

DRAFT – Report on Matters Related to Remote Worksite Emergency Response in the B.C. Silviculture Sector



A silviculture work site: Remote, majestic and scenic. But 200 kilometres from the pavement and out of reach of the repeater channel.

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By John Betts

Chair SAC Emergency Response Working Group¹

¹ Lisa Houle chaired the working group before her move in the summer to WorkSafeBC as Forestry Specialists with Industry & Labour Services. The working group recognizes her important contribution in first raising the silviculture emergency response issue and then establishing the direction and organization of this review.

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I. Introduction

A. Background

In 2009 when the BC SAFE Silviculture Program considered the importance of developing industry best practices and strategies to improve emergency response practices across the silviculture sector, it stated in a briefing note to the BC Forest Safety Council,

“Recent fatalities involving forestry crews operating in remote locations have revealed that even firms with relatively sophisticated health and safety plans may lack sufficiently robust emergency response operating procedures. As a result they also lack properly trained managers and supervisors to implement them. Experience has shown it is not always, or simply, a matter of dialing 911. And when that may be the proper strategy, just dialing 911 can be problematic as well. Failings in emergency response and crisis management can delay appropriate and timely responses. The likely result is a bad situation becomes worse.”

Five years later, the setting remains essentially the same for the silviculture sector. Over the same period, other groups have recognized potential shortcomings in responding to emergency situations in remote settings. These include individual forest companies, rural communities in the BC north and Vancouver Island, the BC Coroners Service, the Union of BC Municipalities, the Canadian Radio-television and Telecommunications Commission, WorkSafeBC, and the BC Forest Safety Council. This growing interest speaks to the timeliness of this report and the scope of the situation around responding to emergencies in remote locations in the province.

With BC Forest Safety Council support the BC SAFE Silviculture Program Strategic Advisory Committee (SAC) in 2013 formed a silviculture emergency response working group to review matters related to emergency response practices for remote silviculture worksites in British Columbia.

CBC News 19 September '06: A veteran Vancouver Island logger has testified at a coroner's inquest that he held onto his mortally injured partner for an hour last November while they waited for a rescue helicopter to arrive.

Mark Lee told the jury he first knew something was wrong when Ted Gramlich failed to answer a 12:30 p.m. radio check. He said it took him nearly half an hour to get through the bush along a ridge to find his partner, who had been struck by a falling tree. He then radioed for help, and held Gramlich trying to keep him warm and urging him to hang in there.

Lee said his friend remained conscious until the helicopter arrived about an hour later. Gramlich was airlifted to a waiting ambulance near Lake Cowichan, and then driven to hospital in Duncan. By the time Gramlich arrived in the ER at about 3:30 p.m., about three hours after the missed radio call, he was dead. Lee told the jury there should be heli-pads at all B.C. logging operations, with helicopters standing by to transport injured workers. Gramlich's girlfriend, Debbie Geddes, told reporters outside the courthouse that she agrees help should be closer for loggers in the woods. "Why was there such a big time lapse? Why did he have to lay there and slowly bleed to death? There was no need for it, none at all.

"The system has failed my Ted and I don't want the system to ever fail another human person again."

B. Purpose of the Report

The purpose of this review is to address three broad areas:

- a. Identify the key problems and challenges associated with emergency response practices and procedures in the B.C. silviculture sector;
- b. Make recommendations to improve remote emergency response practices in the industry;
- c. Frame an outreach and education strategy to assist industry actors in integrating best practices into their health and safety planning and emergency practices.

The purpose of the report is to convey the results of the various inquiries carried out by members of the SAC ERP working group.

It is the intent of the report that it should form the basis for continuing collaboration between the silviculture sector, the BC Forest Safety Council, WorkSafeBC and other groups in the development and implementation of the review's recommendations.

C. Methodology

This inquiry began with the establishment of an emergency response working group (ERP) as a subcommittee of the BC SAFE Silviculture Program Strategic Advisory Committee (SAC). There were numerous ways of making sense of the problem. One categorization used a timeline working through each step of an actual emergency response to identify the main points. Another separated the key elements into actors and actions. The group found it logical to work with more general subjects such as outreach, guidelines, equipment and training. An analytical matrix was developed accordingly.² The organization of this report roughly follows a mix of all of the above.

Besides working with the resident expertise and experience of the working group, interviews were conducted with various agency and volunteer groups involved, relevant reports were considered, and coordination was maintained with the BC Forest Safety Council. Much more work along these lines is required to iron out the inconsistencies that cropped up within and between the actors involved. It was initially proposed that the working group gather more narratives to support its findings. But the group concluded that the salient features of this broad landscape would be evident without this process. Future efforts along these lines will make the data domain richer, but not substantially different.

This initial report provides a map of the strategic landscape pertaining to emergency response in remote settings for silviculture in B.C. It is drawn from examination of the facts as found, inferences about how they related, and triangulation to fill in the gaps. As always we need to remember that, "The map is not the terrain."

² This matrix is in the appendices of this report.

II. Initial Thoughts

Based on the various inquiries and subsequent discussions undertaken by the members of the working group the following should be considered:

- a. There is likely a gap between many contractors' expectations of the 9-1-1 system and reality. This gap will probably be reflected in the level of emergency response preparation described in their health and safety planning. A further gap may exist between what is written and audited in a company's safety system and what that operation is capable of executing in an actual situation. These weaknesses are most likely to be noticed during a crisis.
- b. The definition of remote should be temporal rather than spatial. One of the prime observations of the group was that silviculture work sites anywhere may pose serious and time-consuming difficulties in safely packaging and extracting a seriously injured worker just from the injury site to the roadside. Using the core medical principle of the golden hour as a guideline, the amount of time it might take a crew to package and transport an individual to the point of transfer of care should define whether a site is remote.
- c. Nevertheless, in considering the latitudes generally north of Prince George, which constitutes such greater degrees of distance and time, consideration should be given to an enhanced dimension of the definition of remote.
- d. There is a central tension around operating safely on remote worksites with transient camps and crews, which is the typical condition of most silviculture operations. Since the distance and time to care is longer, injuries in remote sites risk more severe consequences. It is incumbent then on the managers to operate with a higher standard of care. Yet with transient camps and remote settings there is a practical disadvantage to achieve that end. There may be less capable transportation and treatment resources readily available to operators. The very factors that contribute to the higher risk injured individuals face are the ones that the operators may not be in a strong position to mitigate. Nevertheless the sector needs to find a place between what is precarious and what is an acceptable standard of care to ensure workers don't face unreasonable risks and consequences while working in remote work sites.
- e. Because of the likely extension of time involved in packaging, extracting and transporting a victim due to injury or a medical emergency on remote sites, the working group believes additional training for silviculture first aid attendants is appropriate. The core skills and knowledge of this training would create an individual competent in what might be called remote site extended primary care. This skill set would be intended to mitigate the effects of trauma and exposure similar to training available in emergency wilderness first aid.
- f. Vehicle crashes should be treated as a separate area of training and planning because of the very high exposure in traveling to and from worksites and the possibility of multiple injuries or worse. Triage training, developing rescue capacity, incident management, and coordination with rescue resources and responders are high priorities.
- g. Given the jurisdictional diffusion between levels of government, agencies and volunteer groups, the interaction of their protocols, their various roles and responsibilities, and the patchwork of communication network interfaces available, or not, in remote sites, developing a resource guide to operators is recommended. This manual would provide information on the various actors

- involved in emergency response along with their capabilities, establish basic guidelines for improving emergency response structure and practice within companies and recommend procedures for contacting and coordinating with the 9-1-1 system, emergency transporters and rescue operations.
- h. Following on the last consideration the working group sees a mutual benefit to all actors and authorities involved in rescue and emergency response to establish a workplace improvement team (WIT). This group would comprise the agencies, regulators, responders and end users involved in remote site emergencies in the silviculture sector. The purpose of the group would be to encourage collaboration, communication and coordination through regular meetings and establish a lessons-learned function to advance practices and procedures.
 - i. It is been a long standing position of the industry that mutual aid among adjacent operators active in remote sites might increase the chances for better results in an emergency. Establishing this near real time network would be dependent on a number of things including WorkSafeBC's notice of commencement of project (NOP) requirement. At this point the level of NOP compliance, data collection and coordination is unclear. The working group recommends that WorkSafeBC work with the silviculture industry and other regulators with an interest in where operations are taking place to develop this potential.
 - j. It is incumbent on the silviculture industry to increase the level of awareness around proper recognition of hazards and improve the potential for effective response in remote site emergencies. The working group recommends that the first step in this campaign should involve outreach and education using media aimed at managers and supervisors at the pointed end of the problem where hazards may be underestimated or unrecognized.
 - k. Consideration should be given to the concept of reverse 9-1-1 along the lines of Enhanced Community Notification Service (eCNS) for the silviculture sector. This service would permit emergency notification of imminent or unfolding danger that threatens the lives and health of crews on remote sites. Examples could include floods (as occurred in Alberta this year), wildfire (as occurred in B.C. this year), and other civic or natural disasters, which could require localized actions such as the evacuation of camps or worksites. This service could have utility in sending relevant notice regarding less dangerous events such as tick outbreaks in some regions, spreading viral contagion and other possible alerts. Given the wireless worker cohort that makes up much of the silviculture industry, there already exists an informal communications ecosystem in the field operating in near real time. It would be worth considering ways to exploit this potential network as a means of reducing the industry's exposure to impending hazards in remote sites.
 - l. The working group recommends that education and guidelines should be promoted to assist companies in surviving as businesses in the aftermath of a major crisis. Not only would catastrophe management training be practical in mitigating the business effects of a disaster, the planning exercise involved would serve to drive home the consequences of severe emergencies, and act as an incentive to work conscientiously to avoid them.
 - m. In terms of what might be a future ideal situation, the silviculture sector should set itself a mission where silviculture crews would be considered a safety and rescue asset, rather than a liability on B.C. remote landscape. The province's rescue and emergency capacity is spread out, not only geographically, but across various governmental jurisdictions, agencies and volunteer organizations. At times this overextended network may seem to be held together largely by good faith. The silviculture sector has proven to be resourceful and innovative

sector in many respects. If it can apply that intelligence to developing its own reliable remote emergency response capacity, it could benefit itself and increase the public good as well.

- n. The OHS regulations offer little practical guidance to silviculture operators as to what constitutes an appropriate level of emergency response preparation. In particular as to how they would apply in nonconventional settings typical of silviculture workplaces. It is also unclear how they could or should be vetted. Some requirements in place are not that practicable. The requirement for a daily helicopter plan is an example. Weather and the helicopter capability are highly variable, making this kind of preparation unreliable. The regulation works in principle, but falls short in the practical. As well, work should be done to produce better “first aid assessment tools” to address “barriers to first aid” in remote silviculture workplaces. The industry and WorkSafeBC have an opportunity here to create more specific and practical guidelines.
- o. In working on this review, the working group recognizes the earlier contribution and recommendations of Colin James, whose daughter Julia died in a tree planting vehicle crash in 2003. Mr. James’ presentation to the WSCA annual conference in 2004 and his subsequent work then with the SAC led to significant improvements in the industry’s approach to health and safety. In particular, his recommendations around mutual aid and the development of rescue capacity within crews, many of which have been integrated into the practices of leading silviculture companies, are mentioned again in this report. One of the purposes of this review is to move the industry as a whole further towards the goals set out by Mr. James a decade ago.

III. Principal Elements

D. The OHS Regulatory Landscape

- a. The minimum OHS requirements for emergency preparation and first aid on remote silviculture work sites often fail to meet the circumstances on the ground in silviculture workplaces. Inherent in the regulations are unrealistic assumptions about access, available assistance and the resources that can be found on typical forestry projects. The regulations may not discriminate well between a shop floor and a planting site.
- b. The regulatory insensitivity just described can lead to deficiencies in both directions. By just meeting the minimum requirements, operators may actually under prepare for what they face in the field. In other circumstances the expectations of the regulations may lead to ineffective and impractical requirements. This central tension between reality and regulation is nothing new in workplace safety. But it is both an obstacle and an opportunity for the actors involved in making remote sites, or any work site, safer.
- c. Notwithstanding the above, it may be a feature of any regulation that it contains a necessary degree of ambiguity. In this case OHS 4.13(2) is a good example. The whole crux of this undertaking is to find a reasonable interpretation of what might meet the test of “appropriate” when it comes to developing and implementing the rescue and evacuation of a worker, or workers, from an injury site that falls under this report’s general (and perhaps ambiguous) definition of remote. The regulation, as we have stated, is open to interpretation. The relevant OHS

guidelines and their minimum requirements may not be the best match to circumstances.

- d. It is the working group's general recommendations that the industry take the lead in developing best practices around this broad subject, including the recommendations and models proposed in this report. Setting and recognizing standards is a newly unfolding role for the Council at this moment. It is the working group's wish that this recommendation will contribute to that evolution in the Council's role and place in reducing injuries and fatalities in the sector.
- e. Notwithstanding the above, the industry recognizes the primacy of WorkSafeBC's regulator ambit as it applies to first aid and first aid training. After best practices become established and many of the questions posed in this report are further researched, it is the working group's hope that WorkSafeBC, in collaboration with the BC Forest Safety Council, considers reviewing existing regulations, first aid guidelines assessment tools, and compliance practices to support the findings of this review. That should make it easier for employers to produce and implement the best plans possible. Using the proposed workplace improvement team (see C g.) could advance us towards this end.

The following excerpts are from the OHS Regulation that pertain to the treatment and rescue of injured workers and their safe evacuation from an injury site:

4.13 Risk assessment

- (1) *The employer must conduct a risk assessment in any workplace in which a need to rescue or evacuate workers may arise.*
- (2) *If the risk assessment required by subsection (1) shows a need for evacuation or rescue, appropriate written procedures must be developed and implemented, and a worker assigned to coordinate their implementation.*
- (3) *Written rescue and evacuation procedures are required for but not limited to*
 - (a) *work at high angles,*
 - (b) *work in confined spaces or where there is a risk of entrapment,*
 - (c) *work with hazardous substances,*
 - (d) *underground work,*
 - (e) *work on or over water, and*
 - (f) *workplaces where there are persons who require physical assistance to be moved.*

4.14 Emergency procedures

- (1) *Emergency means of escape must be provided from any work area in which the malfunctioning of equipment or a work process could create an immediate danger to workers and the regular means of exit could become dangerous or unusable.*
- (2) *Emergency exit routes must be designed and marked to provide quick and unimpeded exit.*
- (3) *At least once each year emergency drills must be held to ensure awareness and effectiveness of emergency exit routes and procedures, and a record of the drills must be kept.*

3.16 Basic requirements

- (1) *The employer must provide for each workplace such equipment, supplies, facilities, first aid attendants and services as are adequate and appropriate for*
 - (a) *promptly rendering first aid to workers if they suffer an injury at work, and*
 - (b) *transporting injured workers to medical treatment.*

- (1.1) *The type and quantity of equipment, supplies, facilities, first aid attendants and services referred to in subsection (1) must be no less than is required by Schedule 3-A.*
- (1.2) *The quality, maintenance and use of equipment, facilities and methods of transportation referred to in this section must be acceptable to the Board.*
- (2) *For the purpose of complying with subsection (1), the employer must conduct an assessment of the circumstances of the workplace, including*
 - (a) *the number of workers who may require first aid at any time,*
 - (b) *the nature and extent of the risks and hazards in the workplace, including whether or not the workplace as a whole creates a low, moderate or high risk of injury,*
 - (c) *the types of injuries likely to occur,*
 - (d) *any barriers to first aid being provided to an injured worker, and*
 - (e) *the time that may be required to obtain transportation and to transport an injured worker to medical treatment.*
- (3) *The employer must review the assessment under subsection (2)*
 - (a) *within 12 months after the previous assessment or review, and*
 - (b) *whenever a significant change affecting the assessment occurs in the employer's operations.*
- (4) *First aid equipment, supplies and facilities must be kept clean, dry and ready for use, and be readily accessible at any time a worker works in the workplace.*

3.17.1 Air transportation

If air transportation is the primary or only method for transporting an injured worker, all of the following requirements must be met:

- (a) *before the start of operations in a workplace, arrangements must be made with an air service to ensure that an appropriate aircraft is reasonably available to the workplace during those operations;*
- (b) *the arrangements in paragraph (a) must include procedures for*
 - (i) *the employer to determine the availability of appropriate aircraft before the start of each work day, and*
 - (ii) *the air service to notify the employer if an appropriate aircraft ceases to be available;*
- (c) *a system must be provided that enables the pilot of the aircraft and the first aid attendant attending to an injured worker to communicate at all times when the aircraft is in transit to the location of the injured worker and during transport of the injured worker to medical treatment.*

Schedule 3-A Minimum Levels of First Aid

1 In this Schedule:

"ambulance service" means an ambulance service acceptable to the Board;

"hospital" means a hospital within the meaning of the Hospital Act or a diagnostic and treatment centre where the hospital or centre has

- (a) *an emergency department or resuscitation area, and*
- (b) *a physician on duty or immediately available on call.*

2 (1) Tables 1 to 6 have different levels of first aid service that are based on how long it takes to transport an injured person to a hospital and the number of workers per shift.

(2) Exceptions to note: In circumstances in which Tables 1 to 6 would otherwise require a Level 2 first aid certificate under column 3 [noted with an asterisk ()], a Level 3 first aid certificate is required and an Emergency Transportation Vehicle ("ETV") must be provided, if*

- (a) *there is on the access route to the workplace an obstruction, barrier, rough terrain or other similar circumstances likely to delay the arrival of an ambulance service for more than 20 minutes after it was dispatched, or*

- (b) *there are areas in the workplace which an ambulance service cannot safely access, and for which workers at the workplace are required by this Regulation to be trained, equipped and capable of effecting rescue.*

The tables referred to are included in the appendix of this report.

E. Hazard Recognition and Assessment

- a. There is considerable anecdotal evidence that serious incidents including close calls occur regularly throughout the silviculture field season in remote settings. Very few, if any, result in official reports or informative lessons-learned alerts. This failure to beneficially share experiences is an obstacle for the industry.
- b. Companies do generally meet the requirement for on site risk assessment and first aid. But this obligation is often met routinely and assumes a business-as-usual approach, when the unnoticed actual facts on the ground may dictate significant adjustments are required in first aid and emergency preparation. In this common scenario hazards go unnoticed or improperly assessed, and measures taken fall short.
- c. The above is exacerbated by the feeling on the part of many owners that they already face onerous requirements for first aid under current WorkSafeBC O.H.&S guidelines.
- d. It should go somewhat to the credit of firms that have shown remarkable ability to improvise and adapt in unfolding situations without having properly planned for contingencies. This evident resilience is a good thing. Nevertheless, better anticipation of the possibilities of failure beforehand, rather than making it up on the spot, will lead to more reliable safety performance in remote sites.
- e. Companies may be unaware of broad deficiencies within their own general safety systems leading to overestimation of their capacity and blindness to their overall vulnerabilities.
- f. The current forestry pre-qualification audit is not always a reliable indicator of how well a firm may have integrated practices and training into its operations. There may be some distance between meeting audit requirements and actual practice. That gap may be papered with binder-filling, blurb posting and box ticking exercises. Properly integrating emergency and first aid systems so that they practically match circumstances and the company's capacity remain a challenge for many operators in the sector.
- g. Some subtlety needs to be employed to address the problem of integration. Any programs or modules developed to help operators should recognize existing instruments and tools. They should work with systems already commonly used and familiar to both users and providers. Attempts to improve performance must strike a balance between asking too much of users, or too little. Overshooting the objective will leave companies discouraged. Undershooting will lead them to discount the exercise. Most importantly, templates should be flexible and require adaption on the part of the user. Too often the assessment process becomes

"We were camped on a planting project near Lillooet last spring. A wild fire had been burning in the valley below near town for most of the week. One day the wind picked up on a day off. A ministry helicopter landed and told those of us who were still in camp that we were a "ticking time bomb" and we had 45 minutes to evacuate the camp site. We pulled up the cook shack, grabbed what we could, leaving behind some people's tents. Luckily the fire didn't jump the highway and it missed camp. We were lucky. It could have been worse."

- mechanistic, losing any actual meaning in the rote process of meeting the requirements of the form. Flexible forms that require a more critical assessment on the part of the user are more likely to lead to effective adaptations in the assessment process, and a better matching of needs, activities and capacity.
- h. Presently, companies need improved assessment tools and products to more critically appraise themselves and the worksites they operate on. Following the general manner just described, the working group recommends that the necessary templates, tools and training be developed.
 - i. In order to foster more critical awareness around the hazards and consequences faced in remote silviculture work sites a highly realistic visual documentary should be created showing the challenges of extracting individuals from an actual silviculture worksite. It should be abundantly, if not viscerally, evident how much effort, time, and skill is likely required to extract an injured worker off a typical site without further injuring them or any of the responders. The objective of the documentary would be to allow managers to put themselves in the picture and fully appreciate their safety assignment in a remote site emergency scenario.

F. Transportation Hazards

Each year the silviculture sector logs close to 10 million person kilometers of driving on resource roads and public highways in the province. The vast majority of these kilometers are in vehicles carrying more than two occupants including the driver. As has been observed by the industry, the common configurations used for carrying workers, equipment and seedlings put the vehicles at the limit of their GVW design capacity. Resource roads in the province are under an array of usage, jurisdictional, and cost pressures. The advanced training required of silviculture vehicle drivers has only a toe hold on the industry as of yet, with only a handful of companies undertaking a program to certify their operators to the industry standard. Judging from hearsay and anecdotal evidence, trucks full of workers leave the road regularly each season. Many of these crashes probably occur on what could be considered remote sites. It is remarkable that serious injury and fatal crashes have been relatively infrequent across the sector.

- a. As part of an initial emergency assessment, managers should assess whether they are operating in an area where first responders, usually the volunteer fire department, have highway rescue capacity, i.e. jaws of life, air lifting bags, etc.
- b. The working group recommends that a directory of road user groups, private emergency service providers and other non-government resources be developed to assist operators in finding resources that may be available beyond, or along with, regular agencies and first responders.
- c. Triage skills should be part of First Aid attendant training. All workers should have basic First Aid training to be of assistance in an emergency and to foster a responsible attitude of looking out for fellow workers. Crews should be practiced in their incident management roles as part of the coordination required in a serious incident.
- d. All drivers in the silviculture sector should be certified to the BC Forest Safety Light Truck Driver Standard developed by the BC SAFE Silviculture Program, or they should be in a Council recognized graduated training and mentoring program to achieve that level of competency within one year.
- e. The silviculture as a whole should adopt the best practice of using driving “co-pilots” to assist and support drivers. This practice should be part of graduated training and mentoring to the industry light truck driver standard.

- f. The prospect of passengers being trapped in a crashed vehicle remains a possibility with grim consequences in remote locations. Rescue equipment and crews may be too distant or not available at all to assist. Nevertheless, it is quite possible that with the kinds of equipment typically at hand on a silviculture project and augmented with specific light tools, a remote site rescue crew could gain enough mechanical advantage to pull apart a wreck sufficient to treat or extract victims. Education on the creative use of available tools and techniques to undertake vehicle rescues should be developed.

Treeplanter killed in crash

Prince George Citizen: by GORDON HOEKSTRA

Friday, 16 May 2008: A 25-year-old Montreal woman was killed Thursday evening when she was ejected from a crew-cab pickup carrying a tree-planting crew that rolled on a logging road south of Vanderhoof. Christine Benoit-Belisle was transported to St. John's Hospital in Vanderhoof, but succumbed to her injuries, Vanderhoof RCMP said Friday. The police said Benoit-Belisle was not wearing a seatbelt. The other four occupants of the crew-cab suffered minor injuries. Vanderhoof RCMP, with the help of Prince George RCMP, and the coroner's office continue to investigate the crash at the 83.5-kilometre mark of the Kluskus Forest Service Road. WorkSafe B.C. was also on the scene.

G. Actors

The first thing to note in examining the roles and capacity of the various emergency actors including the public safety answering points, first responders, rescuers and transporters, is that there is apparent variability within and between these providers about how and where they operate. There is also an alphabet of agency group acronyms to go along with an array of dispatch centres. Included as well is varying advice on who to contact and how to do it as the working group found out. This leads us to imagine that there may be regional variations in dispatch, protocols, practices and capacity. Sorting all this out is a key objective and one of the major recommendations of this review. The following is provided as a summary of the working group's general understanding at the moment. It is worth repeating that we have not had time to fill in obvious gaps or to verify or cross check much of the initial information gathered so far.

9-1-1

Responsibility for 9-1-1 services lies with local governments in British Columbia. The Union of BC Municipalities has recently undertaken a policy review of this service looking at its funding, varying availability, coverage gaps, adaption to new technologies and other challenges that the service faces. The service is described as a front-end gating mechanism connecting the public to the correct emergency service dispatch agency: fire, ambulance, police. There are 12 Public Safety Answering Points (PSAP), which operate under local government authority and provide 9-1-1 services to most of the province.

- a. 9-1-1 services are available in most areas of the province, but there are still some unserved areas and some coverage gaps. Two regional districts – the Northern Rockies Regional Municipality and Central Coast Regional District – and one provincially governed region (the Stikine Region), lack any 9-1-1 service. Additionally, there is no 9-1-1 service in Skeena-Queen Charlotte Regional District outside of the City of Prince Rupert and District of Port Edward. Seven

- other regional districts reported coverage gaps, either in some electoral areas or on some First Nations reserves.
- b. Satellite access to 9-1-1 emergency response varies by service provider. Depending on which network is used, and where the call originates, 9-1-1 service may or may not be available. Individual service provider can provide details. It may be the case that some providers actually route your call first to a private response centre, which subsequently relays your message to the appropriate agency. This may add another relay in the continuum of assessment, transfer and dispatch.
 - c. Since 9-1-1's implementation in the 80s the service has added enhanced features as telephone companies adapted their switches and networks to make the system more robust. The advent of wireless service brought a series of challenges, particularly around the automatic locating of callers. Generally locating a wireless caller, which is also dependent on the model and settings of the phone used, can be far from precise in most situations. Just how reliable automatic location works for wireless 9-1-1 callers in the province needs to be further researched.
 - d. The majority of emergency calls from remote sites are likely to involve accessing the phone network by radio. In cases where 9-1-1 is not reachable by radio, there are various options to reach emergency dispatch:
 1. Call the closest local RCMP detachment number, state you have an emergency, and ask for dispatch. After hours calls will, after sometimes lengthy recordings, eventually connect you to the dispatch centre.
 2. Call one of the three regional BC Ambulance Dispatch Operations Centres:
 - i. Vancouver centre covers primarily the Lower Mainland and some adjacent areas, including Pemberton and Lillooett;
 - ii. Kamloops centre covers the Interior and the North of B.C.
 - iii. Vancouver Island centre covers the Gulf Islands, Vancouver Island and Powell River.

BC Ambulance

The ten digit phone numbers to the three BC Ambulance Service centres are: Vancouver 604-872-5151; Kamloops 250-374-4411; Victoria 250-727-2400. All centres operate from the same computer platform. Any centre can be called from any location. Typically, Vancouver is for South Western B.C., Victoria is for Vancouver Island, and Kamloops is for everything north and east of Hope.

- a. BC Ambulance reports that they are able to initiate and coordinate all available resources from their dispatch operations centres. These resources would include, presumably, SARs, ambulance, fire, Comox 442, air ambulance, private helicopter rescue, and so on. BC Ambulance's assessment of the situation is based on information provided by the caller, i.e., mechanism of injury, condition of patient(s), incident location, will dictate what resources, including launching a helicopter, are dispatched to the scene.
- b. Ground ambulances will operate on any passable two-wheel drive road wide enough for them. Nevertheless, the province's 500 ambulances have essentially zero clearance. They are street vehicles. Passable may mean only graded gravel road. Water bars, even shallow ones, standing water and ruts may be barriers to a regular ambulance.
- c. BC Ambulance Service has four wheel drive ambulances in a number of communities including Zeballos, Bella Coola, Burns lake, Williams Lake, Seton

Portage, Goldbridge, Pemberton and Lillooet. These units are located because of grades in and out of communities, weather conditions and the roadways in those areas. They are not located specifically to do off-road remote site responses.

- d. The radios in the province's ambulances do not have resource road radio frequencies. Any emergency response will have consider the necessity to meet and escort an ambulance on radio-controlled resource roads.
- e. On scene, the ambulance paramedics and crew cannot leave the roadside. It is incumbent on the operator, or other first responders, if needs be, to execute the rescue and extraction of a patient for transportation by ambulance.
- f. It is incumbent on the caller to be able to provide precise directions to the incident site, otherwise the ambulance will not be dispatched.
- g. Likewise the caller needs to be able to provide critical information about the condition of the patient and the mechanism of injury to aid in the proper dispatch of resources.
- h. BC Air Ambulance may dispatch medevac helicopters to remote silviculture worksites to transport an injured worker. Only the Lower Mainland, Kamloops and Prince Rupert have dedicated (ambulance-equivalent) medevac helicopters. In the balance of the province, BC Ambulance organizes helicopter transport through an adhoc contract fleet of 40 machines. These responders may have varying capacity in terms of on board care. The dedicated medevac helicopters are large air ships including two Sikorsky S-76s and a Bell B412 that can only fly in day light and not all weather conditons. They need a good landing site and are much in demand. Emergency planners should consider air ambulances a "bonus" option because of their limited availability, and therefore plan accordingly.
 - 1. Helicopter support requires GPS coordinates and the caller's actual VHF ground frequency numbers, not the common name for the frequency.
 - 2. The pilot will need a safe landing zone to set down. This means an area of at least 25 metres in diameter without wires or real hazards including a clear approach and departure line. Ideally the landing site should be two to three lengths from standing timber.
 - 3. If the possibility of landing is uncertain, due to weather or site conditions, the caller should be prepared to provide information for a fall back plan including the simultaneous dispatch of a ground ambulance.
 - 4. Fixed wing aircraft may also be available, but only a few can land on gravel runways typical of remote locations.
- i. In calling BC Ambulance on a cell phone, automatic number identification and automatic location information (ANI/ALI) are limited depending on the carrier, location, and handset model. The ANI/ALI function is further effected by which technology is used by the carrier including cell tower triangulation or GPS. Accuracy can range from three meters to 17 km depending on the area of the province.

Be ready with this information

*What is the exact **location** of event?*

*What **exactly** happened?*

*How **many** patients?*

*What is the **age** (approximate) of the patient(s)?*

*Is the patient(s) **conscious**?*

*Is the patient(s) **breathing**?*

*Is there **difficulty** breathing?*

*Is there chest **pain**?*

*Is there **severe** bleeding?*

*Is there **obvious** injury?*

Search and Rescue (SAR) and Road Rescue Societies

There are 80 volunteer i.e., non-profit societies, search and rescue groups (SAR) across British Columbia. They fall under the coordination and jurisdiction of Emergency Management British Columbia. SAR groups may vary in their capacity and skill level for executing search and rescue operations. This variance is compensated somewhat by the coordination and cooperation possible between different groups.

- a. Rescue is defined as the safe extraction and transportation of a victim to a transfer of care point without causing further injury to the individual.
- b. SARs can only be dispatched to a scene by an initiator such as the RCMP, ambulance operations dispatch centre or some other agency or coordinating centre with authority.
- c. Individual operators cannot contact a SAR group directly for assistance. This does not rule out contacting SARs initially as part of a company's general program of prudence and practice around preparing for an emergency.
- d. Notwithstanding the above, SARs cannot be considered or written in as a component of a company's emergency management system and response. SARs are dedicated primarily to civil search and rescue operations and their involvement in industrial settings occurs at the discretion of emergency initiators when on site resources are exhausted or the situation clearly is beyond the capacity of the operator involved. After the event, questions will be asked as to why the company did not have resources or plans in place to deal with the incident.
- e. The above consideration again brings this report and working group back to the central question of what is an acceptable level of emergency rescue preparation, including planning, training and equipment, for a silviculture firm operating in a remote site location. Although the involvement of SARs is not ruled out, clearly they are not intended for industry to directly rely on as a resource in a critical situation.
- f. SARs involvement with silviculture incidents have been rare in the province. One incident involving helicopter aerial rescue of an injured tree planter near the Lower Mainland a few years ago is being looked into for possible lessons learned.
- g. Helicopter long line rescue capacity matters are not in an area this report intends to examine. That subject has been left to the Council.
- h. Road rescue societies are part of Emergency Management British Columbia's Public Safety Lifeline volunteer program. They provide vehicle extraction services in areas outside of local fire protection districts. Some of this service is also provide by career and/or paid on call fire departments and Ground Search and Rescue groups.

Tree Planter Breaks Ankles

May 9th, 2008. On Thursday, May 8, 2008 a 31 year old tree planter suffered two broken ankles after a fall which occurred in a remote area near the north end of Stave Lake. Mission Search and Rescue was tasked by the B.C. Ambulance Service to facilitate the removal of the injured subject. After assessing the situation, specially trained members of Chilliwack Search and Rescue and a helicopter were brought in. The tree planter was lifted out from the accident site with a long line under the helicopter and transported to other rescue members located a short distance away. Once stabilized, he was flown by helicopter to waiting Mission SAR and BC Ambulance crews at the south end of the lake.



Fire Departments

The 9-1-1 response to a typical silviculture incident may involve the dispatch of the local fire department. These responders will have varying levels of skill and capacity.

- a. 9-1-1 dispatchers may send fire departments to a scene requesting an ambulance.
- b. Fire crews can leave their local fire protection districts once directed by dispatch, and proceed on roads their vehicles can operate on. Nevertheless, information received on this topic also indicates that there may be limitations to this if there are not pre-existing agreements in place to do with adjacent districts, designation of authority and mutual aid arrangements. Some crews may not be able to operate out of their districts, depending on the situation. This complication warrants more investigation.
- c. Fire crews can leave the roadside, but they will be arriving wearing their structural fire fighting gear and outfits.
- d. Some crews around the province have trained and equipped up to a level to engage in highway rescue operations, particularly for victims trapped in a vehicle. Nevertheless, recent events indicate fire crews may be restricted in their ability to respond to a motor vehicle accident if they do not have capacity to leave a crew behind to deal with an emergency in their community.
- e. The working group recommends a directory be developed designating fire department capacity and coordinates for the province. This document should further explore possible limits to the availability of fire crews as mentioned above.

RCMP

The Royal Canadian Mounted Police have a role in dispatch and initiation of resources in emergencies as noted so far. When dispatched to a site, they are not expected to perform as paramedics or rescuers.

- a. RCMP can have a critical role as a possible initiator in a search and rescue situation requiring Flight Rescue or Marine Search and Rescue (see 442 Transport and Rescue Squadron).

442 Transport and Rescue Squadron

This resource is a Royal Canadian Air Force tactical transport and search and rescue unit based at Canadian Forces Base (CFB) Comox in the Canadian Province of British Columbia. The squadron flies six De Havilland Canada CC-115 Buffalo STOL aircraft and five AgustaWestland CH-149 Cormorant rescue helicopters. One of each is on constant readiness to deploy in response to distress calls in the Victoria Search and Rescue Region, which includes most of British Columbia and the territory of Yukon as well as 560,000 square kilometers in the Pacific Ocean, up to 600 nm offshore.

- a. This federal rescue resource will only be deployed in response for flight rescue or marine search and rescue requests based on these guidelines:
 1. The service is required to save a life or reduce human suffering;
 2. The resources of local authorities and BC Ambulance are exhausted;
 3. The capability required is unique to 442 Transport and Rescue Squadron assets.

Wildfire Management Branch

Although not part of the regular emergency response program in the province, the Branch may represent a potential resource for remote sites given its communications network (mentioned already), its dispatch and coordination capacity, trained staff and the months of the year that much of this potential remains dormant. In discussion, the working group felt this area was worth further exploring.

Private Providers

Private providers are known in certain parts of the province. Their capacity and coordinates need to be researched and catalogued. Competent silviculture operators in many areas have established working relationships and strategic emergency planning involving local helicopter companies. The scope and resilience of those strategies varies with the equipment, capacity and contract of the helicopter companies involved, as well as the weather. It is also important to do pre-planning with the private service provider so there is no confusion about equipment, process and payment during an incident. More research is required around the dispatch and costs of involving private companies in an emergency situation.

H. Communications

- a. The radio communications networks available in remote worksites in B.C. are a patchwork. The radio spectrum falls under the federal ambit of Industry Canada. It is generally recognized that there are numerous technical, governance, and performance issues associated with radio usage in the province. On the ground, some of these are being addressed such as the standardization occurring around radio use on resource roads. Narrowbanding is also underway to allow more channels. And as in many other communications domains, systems are switching from analog to digital. Nevertheless, the organic development of radio use in the province has created a mosaic of variable performance and practices. Capacity then is highly site specific, mostly independent, and can only be approached locally.
- b. The BC Ministry of Forests Lands and Natural Resource Operations, Information Management Group, Radio Operations reports (2009) that it provides reliable two-way VHF radio communications for about 85% of the province. Its main

- purpose is to provide communications service for operations personnel. It is heavily used during fire season for directing crews and air tankers. The system's use by contractors and its possible use for emergency coordination on remote sites needs to be examined further by either the ERP working group or the proposed workplace improvement team recommended earlier in this report.
- c. Significant changes have occurred and continue in the world of telephony. Wireless coverage and performance improves steadily in populated areas. But large swathes of rural and remote B.C. remain unserved, such as the central Interior west of the Fraser River. At the same time, former radio-telephone services are being phased out or let decline. Some private firms have stepped into this gap providing interconnect radio services at the local level.
 - d. It has been noticed more than once that phone numbers change in the general flux around phone service. It is imperative that operators check to make sure emergency numbers provided are not out of date.
 - e. There are two main satellite systems available in B.C. along with a handful of other competitors coming on the scene. Iridium and Globalstar differ primarily in the number and distance of their satellites. Iridium's are farther out and create a slight latency effect, or lag in a conversation. Iridium works with inReach Two-Way Satellite Communicator, which may be a valuable option. Globalstar is the less expensive service and originally had trouble providing around the clock service. That has been addressed with additional satellites.
 - f. SPOT, inReach and other satellite GPS locators may all have utility in remote site applications. This will depend on whether they have one-way or two-way capacity and how the units handle "panic button" calls. It is also critical to program useful emergency information into the unit's attributes to assist emergency dispatch in quickly recognizing the situation they may be dealing with and making the proper assessment.

I. Training

One of the main recommendations of this report is to develop advanced first aid training for emergency situations on remote sites. Emergency first aid is a mature instructional domain that includes well-developed relevant fields such as wilderness first aid and first aid for loggers training, which may be useful on remote site emergencies. There are also reliable private service providers with content and instructors to support existing curricula.

- a. The working group should undertake a facilitated curriculum development exercise to arrive at a profile of competencies that a silviculture remote site first attendant needs to possess. This job task analysis would lead to defining the skills, knowledge and attitudes a person in this capacity requires. This would lead to the adoption, adaptation or development of a curriculum to support the training and education necessary for certification and recognition.
- b. As stated at other points in this report this process should be undertaken in collaboration with WorkSafeBC as the regulator, the BC Forest Safety Council and other relevant actors and parties.

J. Drills

Conducting safety drills as a means of building and retaining emergency response skills are a type of training that deserves specific recognition in this review. If you are not drilling, you are not prepared for a remote site emergency.

- a. The ability of a company to respond to an emergency is highly dependent upon the capacity of its employees to work together as a team to manage the situation. Even with all the equipment and written procedures in place, an unprepared company can face serious, and potentially life-threatening challenges in managing an emergency. Conducting safety drills is one of the most important things a company can do to increase the chance of their employees successfully overcoming the challenges they may face in an emergency.
- b. Section 4.14 of the Occupational Health and Safety Regulation (Emergency Procedures) requires that companies conduct drills at least once per year. In recognition of this requirement, the BC Forest Safety Council introduced requirements for drills as part of their BASE 3 Audit Standard in 2011. Since this time, conducting drills has become a more common part of safety training in silviculture and the rest of the forest industry. However, many companies continue to fall short of meeting this requirement and providing their employees with this potentially critical form of training. Although many companies are conducting drills, there also continues to be limits in understanding of what makes an effective drill, and how we can use drill to improve our emergency procedures.
- c. Those companies that are conducting drills and carefully reviewing their outcomes are engaging in practices that could potentially save lives. They are protecting their workers and their business from unnecessary stress and harm. Those companies that are still struggling with performing effective drills are missing out on opportunities to protect their employees, and to change they way they think about safety and the company.
- d. Guidelines should be developed describing effective drills and drilling practices.



"I remember the first serious incident that I had to deal with as a first aid attendant. A worker had sustained head and body injuries in an ATV accident. I was new to the company, and in charge of directing eight other workers in caring for and transporting the injured worker. Our ability to transport the worker was hampered by a lack of radio contact due to the isolated valley we were working in. Fortunately, we made contact with a passing log truck that was able to relay an emergency message to the local medical services on our behalf.

A second challenge was that I was the only person with advanced first aid training. I had to train the other workers to assist me during the process of the evacuation. During the response, one worker directly challenged my decision-making and had to be asked to stand aside from the scene.

In the end, we were able to overcome our internal challenges and the obstacles of our setting, with the worker arriving safely at the hospital. However, we all knew that we had been tremendously fortunate that the worker's injuries were not more serious, and we were simply lucky to have a passing truck pick up our signal.

During our debriefing session at the company, we had to devote extensive time to sorting out our chain of command, and repairing the damage to our crew morale that had occurred as a result of the arguments and near panic that occurred during the incident.

That year, I implemented a program at the company training every worker to assist me as the head first aid attendant. It focussed on communication and transportation procedures. Two years later we had a second incident with a worker struck by a vehicle. This time, I was immediately assisted by six people that I had personally trained as my helpers. Without needing to demonstrate or explain any complicated tasks, I was able to quickly direct my co-workers in controlling the scene, assessing the patient, and stabilizing him so that we could quickly and gently load him onto a spineboard for transport.

We were able to work as a team to provide care, and had the worker prepared for transport to hospital within a mere 15 minutes. The impact of this on the company was remarkable.

Our debriefing session still focused on what we could have done better. However, instead of devoting our time to sorting out our near-failure and debating our chain of command, we were able to validate the positive impact of our training and preparation.

More importantly, all the workers that were present that day were impressed with the ability of the company to deal with the situation. Encouraging participation in future emergency training sessions became much easier, and the respect between the crew and the first aid staff grew to new heights.

Looking back at the two situations, it seems clear to me that the difference between a well-trained (and well drilled) staff and a staff without drilling was like night and day. We successfully transformed a potentially unprepared and argumentative group of people into a high-performing team with a more positive attitude towards safety preparation."

K. Equipment

Just what remote site rescue and first aid equipment is required will be dependent on just what level of capacity the industry and other actors involve designate as reasonable. This report is part of that discussion.

Principally, discussions to date have been around what constitutes an acceptable Emergency Transportation Vehicle (ETV). This includes models such as Express Custom Mfg. aluminum ETV insert. Adaptions to the FIST units have been proposed as well. The limits to certain acceptable units such as GMC Suburbans have been mentioned.



The electronics field continues to produce a plethora of models and devices all with varying attributes and reliability.

Rescue equipment discussed range from the applicability of duct tape and the space blanket to wheeled stretchers, winches, grompers, ropes and pulleys.

Some companies have begun to utilize specially prepared emergency kits for hard-access work locations such as helicopter and boat-accessed worksites. These kits include first aid supplies, as well as compact shelter tarps, insulative blankets, emergency rations, fire starters, and flares. Such supplies provide critical needs in the case that transportation becomes compromised and a serious emergency occurs.

L. Outreach

A very small budget has been designated in this year's 2014 BC SAFE Silviculture Program for outreach regarding emergency response in remote sites. Likely the programs resources will work better in collaboration with the Council's overall scheme for the forest sector. The BC SAFE Silviculture Program Strategic Advisory Committee (SAC) will decide the best use of these funds and the goals of the outreach program.

Meanwhile a version of this report is intended for release and discussion in conjunction with the 2014 Western Silvicultural Contractors' Association set for the end of January 2014. The working group expects that session will provide useful feed back and further direction.

IV. Findings and Recommendations

- a. Given the expanse that makes up remote British Columbia, and the attenuated response capacity regarding communication, rescue and transportation from regular providers in these settings, it would be wise for the silviculture industry to advance towards a high degree of self reliance regarding emergency response in remote settings. In other words, operators should be predisposed to acting appropriately as opposed to waiting when it comes to rescue and transportation of a patient. Another way to characterize this mission would be to set a goal of

- having silviculture crews trained and practiced to the point where they might be considered actual emergency rescue and transportation assets in remote parts of the province.
- b. The working group recommends that the silviculture sector establish an emergency response steering committee as a sub committee of the BC SAFE Silviculture Program Strategic Advisory Committee (SAC) comprising silviculture leaders and shareholders to advance the research, recommendations and goals set in this report.
 - c. Given the array of agencies and organizations with jurisdictions and roles in remote site emergency communications, rescue and transportation, it would be for the general good if these actors approach solving the central problems posed in a collaborative manner. That would mean initially working out the best ways to work together to reduce the risks and consequences for workers in remote site emergencies.
 - d. In the course of this investigation a welter of acronyms appeared, designating what seems to be a small multitude of agencies, jurisdictions and coordinating bodies. It may fall out of the ambit of this report, but the complexity of the inferred interactions between all those parties warrants some exposition and analysis. A who's who and how they connect might be a start. An examination of the logic and coherence of how all the parties interact is also worth looking at. It is obvious that the many actors involved have differing mandates, levels of services and ways of providing it. The more seamless service between everyone involved, the better the chance of success.
 - e. The working group recommends that industry take the lead in establishing a remote site emergency response improvement team comprising authorities, organizations and end users with the goal to collaborate in solving the various problems of improving emergency practices in remote work places. This group's terms of reference could include:
 1. Developing mutual aid capacity in the resource sector;
 2. Developing a lessons learned strategy for remote site incidents;
 3. Clarifying roles and relationships of the various actors involved in remote site incidents;
 4. Considering strategies to develop reverse 9-1-1 abilities for industry emergency alerts;
 5. Developing best practices;
 6. Dealing with emerging issues;
 7. Directing outreach and education on remote site emergencies.
 - f. The working group recommends that time, rather than distance, be the prime consideration in defining a remote work site. An appropriate medical principle like the golden hour should be considered as a basis for this definition taking into consideration the amount of time likely required to package and transport an individual to the point of transfer of care.
 - g. The working group recommends that industry produce a video or series of videos, as part of its emergency response education and awareness program aimed at encouraging operators to more critically assess emergency response hazards in remote sites and their capacity to deal with them effectively in an actual situation.
 - h. The working group recommends that a group of high performing operators and technical experts undertake a curriculum development (DACUM) exercise to arrive at an occupational profile of competencies necessary for remote site first

- aid attendants. This job task analysis would be then used to adopt, adapt, or develop supporting training curriculum for this position.
- i. The working group recommends that industry and WorkSafeBC work together to review and revise first aid guidelines, hazard assessment tools, and compliance practices that fall under the OH&S regulation as it applies to remote work places.
 - j. The working group, taking into consideration the above recommendations, recommends that industry produce a series of practical guidelines as soon as practicable to enable operators to improve their emergency response planning and practices. The topics of these guidelines could include:
 - 1. Site assessment tools to properly recognize work place risks and hazards as they pertain to first aid and transportation of patients;
 - 2. Internal audit tools allowing operators to more critically evaluate their own emergency response systems;
 - 3. Recommended best practices to improve overall coordination and prework planning for emergency response;
 - 4. BC ambulance protocols for remote site emergencies;
 - 5. General catalogue of available emergency resources across the province;
 - 6. Effective emergency drilling practices for crews;
 - 7. Recommended tools and equipment for emergency rescue and transportation;
 - 8. Recommended specific skills and tools required for MVA entrapment rescue;
 - 9. Recommended first aid training;
 - 10. Lessons learned;
 - 11. Post crisis management.

V. Acknowledgements

- a. Thanks needs to be given to the volunteers on the ERP working group including Lisa Houle, Jordan Tesluk, Carlo Galvani, Doug MacLeod, Sylvia Fenwick-Wilson and Alan Sidorov.
- b. The ongoing cooperation and indulgence of the emergency agencies and groups assisting with the research is much appreciated.
- c. The BC Forest Safety Council should be recognized for its support and ongoing cooperation and collaboration.

Appendices

Table 1: This table applies to a workplace that an employer determines under section 3.16 (2) (b) of the Regulation creates a low risk of injury and that is more than 20 minutes surface travel time away from a hospital.

Item	Column 1 Number of workers per shift	Column 2 Supplies, equipment, and facility	Column 3 Level of first aid certificate for attendant	Column 4 Transportation
1	1	<ul style="list-style-type: none"> Personal first aid kit 		
2	2-5	<ul style="list-style-type: none"> Basic first aid kit 		
3	6-30	<ul style="list-style-type: none"> Level 1 first aid kit 	Level 1 certificate	
4	31-50	<ul style="list-style-type: none"> Level 1 first aid kit ETV equipment 	Level 1 certificate with Transportation Endorsement	
5	51-75	<ul style="list-style-type: none"> Level 3 first aid kit Dressing station ETV equipment 	Level 3 certificate	
6	76 or more	<ul style="list-style-type: none"> Level 3 first aid kit First aid room ETV equipment 	Level 3 certificate	ETV

Table 2: This table applies to a workplace that an employer determines under section 3.16 (2) (b) of the Regulation creates a low risk of injury and that is 20 minutes or less surface travel time away from a hospital.

Item	Column 1 Number of workers per shift	Column 2 Supplies, equipment, and facility	Column 3 Level of first aid certificate for attendant	Column 4 Transportation
1	1			
2	2-10	<ul style="list-style-type: none"> Basic first aid kit 		
3	11-50	<ul style="list-style-type: none"> Level 1 first aid kit 	Level 1 certificate	
4	51-100	<ul style="list-style-type: none"> Level 2 first aid kit Dressing station 	*Level 2 certificate	
5	101 or more	<ul style="list-style-type: none"> Level 2 first aid kit First aid room 	*Level 2 certificate	

Table 3: This table applies to a workplace that an employer determines under section 3.16 (2) (b) of the Regulation creates a moderate risk of injury and that is more than 20 minutes surface travel time away from a hospital.

Item	Column 1 Number of workers per shift	Column 2 Supplies, equipment, and facility	Column 3 Level of first aid certificate for attendant	Column 4 Transportation
1	1	<ul style="list-style-type: none"> • Personal first aid kit 		
2	2-5	<ul style="list-style-type: none"> • Level 1 first aid kit 	Level 1 certificate	
3	6-15	<ul style="list-style-type: none"> • Level 1 first aid kit • ETV equipment 	Level 1 certificate with Transportation Endorsement	
4	16-50	<ul style="list-style-type: none"> • Level 3 first aid kit • Dressing station • ETV equipment 	Level 3 certificate	ETV
5	51-100	<ul style="list-style-type: none"> • Level 3 first aid kit • First aid room • ETV equipment 	Level 3 certificate	ETV
6	101-300	<ul style="list-style-type: none"> • Level 3 first aid kit • First aid room • Industrial ambulance equipment 	Level 3 certificate	Industrial ambulance
7	301 or more	<ul style="list-style-type: none"> • Level 3 first aid kit • First aid room • Industrial ambulance equipment 	2 attendants, each with Level 3 certificates	Industrial ambulance

Table 4: This table applies to a workplace that an employer determines under section 3.16 (2) (b) of the Regulation creates a moderate risk of injury and that is 20 minutes or less surface travel time away from a hospital.

Item	Column 1 Number of workers per shift	Column 2 Supplies, equipment, and facility	Column 3 Level of first aid certificate for attendant	Column 4 Transportation
1	1	<ul style="list-style-type: none"> • Personal first aid kit 		
2	2-5	<ul style="list-style-type: none"> • Basic first aid kit 		
3	6-25	<ul style="list-style-type: none"> • Level 1 first aid kit 	Level 1 certificate	
4	26-75	<ul style="list-style-type: none"> • Level 2 first aid kit • Dressing station 	* Level 2 certificate	
5	76 or more	<ul style="list-style-type: none"> • Level 2 first aid kit • First aid room 	* Level 2 certificate	



Table 5: This table applies to a workplace that an employer determines under section 3.16 (2) (b) of the Regulation creates a high risk of injury and that is more than 20 minutes surface travel time away from a hospital.

Item	Column 1 Number of workers per shift	Column 2 Supplies, equipment, and facility	Column 3 Level of first aid certificate for attendant	Column 4 Transportation
1	1	<ul style="list-style-type: none"> • Personal first aid kit 		
2	2-5	<ul style="list-style-type: none"> • Level 1 first aid kit 	Level 1 certificate	
3	6-10	<ul style="list-style-type: none"> • Level 1 first aid kit • ETV equipment 	Level 1 certificate with Transportation Endorsement	ETV
4	11-30	<ul style="list-style-type: none"> • Level 3 first aid kit • Dressing station • ETV equipment 	Level 3 certificate	ETV
5	31-50	<ul style="list-style-type: none"> • Level 3 first aid kit • First aid room • ETV equipment 	Level 3 certificate	ETV
6	51-200	<ul style="list-style-type: none"> • Level 3 first aid kit • First aid room • Industrial ambulance equipment 	Level 3 certificate	Industrial ambulance
7	201 or more	<ul style="list-style-type: none"> • Level 3 first aid kit • First aid room • Industrial ambulance equipment 	2 attendants, each with Level 3 certificates	Industrial ambulance

Table 6: This table applies to a workplace that an employer determines under section 3.16 (2) (b) of the Regulation creates a high risk of injury and that is 20 minutes or less surface travel time away from a hospital.

Item	Column 1 Number of workers per shift	Column 2 Supplies, equipment, and facility	Column 3 Level of first aid certificate for attendant	Column 4 Transportation
1	1	<ul style="list-style-type: none"> • Personal first aid kit 		
2	2-15	<ul style="list-style-type: none"> • Level 1 first aid kit 	Level 1 certificate	
3	16-30	<ul style="list-style-type: none"> • Level 2 first aid kit • Dressing station 	* Level 2 certificate	
4	31-300	<ul style="list-style-type: none"> • Level 2 first aid kit • First aid room 	* Level 2 certificate	
5	301 or more	<ul style="list-style-type: none"> • Level 2 first aid kit • First aid room 	* 2 attendants, each with Level 2 certificates	

[Enacted by B.C. Reg. 320/2007, effective February 1, 2008.]

EMERGENCY RESPONSE PLANNING IMPROVEMENTS – Project Plan @ March 21, 2013, May 5, 2013

Objective = Produce practical, recommended practices for managers and practitioners to guide strategies for effective management of incidents at remote sites.

Overarching Outcomes Perhaps shared with BCFSC	SAC Project to support it	Tasks involved	Update	Owner (Lisa to coordinate)	Timeline
I. Thorough, documented understanding of how remoteness is a factor in recent incidents. Where are the problems?	1. Review of recent incidents and key learnings. 2. Findings should play into projects below.	1. Follow-up with Coroner's office re: what they are seeing and Research Secretariat possibilities. 2. Gather best way to gather narratives & experiences from other silv. Companies. 3. Confirm with the Council to what extent they are doing this and/or who else is pursuing this topic.	1. Lisa and Gerard spoke with Chico Newell; the Coroner's office is interested in this topic as well. May be some potential funding there for specific needs. 2. How many 'stories' do we need to collect before moving forward? Between WSCA and Coroners reports we have enough info for pilot. 3. Opportunities to liaise with other groups being reviewed.	Lisa	Completed end of summer
II. Create Guidelines for Contractors: (What to use, who can help, how best to plan internally)	3. Catalogue of communication equipment and capabilities	1. Research equipment types, nature of service, pros and cons. 2. Consider separating geographically.	1. Comparisons started of various satellite services and GPS locators.	Sylvia	1 day to research 1 day to compile. Due end of July
	4. Produce outline of response/support services	1. Research all agencies and organizations that are capable of helping, outline limitations, jurisdictional issues etc. 2. Provide contact information for all, or links for most updated 3. Specifically clarify extraction equipment and service	1. Review of who is the best agency to call for help – if you have only 1 call, regardless of where you are. 2. Currently confirming BC Air Ambulance jurisdiction scope and abilities to contract out support.	Carlo	1 week. Draft complete end of July

		<ol style="list-style-type: none"> 1. Create strategy to share across sector all info collected above 2. Research best company practices for incident command & communication (reporting protocols). Will most likely involve sharing outcomes from #1 above. 3. Identify pitfalls 4. Create drills based on real scenarios, provide to industry 	<ol style="list-style-type: none"> 1. Not started yet, other than assimilating info as it comes in with above mentioned outreach. Support materials and drills will be key outcome. 	Jordan -	Fall 2013
III. Improve First Aid service for Forestry	6. Make recommendations for First Aid training & equipment improvements (follow-up from this to go to Council)	<ol style="list-style-type: none"> 1. Review equipment options - pros./cons 2. Review first aid training options - pros./cons 3. Recommend basic worker training 4. Talk to Brooks Hogja and others for input 	<ol style="list-style-type: none"> 1. Exploring numerous FA equipment improvements that may allow forestry firms to provide better FA response. Talking with Alpine Pacific Institute and Wilderness FA Agencies. 2. It may be the case for our work to make recommendations for the council to pursue should they see fit. 	Alan	1 week ?
IV. Provide Post-incident assistance	7. Compilation of Post incident support and guidelines	<ol style="list-style-type: none"> 1. Review what council has done. Add recommendations if appropriate - given outcome of #1, but leave it with them to manage. 	<ol style="list-style-type: none"> 1. Not started yet. 	John B.	.5 day
V. Ensure ongoing improvements, cross industry communication and currency of info	8. Make recommendations for Council Working Group managed by BCFSC	<ol style="list-style-type: none"> 1. Compile topics that will require ongoing attention like worker education, industry outreach, regulatory improvements, technology changes, audit inclusion etc. 	<ol style="list-style-type: none"> 1. Not started yet - tied to final outcome. 	One committee member hands over to council	