

# ASPECT

Definition: ˈas - pekt / 1. a position facing a particular direction  
2. appearance to the eye & mind.

## THE DEGIFS NEWSLETTER

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### THE EDITORIAL...

Sitting before the computer, Wednesday, September 12<sup>th</sup>, reflecting on yesterday's events in the US, I found it difficult to compose an editorial. I pondered writing something on free trade and softwood lumber duties (just what you wanted to read). However, at that moment, that issue seemed insignificant and paled in comparison to the shattering events that had taken place.

Had the muse abandoned me? I sat dejected. In front, a blank vertical plane flickering with electrons stared ominously at me. A slice of protein stuffed between two yeast planes, and a vessel of dark obnoxious looking liquid sat unattended beside an inclined implement full of cubes that relied on the testing of manual and digital flexure. Silence. Suddenly, neurons trembled, synapses fired, a rhythmic fluctuation of voltage, the cerebrum momentarily shuddered then promptly went back to rest - damn another misfire. However, during that all too brief period of shattering enlightenment a thought emerged. A cluster of brain cells decided to let the historian take over and have you, the reader, do the work. What a spark of genius(?), what great cells - let someone else do the work. Yeast planes devoured, dark obnoxious liquid ingested, digital and manual flexure put to the test, ominous flickering vertical plane ablaze with electronic movement, The Editorial is born.

So, for your enjoyment and entertainment I have listed a few recent historic events and have you reminisce on what you were doing at that particular moment in time when that particular event occurred. For a number of readers some of this stuff resides for them only in history textbooks, for others, events took place only a short time ago. Listed in no particular historical order (as a side quest, you can undertake that arrangement), what were you doing at precisely the moment when:

**DIVISION OF ENGINEERS AND GEOSCIENTISTS IN THE FOREST SECTOR**

1. The first step was taken by man on the surface of the Moon,
2. JFK was assassinated,
3. Disco died (and rightfully so)
4. The Challenger exploded,
5. Paul Henderson scored the winning goal in the Canada - Russia hockey series,
6. The Cuban missile ultimatum was announced
7. The Berlin wall came down
8. The bombing of Baghdad commenced during the Persian Gulf war,
9. At 11:30 in the morning the day after your 19<sup>th</sup> birthday,
10. The explosion at Chernobyl occurred,
11. The first images transmitted from the surface of Mars were shown
12. Numerous sightings of Elvis occurred at the Terrain Stability and Forest Management Conference in Nelson.

Wow, what was that dark obnoxious liquid?

Cerebrum at rest.  
B.T.

## MANAGING COASTAL OLD GROWTH FORESTS IN BRITISH COLUMBIA-SHOULD WE SET ASIDE RESERVES?

*By Scott Weston, P. Geo*

### Introduction

The low elevation coastal forests of BC are part of a temperate rainforest extending from southern Alaska to Northern California. The government of BC owns more than 95% of these coastal forests, and has managed the land primarily for timber production (MOF, 2001). Since the 1980's and increasingly through the 1990's, public pressure has been placed on the government to preserve an increasing amount of these old or first growth forests. This has resulted in the creation of many new provincial parks, preserving close to 12% of the coastal land base (MELP, 2001). One of the main reasons for creating some of these parks is the preservation of old growth forests. If the objective is to preserve old growth forest ecosystems, will these reserves achieve this goal over the long term?

### Old Growth Defined

The definition of old growth is complex and there is often disagreement amongst experts about aspects of the definition (Addison, Pers. Com. 2001). Old growth forests develop on sites with specific topographic and biogeographic positions, over a period of time (typically 250->750 years), under particular climatic regimes and under highly variable and location-specific disturbance regimes (Carey, 1998). Old growth forests can be described by one or more of the following characteristics: very large trees, very old trees, complex forest structure, diverse species composition, and accumulation of dead organic matter (Kimmins, 1997). There are typically large amounts of coarse woody debris in the form of standing snags and downed trees at various stages of decomposition. Old growth forests and their structural elements function differently from second growth forests in providing for biological diversity (Carey, 1998). Old growth forest ecosystem diversity may be associated with particular elements of forest structure: large, live trees; large standing dead trees; large, decaying fallen trees on land or in streams; diverse foliage-height profiles; and diverse fungal communities (Carey et al, 1991). These diverse structural components have been found to support a higher number of animal species than second growth forests (Carey, 1998), and a significantly higher number of insects, fungi and other micro organisms (Winchester, 1998). To some, old growth forests evoke a feeling of passion knowing that there are trees that have been growing since before Canada was even known about in Europe, and that some trees are as tall as large buildings. This may make one feel insignificant and evoke feelings of awe, respect and veneration. To others, old growth forest values represent complex and diverse ecological systems. Still to others, the old growth values are economic. The high quality wood commands high prices when cut into lumber and pulped for paper.

### Preservation of Old Growth Forests

Old growth forests are conserved mainly in the form of provincial and national parks and in ecological reserves. These parks and reserves contain many of the best representative elements and special features of the coastal forest ecosystem. They protect and manage for future generations a wide variety of outstanding lands which represent the best natural features and diverse wilderness environments of the province (MELP, 2001). There are several reasons to set aside reserves of old growth forests:

- old growth as an ecological reserve-natural, non-human altered forests are steadily diminishing world wide. Reserves provide ecological benchmarks against which future generations can measure the effectiveness of forest management.
- old growth as a reservoir of gene variations-provides future generations access to natural genetic variation of forest ecosystems as forest management selects superior genes for second growth forests.
- old growth as wildlife habitat-some species require old growth forests or a high degree of 'old growthness' for survival. Without it, they would likely become extirpated from the region or extinct.
- old growth as recreational environments
- old growth as migration pathways for species-a geographically extensive network of reserves allows for movement of species as climates and conditions within the reserves change.

### Long Term Management

While some will argue that wild places should be managed from an ecocentric perspective, it is my opinion that all decisions humans make, including wild places, are made from an anthropocentric perspective. We choose our actions based on what we feel is best for us as a species. Ensuring the long-term conservation of old growth forests benefits humans as well as the old growth forest ecosystem. The decision to preserve an ecosystem is made to appease human values. However, setting aside forests in reserves does not guarantee the preservation of old growth forests because these forests are not static. The forest and associated ecosystems have been changing and evolving for hundreds of years, and they will continue to change. Climate change, successional forest processes and natural disturbance are all agents of change for old growth forests. Some old growth forests are successional forests that will eventually be replaced by climax forests. An old growth Douglas Fir forest created by fire 200-400 years ago will eventually change to a cedar-hemlock dominated forest of much less grandeur. Or, the forest could be blown over, destroyed by fire, or infested by insects, and would regenerate as the primarily Douglas-Fir forest. The biological, intrinsic and economic values of these forests will change over time and will not be the same as when the park land was originally set aside. It is clear that preservation of old growth forests as we know them today will not ensure conservation of the same old growth ecosystem in the future.

### Conclusion

Old growth forests are valuable to humans and these ecosystems should be preserved. However, setting aside parks and forest reserves will not guarantee the preservation of the ecosystem as we know it today because it is constantly changing. To ensure the long term conservation of old growth ecosystems, more land must be set aside as forest reserves to allow for changes to the forest ecosystem, and/or the land base must be managed for human wood production needs and ecosystem conservation through intensive forest management such as long term crop rotation and enhancing old growth characteristics in second growth forests. This conclusion is not isolated to the BC temperate rainforest, but can be applied to rainforests worldwide.

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## **THE IMPACT OF ROADS, TRAILS AND LANDINGS ON SITE LOSS AND ENVIRONMENTAL RECOVERY IN COASTAL BRITISH COLUMBIA FORESTS**

*By Victoria Stevens, DEGIFS 2001 Bursary recipient*

As viable timber supplies in Coastal British Columbia become more scarce and pressures to minimize environmental impact increase, geotechnical planning and forest rehabilitation have gained more esteem in the forestry industry as means to combat these issues. Forest harvesting operations are the main cause of soil degradation and lowered forest productivity in British Columbia (Thompson et al, 1990) as compaction and lowered nutrient levels create difficulties in the successful regeneration of harvested areas. The impact of forest harvesting on the land is becoming more understood and consequently, as this knowledge base grows, preventative geotechnical practices are becoming increasingly important in the recovery of harvested areas. The underlying concept is that taking the time in early stages of forest development and absorbing the initial costs of comprehensive planning will result in easier, faster and more complete regrowth of trees. Furthermore, the chance of costly environmental problems such as permanent site loss or land sliding occurring will decrease. The goal of forestry geoscience should be to minimize the environmental impact of development, to create safe construction practices for humans and to subsequently understand what measures should be taken in order to accomplish this.

Site loss due to roads, trails and landings is the result of many interconnected factors, such as soil compaction and disturbance, poor nutrient supplies and competition between coniferous and deciduous vegetation. It is important to note that site loss due to permanent access roads is not considered part of the allowable 7% Site Degradation limits set for a cutblock by the Ministry of Forests. This means that there is often little silvicultural planning completed for roads and landings (MoF, 1999). Therefore, roads, trails and landings represent a large area of forest land that is not being fully recovered after harvesting has occurred.

In many areas of the province, current stands of available harvestable timber are located on

increasingly adverse and difficult terrain (MoF, 1999). This results in higher levels of permanent site loss as more rock has to be blasted or removed and higher amounts of ballast laid down during the construction of roads and landings. As the terrain becomes steeper, the depth of cut and amount of sidecast associated with road construction greatly increases (Senyk and Craigdallie, 1997). Permanent site loss due to roads, trails and landings can be attributed to many factors such as debris piles, heavy soil compaction, over-steepened cut banks and accumulation of debris from limbing operations on landings. These types of surficial materials are not favourable substrates for coniferous tree growth, and colonization by deciduous species may take up to 10 years. While some species such as Red Alder contribute to soil regeneration (Pojar and Mackinnon, 1994) and decompaction, they are not preferred commercial species and are often subjected to prescribed brushing, even though healthy coniferous tree growth is at times unlikely.

Current methods of forest harvesting carry an extremely large impact on forest soils. Soil disturbance is a leading cause of site loss, most commonly in the form of soil displacement and compaction (Senyk and Craigdallie). Logging can produce compacted soil on up to 20-35% of the area harvested (Adams, P.W., 1998). Soil compaction results in an increase in a soil's bulk density and a decrease in the volume of macropores and smaller soil pores, which are essential for healthy root growth and drainage. A lowering of future productivity can be due to reduced soil aeration and porosity, reduced water infiltration, and reduced root growth. The recovery of soil porosity by natural processes can be very slow, in some situations, greater than 50 years (Adams, P.W.1998). Most compaction due to large equipment often occurs in the first 3-5 passes, so constructing many small trails will not effectively reduce overall compaction (Plotnikoff, M., 2001).

Road construction requires the removal of the upper mineral soils and forest floor, which is commonly sidecast or endhailed. This carries a negative impact on the nutrient base for future productivity as large amounts of nutrients are stored in the humus and organic mineral layers of the soil profile. On skid trails, any manipulation of the forest floor will disturb the natural process of nutrient storage and recycling, often increasing the rate of organic matter oxidation which results in increased nutrient loss (Plotnikoff, 2001). The forest floor is also home to many soil organisms

which are essential to soil health, and by implication, to forest health.

It is also important when engineering a road that the cohesion of a soil is understood in order to prevent instability. The geometry of the road prism must take into account that a suitable angle of repose may not prevent continual soil raveling (Ward, 2000), which will prevent the establishment of vegetation. Even if the entire slope appears stable, small-scale erosion will continually deliver sediment to run-off and consequently to streams, and will undermine future stability. It is desirable to have slope angles such that vegetation can be established in order to stabilize the slope and promote recovery and regrowth. While lower slopes will translate into wider zones of intense disturbance and may not be viable in adverse terrain, if the entire prism can potentially be replanted or naturally revegetated, this will mean increased future recovery and productivity and negative impacts on streams and waterways can be prevented.

It also is extremely important to understand the natural hydrology of an area in order to prevent damage in the form of land sliding, ponding of water and sediment production. Drainage along a constructed road should aim for shallow, slow and dispersed flow in order to prevent concentration of run-off and throughflow which could result in massive sliding or road failures (Ward, 2000). Again, while constructing the perfect road can be expensive, it will reduce the chance of costly, large-scale damaging events such as a road washout in the future.

Sound preventative measures can prove to be invaluable for future forest regeneration. Rehabilitation of forest roads, trails and landings should aim for restoring the site to a state that will facilitate tree regeneration. Rehabilitation can prove more successful if planned for before construction begins. Based on current research, the following recommendations can be made:

1. If at all possible, reserve the topsoil removed during road construction in order to reassemble mineral soil profile on road surface during deactivation
2. Enforce road specs so that cut slopes are at an angle of repose that can be planted and will not be subject to soil raveling

3. Recommend road rehabilitation beyond simply conditioning the running surface, as these surfaces are often not productive and should be covered with some soil in order to establish vegetation (Ward, 2000)
4. Enforce moderate to extensive pullback in unstable areas or areas of deep fill. In order to ensure stability of a regenerating forest, the root systems of the young trees must be able to penetrate the original forest floor. Decomposing forest floors provide an excellent failure plane for future sliding (Ward, 2000), so it is important that large amounts of fill and vegetation are not loading a slope and subject to possible sliding.
5. Ensure logging methods are appropriate to the terrain. Establish designated skid trails and encourage skyline or highlead yarding where feasible in order to reduce disturbance due to skidding and skid trails
6. Wherever possible without over-steepening the cutslope, narrow the road right of way in order to reduce the area impacted by soil compaction and disturbance

Applying these practices in the field will act to mitigate the problems of site loss and lowered productivity in harvested areas. Conserving forest soils and forest land will pay off in future harvests and increased forest health (Plotnikoff, 1999) and should not be overlooked in importance. Understanding the impact that road, landing and trail building have on forest soils and hydrology will raise awareness of how sound planning can benefit all parties involved and will minimize the impact of forest harvesting on British Columbia forests.

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## THE NEW DEGIFS WEB SITE

<http://www.degifs.com>

At last the new DEGIFS web site is up and functioning. It has been a slow process, but the site is finally done thanks to the perseverance of Mike Stashuk (a web design specialist) who spent many long hours putting it together. The original plan, to have it up and running by the end of April 2001 went out the window after Mike's former company disbanded. However, Mike took the job on personally, doing it during his free time. It was only by his determination (and a little patience from our side) that it was completed.

One of the prime aims in developing the site was that it should be used for sharing information between members. We purposely avoid flashy pictures, music and colors, going for a more professional and 'earthy/forestry' look. (Bruce Thompson might disagree with me, but he is willing to discuss it over a few beers at the AGM). After some initial attempts in trying to develop a conventional HTML based site, Mike decided that a better approach would be to make the site database driven. This means the main structure or template for the site is completely separate from the information and data that goes into it. The beauty of this (for us non-tech types) is that information can be added, edited and deleted without using HTML. This is really a great time saver for the web administrator and means that members can also have direct input into the site – see below.

The front page of the site has been totally revamped and revised with the focus on ease of navigation. It should be impossible to get lost in the site. (Please tell us if you do). The front page has an overhead tool bar that leads to all sections of the site, a column of quick links to the left, and boxes for the most recent announcements, resources and discussions. The photo on the front page can also be changed. (If you have something you would like to see, please send it.) We have also taken the liberty of slightly changing the DEGIFS logo to make it both simpler and cleaner.

A great advantage to this site is that members can directly add information into it. For new announcements or resources go to the respective button on the top tool bar, hit add, and then fill in the template with your name, email, title and the detailed information. This data is then submitted to the site, but has to be approved by the administrator before it is released in full. When you submit something it is a



good idea to send an email to the administrator so that it can be quickly edited and added to the site. It can also be deleted! The employment information is much the same, just go through the employment section on the resources button.

A new and interesting part of the site is the discussion forum. This has the potential for starting some interesting and useful debates on current issues of concern. This requires you to firstly log in with your name, password and e-mail, ensuring that postings can be traced to their owner. We are currently going to slightly modify this section to add in a standard set of rules and conduct. At present the site is open to the public, but could be restricted to members only. This will depend on usage and demand, etc. If you wish to submit a new discussion topic, short paper or something controversial (as long as it is not Tim Smith's All Black rugby jokes) please send us an e-mail and we can add it in. At some stage, assuming the discussion forum increases in usage, it might be useful to designate a moderator to solely take care of this portion of the site.

The most recent Aspect Newsletters are available in digital (.pdf) format on the site. We are also trying to gather past digital copies of all other Aspects so that can be added to the site. If you have any hidden away on your hard drive or stored on discs, please e-mail them to us so that we can then convert them to .pdf files and put them onto the site.

Hope you enjoy the site and find it useful. Give us your feedback on the discussion forum.

Tim Stokes (tstokes@island.net)  
Mike Stashuk (204design@home.com)

**2001 APEGBC ANNUAL CONFERENCE  
DELTA PACIFIC RESORT AND CONFERENCE  
CENTRE, RICHMOND, BC  
OCTOBER 25 - 27, 2001**

Members should strongly consider attending this year's professional development sessions, descriptions are included below:

#### **Special Technical Tour**

**Geoscience & DEGIFS Chilliwack Valley Road Trip**

**Volume 6, No. 3**

#### **Wednesday, October 24, 7:30 AM - 5:00 PM**

Limited to 40 participants; bus departs from the Richmond Delta Pacific Resort at 7:30 AM with pick-up points in Abbotsford and Chilliwack.

We will examine:

- forestry impacts
- landslides
- community watersheds
- urban development
- fish restoration projects
- river engineering
- quaternary geology

Participants should wear warm, rain resistant clothing & boots, & bring a lunch.

Further information:

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#### **Thursday, October 25, 2001**

#### **Professional Development Sessions Descriptions**

#### **Engineering and Geoscience in the Forest Sector**

*Sponsored by the Division of Engineers & Geoscientists in the Forest Sector*

#### **A1**

#### **The Results-Based Forest Practices Code: How Does DEGIFS Fit In?**

*Thursday, October 25, 9:00 - 10:15 AM*

#### **Speaker:**

Ron MacDonald, *COFI*

Expected revisions to the Forest Practices Code to make it more results-based may lead to changes in the role of DEGIFS members in the forest planning process.

**OCTOBER 2001**

**B1**

**Terrain Mapping: Where Do We Go From Here?  
Task Force Report, Recommendations & Panel  
Discussion**

*Thursday, October 25, 10:45 AM - Noon*

**Speakers:**

Irene Weiland, P.Geo.  
Tim Giles, P.Geo.  
Denny Maynard, P.Geo.  
June Ryder, P.Geo.

As part of the 2000 DEGIFS AGM at Whistler, a Task Force was formed to develop professional practice guidelines for terrain mapping & terrain stability mapping in the forest sector. This panel will present the report of the Task Force.

**C1**

**Should We Change How We Carry Out TSFA's?  
Expectations & Current Practice**

*Thursday, October 25, 1:45 - 3:00 PM*

**Speakers:**

Kevin Turner, P.Eng.  
Doug Erickson  
Doug VanDine, P.Eng., P.Geo.  
Peter Mitchell, P.Eng.

Terrain Stability Field Assessment reports are commonly carried out as part of forest development planning. This panel will discuss the current trends & expectations for these types of projects & reports.

**D1**

**Risk Task Force Progress Report: What Lies  
Ahead?**

*Thursday, October 25, 3:30 - 4:45 PM*

**Speakers:**

Doug VanDine, P.Eng., P.Geo.  
Bob Gerath, P.Geo.  
Glynnis Horel, P.Eng.  
Tim Smith, P.Geo.

With increasing emphasis on risk assessments in the forest sector, DEGIFS formed a Task Group to develop a short course in the definitions, concepts, framework, & techniques for risk assessment in the forest sector. This presentation will provide an update on the progress of the task group and the development of the course.

**Friday, October 26, 2001**

**Professional Development Sessions Descriptions**

**Volume 6, No. 3**

**E1**

**Forest Geotechnics in the Pacific Northwest: War  
Stories From the Last 20 Years**

*Friday, October 26, 9:00 - 10:15 AM*

**Speaker:**

Tom Koler, RG, *Pacific Lumber Company*

Geologists & geotechnical engineers have carried out work in the Washington, Oregon, & Idaho State Forests for about the last 20 years. This presentation will discuss how the practice has evolved during this time, with reference to case examples & changes in public policy.

**F1**

**Forest Geotechnics in the US: Current Practice**

*Friday, October 26, 10:45 AM - Noon*

**Speaker:**

Wayne Adams, PE, RG, *Hart Crowser*

Two case studies will be discussed to illustrate the techniques that are used for slope stability assessment associated with forest development planning in the Pacific Northwest.

**G1**

**Snow Avalanche Mapping for Terrain Stability  
Field Assessments**

*Friday, October 26, 1:45 - 2:30 PM*

**Speaker:**

Peter Weir, P.Geo., *Silvatech Consultants*

Snow avalanche mapping is becoming a requirement in forest development planning in some parts of the BC Interior. As a result, the mapping of potential snow avalanche areas is required as part of terrain stability field assessments or as a separate assessment.

**Bridge Welding Field Practices & CSA Standards**

*Friday, October 26, 2:30 - 3:00 PM*

**Speaker:**

Pat Newhouse, *Canadian Welding Bureau*

Installation welding of forestry bridges: position of welding, joint design, performance qualification of the welder, procedure specifications, & the effect of adverse weather conditions on welding will be discussed.

**OCTOBER 2001**

**H1**

**Factors Influencing Landslide Hazard Ratings**

*Friday, October 26, 3:30 - 4:00 PM*

**Speakers:**

Terry Rollerson, P.Geo.  
Mark Sondheim, P.Geo.  
Tom Millard, P.Geo.

As ongoing development of landslide classification systems & use of landslide hazard maps in forest management in the Pacific Northwest progresses, it often is necessary to compare & contrast hazard mapping systems & ratings on a watershed basis. Included in this session will be a discussion of systems presently in use, costs, & benefits.

**I1**

**Landslide Impacts To Streams**

*Friday, October 26, 4:00 - 4:45 PM*

**Speaker:**

Dan Hogan, P.Geo.

Dan Hogan will discuss the geomorphic effects of landslides on streams, incorporating the potential impacts into Terrain Stability Field Assessments, & recent trends in the research of stream systems.



**V GEOLOGIC HAZARDS ARENT NECESSARILY ACTIVE ALL THE TIME**

# Who we are!

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# Do Not Forget!!!

LAST DATE FOR SUBMISSIONS TO ASPECT	NEWSLETTER RELEASE DATE
NOV. 23, 2001	DEC. 15, 2001

Electronic submissions in **Word format (only)** should be made to Bruce Thomson by the date listed above (no exceptions) (bruce.thomson@gems3.gov.bc.ca)

Refer to *Guidelines for Submission* on the website for submission requirements.

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