Stillwater is about 150000 square hectares. They will be covering every single square metre of the 150000 inventorying everything including non-productive alpine. They will account for why areas are not to be harvested. They want to have 100% coverage and knowledge of what the are doing on the land base.
One of the major benefits of LiDAR is it significantly reduces the amount of exposure hour and you can identify hazards from the office. Easy hazards to identify are steep rock bluffs and gullies.
Another useful tool would be finding significantly leaning trees that are much taller than the rest of the stand for danger tree identification.
WFP plans to block the entire land base and identify which areas will be hoe chuck which areas will be land based etcetera and they will overlay that with the tree species identifier and redraw the forest cover layer. The information will be really good and will be able to manage the land base better.

Darwyn said the next SFMP will be based on LiDAR. Safety will be greatly improved because they can do a lot of work before they have to put someone on the ground to verify. On the environmental side it will be much easier to put roads in the right spot. It will reduce potential landslide risks down the road. There will be many more benefits.

Adjourned: 8:45pm

Action List Items

Action Items	Who	When